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THE ILLUSTRATED
DICTIONARY OF GARDENING.

VOL. IV.



ANEMIA PHYLLOIDES.

THE
ILLUSTRATED
DICTIONARY OF GARDENING,

A PRACTICAL AND SCIENTIFIC

*Encyclopædia * of * Horticulture*

FOR

GARDENERS AND BOTANISTS.

EDITED BY

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ASSISTED BY PROFESSOR J. W. H. TRAIL, A.M., M.D., F.L.S., IN THE PARTS RELATING TO INSECTS, FUNGI,
PLANT STRUCTURE, HORTICULTURAL CHEMISTRY, &c.; AND J. GARRETT IN THE FRUIT,
VEGETABLE, AND GENERAL GARDEN WORK PORTIONS.

VOL. IV.—T TO Z, AND SUPPLEMENT.

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PREFACE TO VOL. IV.

THE Fourth and Concluding Volume of "THE DICTIONARY OF GARDENING" will, it is confidently hoped, prove of not less value than its predecessors. No pains have been spared, by all who have been concerned in its production, to render it a trustworthy Book of Reference. Few plants of any value from a horticultural standpoint have been omitted; a large number that have found their way to British and Continental gardens during the publication of the work, or that were omitted from the other Volumes, will be found in the Supplement, which also contains many corrections and cross-references. A considerable series of names of plants only met with in purely horticultural publications, such as some catalogues, gardening periodicals, &c., have been omitted owing to there being no descriptions; a mere list of such names would have required space which could not be spared, and would have been quite useless when compiled. Doubtless, a large proportion of these names have originated through mistakes, and an equally large number will prove to be purely garden names for more or less well-known plants. As soon as the identity of these undescribed plants is established, careful notes will be taken, and these will be published either in Appendixes, from time to time, or in a New Edition of the entire work.

To all my colleagues at Kew, and to many friends and well-wishers—some of them not personally known to me—I have to tender my grateful thanks for much valuable assistance. To those of my fellow-workers whose names are mentioned in the Prefaces to the previous Volumes, I can only repeat the obligations I have already expressed; without their aid I should not have been able to carry out my share of the work.

Besides continuing this assistance in the main body of the Dictionary, the Rev. PATER W. HURST, B.A., F.L.S., has, in response to the numerous requests made by subscribers for guidance in the matter, incorporated in the work a Pronouncing Dictionary of Plant-

names, which is the result of considerable research, dealing much more fully with the subject than has been done by any previous author; and Professor J. W. H. TRAIL, A.M., F.L.S., &c., has drawn up a practical and comprehensive Classification of Insects and other Animals, according to their properties, beneficial or injurious to the horticulturist. Mr. J. DOUGLAS has undertaken for the Supplement the important department of Florists' Flowers.

My grateful thanks are due to Mr. A. F. BARRON, the Superintendent of the Royal Horticultural Society's Gardens, at Chiswick, for the article "Vine"—except the portion pertaining to Insect and Fungoid Pests, supplied by Dr. TRAIL. The mere mention of the name of the Author of "Vines and Vine Culture" (the standard work on the subject), is sufficient to prove the value of this contribution.

In addition to the names of co-workers already given, I wish to mention those of Messrs. W. BAKER-BARTLETT and W. D. DRURY, who have not only taken infinite pains in the not sufficiently recognised labour of reading for the Press, but have, all through the course of the work, given most valuable assistance and suggestions, for which I desire to record my fullest acknowledgment.

It is at the desire of the Publisher, and in accordance with the suggestion of numerous subscribers, that the Lists of Plants for Special Purposes, &c., have been drawn up, which, it is hoped, may be of use.

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ROYAL GARDENS, KEW,



REFERENCE TO ILLUSTRATIONS OF PLANTS OTHER THAN THOSE FIGURED IN THIS WORK.

IT has been suggested, by an eminent Authority, that many readers would be glad to be informed where reliable Illustrations could be found of those Plants which are not figured in this Work. To meet this want, references to the Figures in Standard Authorities have been given, the titles of the Works referred to being, for economy of space, abbreviated as follows:

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THE DICTIONARY OF GARDENING,

An Encyclopædia of Horticulture.

The following are the Abbreviations used:—*f.* flowers; *fr.* fruit; *l.* leaves; *h.* height; *deg.* degrees; *rhiz.* rhizomes; *cau.* caudex; *sti.* stipes.

The Asterisks (*) indicate plants that are especially good or distinct.

TABEBUIA (said to be the native name in Brazil).

ORD. *Bignoniaceæ*. A genus embracing nearly sixty species of stove, glabrous, pubescent, or villous, erect trees or shrubs, natives of tropical America. Flowers often ample, racemose or cymose; calyx tubular, at first closed, afterwards variously out at apex; corolla tube elongated, straight or scarcely incurved; limb spreading, sub-bilabiate, of five rounded, nearly equal lobes; stamens four, didynamous. Capsules oblong or elongated, subterete. Leaves opposite or slightly scattered, simple (one-foliolate?), trifoliolate, or often digitately five to seven-foliolate; leaflets petiolulate, entire or toothed. Few of the species are in cultivation. They require precisely similar treatment to that recommended for **Tecoma** (under which these plants are sometimes included).

T. acutifolia (Horse Chestnut-leaved). *f.*, corolla orange-coloured, sub-campanulate, the three lower lobes marked with yellow spots; panicle terminal, sub-corymbose. June. *l.* digitate; leaflets seven, obovate-oblong, shortly acuminate, narrowed at base, membranous, pubescent above, canescent-tomentose beneath. Branchlets pubescent. *A.* 20ft. Mexico. Tree. SYN. *Bignonia acutifolia*.

T. chrysantha (golden-flowered). This is the correct name of the plant described in this work as *Bignonia chrysantha*. SYN. *Tecoma chrysantha*.

T. leucoxylla (white-wooded). This is the correct name of the plant described in this work as *Bignonia pallida*. SYN. *Bignonia leucoxylla* (of Velloso).

T. serratifolia (serrate-leaved). *f.*, corolla yellow, glabrous, 2in. to 2½in. long, narrowly infundibular; corymbs contracted. *l.* chartaceous, devoid of scales; leaflets five, 3in. to 5in. long, oblong-lanceolate, shortly acuminate, sub-entire. *A.* 20ft. West Indies, 1822. Tree. SYN. *Tecoma serratifolia*.

T. spectabilis (showy).* This is the correct name of the plant described in this work as *Bignonia spectabilis*. SYN. *Tecoma spectabilis* (F. d. S. 948).

TABERNÆMONTANA (named in honour of James Theodore Tabernæmontanus, of Heidelberg, a celebrated physician and botanist, who died in 1590). SYNS. *Pandaca*, *Reichardia* (of Dennstaedt). Including *Conocharyngia*. ORD. *Apocynaceæ*. A genus comprising about 110 species of stove, evergreen, often glabrous trees or shrubs, broadly dispersed over tropical regions. Flowers

Tabernæmontana—continued.

white or yellowish; calyx usually small, five-lobed or five-parted; corolla salver-shaped, the throat not scaly, the lobes contorted; anthers sagittate, very acute; cymes scarcely branched. Berries or folioles two, globose, oblong, ovoid, or recurved-roniform, smooth or three-ribbed. Leaves opposite, slender or coriaceous, penni-veined. The species, a select few of which are here described, are interesting plants. *T. utilis* (a species probably not in cultivation), when tapped, yields a copious supply of thick, sweet milk, resembling that of the cow in appearance, but in substance rather sticky, owing to the presence of caoutchouc. A mixture of loam, sand, and peat, is the most suitable soil for *Tabernæmontana*. Young plants are obtainable by means of cuttings, inserted in sand, under a glass, in moist heat. Except where otherwise indicated, all the under-mentioned species are shrubs, having white flowers.

T. Amsonia (Amsonia). A synonym of *Amsonia Tabernæmontana*.

T. amygdalifolia (Almond-leaved). *f.* highly odorous; corolla segments obovate, undulated, nearly equal to the tube; cymes dichotomous, one-third to half the length of the leaves. July. *l.* oval-lanceolate or obovate-oblong, acute at both ends, 2in. to 5in. long, shining; petioles ½in. to ¾in. long. *A.* 6ft. South America, 1780. (B. R. 338.)

T. Barteri (Barter's).* *f.* 1in. long; corolla tube slightly dilated at base and apex, the segments oblong-obovate, obtuse, rather shorter than the tube; peduncles dichotomously branched, few-flowered, shorter than the leaves. Summer. *l.* oblong, attenuated at both ends, the upper ones 2in. to 3in. long, in unequal whorls; petioles dilated and slightly connate at base. Branches pale. *A.* 6ft. Western tropical Africa, 1870. (B. M. 5859.)

T. coronaria (crowned).* Adam's Apple; East Indian Rose Bay. *f.* odorous at night; corolla tube ½in. long, the segments oblong, obtuse, rather longer than the tube; peduncles in pairs from the forks of the branches, erect, dichotomous, four to six-flowered. July. *l.* opposite, unequal, elliptic-oblong, acute at base, obtuse and acuminate at apex, 3in. to 4in. long, membranous. Branches dichotomous. *A.* 4ft. Native country unknown; cultivated throughout India. 1770. (B. R. 1064; L. E. C. 406.) There is a double-flowered form, *flore-pleno*. (B. M. 1865, under name of *Nerium coronarium*.)

T. densiflora (dense-flowered). A synonym of *Rauwolfia densiflora*.

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Tabernaemontana—continued.

- T. dichotoma** (dichotomous). *f.* slightly odorous, 1½ in. long; corolla segments slightly exceeding the tube; cymes terminal, dichotomously branched, many-flowered, nearly equalling the leaves; peduncles naked, 3 in. to 6 in. long. September. *l.* oblong, acute at base, obtuse at apex, 2½ in. to 5 in. long; petioles six to ten lines long, embraced by the sheath-like stipules. Branches terete. A. 6 ft. India, 1840. (B. R. 1841, 53.) SYN. *Cerbera dichotoma* (L. B. C. 1816).
- T. grandiflora** (large-flowered). *f.* yellow, inodorous; calyx lobes 5 in. long, leafy, gland-bearing towards the base; corolla tube fourteen lines long, the lobes obovate, very obtuse, shorter; peduncles terminal, twice-forked, few-flowered. Summer. *l.* oval or elliptic-obovate, acute at base, long and acutely cuspidate at apex, 2 in. to 4 in. long, one in each pair smaller, glabrous. Branchlets dichotomous. A. 6 ft. British Guiana and Venezuela, 1823. (B. M. 5226.)
- T. gratissima** (very sweet-scented). A synonym of *T. recurva*.
- T. laurifolia** (Laurel-leaved). *f.* yellow; corolla lobes linear-oblong, shorter than the tube; cymes contracted; peduncle about as long as the petioles. May. *l.* oval or oval-oblong, 4 in. to 8 in. long, blunt at both ends. A. 10 ft. West Indies, 1769. Stove shrub. (B. H. 716.)

TABLE MOUNTAIN PINE. See *Pinus pungens*.

TACAMAHAC. See *Populus balsamifera*.

TACCA (the Malay name). SYN. *Ataccia*. ORD. *Taccaceæ*. A genus comprising about nine species of stove, perennial herbs; three are natives of tropical America, and the rest inhabit various tropical regions. Berry (? always) indehiscent. Other characteristics those of the order (which see). The species best known to cultivators are here described. The tubers of *T. pinnatifida* contain a great deal of starch, known as South Sea Arrowroot, and largely employed as an article of diet throughout the tropics. A compost of loam, peat, and sand, is most suitable for the culture of these plants. They must be very sparingly watered while in a dormant state. Propagation may be effected by division of the roots.

T. artocarpifolia (Artocarpus-leaved). *f.* very numerous, on pedicels 1 in. to 3 in. long, the sterile, pendulous ones filiform;



FIG. 1. UPPER PORTION OF SCAPE, WITH FRUITS, OF *TACCA PINNATIFIDA*.

- T. longiflora** (long-flowered). *f.*, corolla tube very long, slightly swollen below the middle; peduncles lax, about three-flowered. Summer. *l.* oblong-elliptic, abruptly acuminate, acute at base; petioles dilated at base. Sierra Leone, 1849. Tree. (B. M. 4484; F. d. S. 534.)
- T. longifolia** (long-leaved). *f.* ½ in. long; corolla lobes obovate-oblong, reflexed, equalling the tube; cymes axillary, dichotomous, many-flowered, much shorter than the leaves; peduncles thick. July. *l.* sub-sessile, oblong, acuminate, long-narrowed at base, 6 in. to 10 in. long, 1½ in. to 2½ in. broad, membranous. A. 6 ft. British Guiana, 1849.
- T. recurva** (recurved). *f.* fragrant; corolla tube glabrous, the throat fleshy, the segments eight to nine lines long, obtuse; cymes twin in the forks of the branches, spreading, recurved, much shorter than the leaves, many-flowered. June. *l.* broadly lanceolate, acute at base, obtuse and acuminate at apex, 6 in. long; petioles four to six lines long. Branches terete. A. 6 ft. Chittagong and Tenasserim, 1824. SYN. *T. gratissima* (B. R. 1064).
- T. Walllichiana** (Wallich's). *f.* on pedicels twice as long as the calyx; corolla tube four to five lines long, the lobes narrow, falcate, rather obtuse; peduncles twin in the forks of the branches, spreading-recurved, dichotomous, three to five-flowered. Summer. *l.* broadly lanceolate, very shortly narrowed into the petioles, obtuse and acuminate at apex, 3 in. to 4 in. long; petioles very short, channelled. A. 2 ft. to 3 ft. Sumatra, 1873.

small many. l. sub-sessile, obt. at base, in umbels, embraced; segments stalked, pinnatifid; petioles 2 ft. long, stout, erect. Root tuberous. Madagascar, &c., 1872. (B. M. 6124.)

T. aspera (rough). A synonym of *T. integrifolia*.

T. cristata (crested). *f.* dull purplish-brown, numerous, in a nodding, lateral umbel; involucre of four leaves, the lower ones smaller, sessile, the two upper large, flat, erect, purple in colour. Summer. *l.* lanceolate-oblong, with long, channelled, cylindrical petioles. A. 1½ ft. to 2 ft. Malaya, 1812. (B. M. 4538.) SYN. *Ataccia cristata* (F. d. S. 860-1; F. M. 388; L. J. F. 186-7; R. H. 1866, 51).

T. integrifolia (entire-leaved).* *f.* four to eleven, long-pedicellate, at first sub-erect, at length nodding; perianth green, variegated with purple and yellow; spathe ovate, twisted; scapes axillary, solitary. June. *l.* shining-green, rounded-oblong, acuminate, 8 in. to 16 in. long. Stem none or very short. Chittagong, 1810. (B. M. 1488.) SYN. *T. aspera*.

T. laevis (smooth). *f.* six to twelve, umbellate; perianth greenish-violet, with a cup-like, sessile tube; involucre four-leaved; scapes axillary, solitary, shorter than the petioles. July. *l.* oblong, acuminate, glabrous, about 1½ in. long. Stem none. Sikkim, Khasya, Assam, Birma, &c., 1820.

T. pinnatifida (pinnatifid).* *Otobate* Salap-plant; South Sea

Tacca—continued.

Arrowroot-plant. *f.* In a dense umbel, subtended by several leafy bracts; perianth purplish, funnel-shaped, with six sub-equal segments. June. *fr.* somewhat pear-shaped, with prominent ribs. *l.* long-petiolate, large, three-parted, the forked divisions planatifid down to a narrow wing, with irregular, ovate, acute segments. Stem none. Rhizome tuberous. East Indies and Society Islands, 1793. See Fig. 1. (L. B. C. 692; R. G. 582.)

TACCAOËE. A small natural order of perennial herbs, with tuberous or creeping rhizomes, inhabiting tropical regions and China. Flowers regular, hermaphrodite, densely umbellate at the apex of an erect, leafless scape; perianth often brown, lurid, or green above, above the ovary broadly urceolate or globose-campanulate, the tube short and broad; lobes six, biseriate, sub-equal or the inner ones broader, all connivent in a globe or the outer ones (or all) spreading; stamens six; filaments very short; anthers two-celled; ovary inferior; style short, columnar; outer bracts herbaceous or coloured; inner ones long, filiform. Fruit globose, ovoid, turbinate, or elongated, often triquetrous or six-ribbed, baccate, indehiscent or rarely at length three-valved. Leaves radical, large, petiolate, sometimes undivided and entire, occasionally variously lobed and dissected. The order consists of two genera—*Schisocapsa* and *Tacca*—and includes only about ten species.

TACCAEUM (name adapted from *Tacca*, from the resemblance to that genus). **SYNS.** *Endera*, *Lysistigma*. **ORD.** *Ardeides* (*Araceæ*). A small genus (three or four species) of tall, stove, tuberous, Brazilian herbs. Flowers monœcious; spathe erect, the tube short and convolute, the blade gaping or explanate, oblong, acute; spadix in-appendiculate, shorter than the spathe, shortly stipitate, loose-flowered, the male inflorescence ovoid or elongated longer than the petioles. *l.* Leaves long-petiolate, broadly hastate-ovate, bipinnatifid; pinne undulated. Two of the species have been introduced. They are closely allied to *Staurostigma* (which see for culture).

T. peregrinum (foreign). *f.*, spathe olive-green, ovate, acuminate, slightly exceeding the spadix; spadix sub-cylindrical, attenuated from the base to the apex, clothed throughout with flowers, the male and female inflorescences of equal length. *l.* solitary, cotemporary with the flowers, large, tripartite, pinnatifid compound; petioles long, terete, spotted, 3ft. high. Tuber sub-hemispherical. 1873. **SYNS.** *Endera oonophalloidea* (R. G. 732), *Lysistigma peregrinum*.

T. Warmingianum (Dr. Warming's). *f.*, spathe light coppery-tinted brown, 1½ ft. long, convolute below, open above; spadix shorter than the spathe; ovaries green, surrounded by four to six fleshy, dirty-brown staminodia; stamens of male flowers united into a thick, fleshy, round-topped, pinkish column; scape 8in. long. October to January. *l.* solitary, bright green, with a spread of 2ft. to 2½ft., having three principal bipinnatifid divisions; petiole 3ft. high, stout, light green, marked with numerous white lines. 1862. (G. C. n. s., xvi., p. 661; R. G. 1124.)

TACHIA (of Persoon). A synonym of *Tachigalia* (which see).

TACHIADENUS (from *Tachia*, a genus of the same order, and *aden*, a gland; the ovary is surrounded by a ring of glands, as in *Tachia*). **ORD.** *Gentianææ*. A genus including five species of stove herbs or sub-shrubs, endemic in Madagascar. Flowers pink or white, sometimes violet with a white tube, large, few in a terminal cyme, or solitary; calyx tubular, multi-glandular within, five-delt at apex, five-keeled or five-winged; corolla salver-shaped or funnel-like, with a long tube and five spreading, twisted lobes; stamens five. Leaves sessile or stalked, often three-nerved. Only one species has been introduced. It thrives in a mixture of sand, loam, and peat, and requires to be kept rather dry in winter. Propagated by cuttings, inserted in sand, under a hand glass, in heat.

T. carinatus (keeled). *f.*, calyx ½ in. long, the obverse wings half-lanceolate, the lobes linear; corolla tube white, 2in. long, swollen at apex, the lobes violet, rounded, obtuse, less than ½ in. long; cyme terminal, twice dichotomous. October. *l.* oval, sessile, three-nerved. Stem suffruticose, tetragonal. 1868. (B. M. 5094.)

TACHIGALIA (*Tachigali* is the native name in Guiana). **SYNS.** *Quiboa*, *Tachia* (of Persoon). **ORD.** *Leguminosææ*. A small genus (four or five species) of tropical American, unarmed, stove trees. Flowers yellow (?), very shortly pedicellate, racemose; calyx segments five, unequal; petals five, scarcely unequal; stamens ten. Leaves abruptly pinnate. *T. bijuga* and *T. paniculata* have been introduced, but are now probably lost to cultivation.

TACSONIA (from *Tacca*, the Peruvian name of one of the species). **Passion Flower.** Including *Poggenдорffia*. **ORD.** *Passiflorææ*. A genus comprising about thirty species of stove or greenhouse, often pubescent, climbing shrubs, natives of tropical America, mainly differing from *Passiflora* in the usually long, cylindrical tube of the calyx, which is furnished with two crowns, one at the throat, and the other near its base. Petals five, often smaller than the calyx lobes; corona entire or filamentose; stamens five. Leaves alternate. Tendrils lateral, undivided. The species known to cultivation are here described. For culture, see *Passiflora*.

T. Buchananii (Buchanan's). A synonym of *Passiflora vitifolia*.

T. insignis (remarkable). *f.* solitary, axillary, 6in. to 8in. in diameter; tube 2in. long, with a depressed bulb at the base; sepals violet-crimson, linear-oblong, concave, with a green keel terminating below in a green spur ½ in. long; petals darker crimson and shorter than the sepals, nearly flat; corona ½ in. long, of one series of white threads mottled with blue; inner corona an inflexed membrane at the base of the tube above the bulb. Summer and autumn. *l.* 6in. to 7in. long, ovate or oblong, or lanceolate-ovate from a cordate base, obscurely lobed, toothed; petioles short, stout, glandular; stipules small, pinnatifid. Young parts, petioles, punctions, and leaves beneath, clothed with pale or dark rusty-brown wool. Peru (?). Warm greenhouse. (B. H. 1874, 10; F. M. n. a. 89; G. C., 1873, 1112.) **SYN.** *Passiflora insignis* (B. M. 6069; F. d. S. 2083-4.)

T. manicata (sollared). *f.* on peduncles which are longer than the petioles; tube inflated at base, ten-lobed; limb vivid scarlet, 4in. in diameter; corona double; the outer at the mouth of the tube, of many short, blue hairs; the inner at the top of the inflated base of the perianth; bracts elliptic-ovate, pubescent. July. *l.* about 4in. long, coriaceous, three-lobed to about the middle, finely serrate; lobes broadly oblong, obtuse or sub-acute, paler beneath; petioles about ½ in. long, with three or four glands. Stem, leaves beneath, stipules, bracts, and perianth externally, finely pubescent. Peru, before 1850. Stove or warm greenhouse. (L. & P. F. G. i. 26.) **SYN.** *Passiflora manicata* (B. M. 6129).

T. mixta (mixed). *f.* pink; tube cylindrical, 4in. to 5in. long, glabrous or pubescent; sepals and petals obtuse; bracts oblong, ½ in. to 2in. long, herbaceous or coloured, conjoining in an involucre. Late summer. *fr.* ovoid, glabrous or pubescent, edible. *l.* coriaceous, orbicular, three-lobed to the middle; lobes ovate-oblong, acute, serrated; petioles ½ in. to 1½ in. long, with six to eight sessile or stipitate glands. Stem angular. Andes. Plant glabrous or more or less pubescent. Greenhouse.

T. m. eriantha (woolly-flowered). *f.* pink; bracts reticulate-nerved. Plant snowy-pubescent. (B. M. 5750, under name of *T. eriantha*.)

T. m. quitensis (Quito). *f.*, involucre pubescent, cylindrical, equally or rarely unequally three-lobed at apex. *l.* nearly glabrous above, velvety beneath, three-lobed; lobes ovate or ovate-oblong; petiolar glands sessile. Stem velvety. (L. H. xvi. 595, under name of *T. quitensis eriantha*.)

T. m. speciosa (showy). *f.*, involucre pubescent, unequally two or three-lobed at apex. *l.* glabrous above, pubescent beneath, three-lobed; lobes oblong-lanceolate, uncinately serrated; petiolar glands stipitate. Stem sub-terete, glabrous.

T. mollissima (very soft). *f.* pink; tube cylindrical, 4in. to 5in. long, highly glabrous; bracts ½ in. long, forming an urceolate involucre, irregularly cut at the top. August. *fr.* yellowish, ellipsoid, 4in. long. *l.* 4in. to 5in. long, 5in. to 6in. broad, cordate-trilobed; lobes diverging, ovate-lanceolate, serrated; petioles ½ in. long, glandular; stipules six to eight lines long, deeply serrated. Quito, 1845. Whole plant softly pubescent. Greenhouse. (B. H. vit. p. 142; B. M. 4187; B. R. xxxii. 11; F. d. S. H. 70; P. M. B. xlii. 26.)

T. Farrites (Parrita's). *f.*, tube long and slender; sepals five, rosy-orange, oblong-hooded, acute-pointed; petals rich orange, oblong, flat; corona consisting of an outer row of tooth-like projections, and an inner membranous fold bent downwards; stalks cylindrical, longer than the leaves. *l.* three-lobed, glabrous above, pilose beneath; petioles channelled above; stipules entire, subulate-acuminate. Yollima, 1822. Stove or greenhouse. (G. C. n. s., xvii., p. 225.)

T. pinnatistipula (pinnate-stipuled). *f.* pale rose-colour, 4in. to 5in. long; tube cylindrical, dilated at base; coronal filaments

Tacsonia—*continued*.

one-half shorter than the sepals and petals; bracts lin. long, serrated; peduncles 4in. long. September. *fr.* sub-globose, tomentose, edible. *l.* coriaceous, tomentose beneath, tripartite, 3in. to 5in. long, 3jin. to 4in. broad; lobes lanceolate, serrated; petioles lin. long; stipules lin. long, pinnatisect. Chili and Peru, 1828. Greenhouse. (B. iv. 171; B. M. 4062; S. B. F. G. ser. II. 156.) SYN. *Passiflora pinnatisipula* (B. R. 1536). *Poggen-dorfia rosea* is simply a monstrous form of this species.

T. Van-Volkemii (Van Volkem's). * *f.* scarlet, very showy; tube cylindrical, 1½in. long, dilated at base, the limb 4in. to 5in. in diameter; sepals and petals linear-oblong; peduncles slender, twice as long as the leaves; bracts lin. long, serrated. Late summer. *fr.* ellipsoid, edible. *l.* glabrous, 4in. to 5in. long and broad, tripartite; lobes lanceolate, narrowed at base; petioles 1½in. long, with many glands; stipules linear. New Grenada, 1866. Stove or warm greenhouse. One of the finest species. (B. M. 5571; F. M. 289; G. C. 1866, p. 171; I. H. x. 381.)

TENIOCARPUM. A synonym of **Pachyrhizus** (which *see*).

TENIOPHYLLUM (from *tainia*, a band, and *phyllon*, a leaf; in reference to the linear leaves). ORD. *Orchidæ*. A genus embracing about half-a-dozen species of stove or greenhouse, dwarf, epiphytal Orchids, almost stemless and leafless, or with a tuft of linear leaves; they are natives of the East Indies, the Malayan Archipelago, the Pacific Islands, and Australia. Flowers minute, in small racemes; sepals and petals nearly equal, erect or connivent, connate at base; lip adnate to the column at base, and produced into a short spur or pouch; pollen masses four, in two pairs. None of the species have been introduced.

TENIOPSIS. Included under **Vittaria** (which *see*).

TENITIS (from *tainia*, a fillet or ribbon; alluding to the linear pinna). Including *Cuspidaria*, *Neurodium*, *Paltonium*, and *Pteropsis*. ORD. *Filices*. A small genus (five species) of interesting, stove Ferns, all tropical, but not very closely allied. Sori linear, but the line sometimes interrupted, central or sub-marginal. Some of the species scarcely differ from *Tenioopsis* [included under *Vittaria*] in fruit, but in all those placed here the veins anastomose. The following species have been introduced. For culture, *see* **Ferns**.

T. angustifolia (narrow-fronded). *fronds* 1ft. to 1½ft. long, ½in. to ¾in. broad, narrowed very gradually to an acute point and below to the base or a short stem, falcid; midrib distinct; veins immersed, forming two or three rows of vertical, hexagonal areolæ. *sori* sunk in a groove, a short distance from the edge. Cuba to North Brazil, 1816. SYN. *Pteropsis angustifolia*.

T. blechnoides (Blechnum-like). *rhiz.* creeping. *st.* 8in. to 12in. long, firm, naked, glossy. *fronds* 1ft. to 2ft. long, 8in. to 12in. broad, simply pinnate; pinnae of barren fronds two or three on each side, 6in. to 8in. long, 1in. to 2in. broad, oblong-lanceolate, acuminate, cuneate at base, the edge thickened and wavy, the lower ones stalked; fertile pinnae narrower and more numerous. *sori* in a continuous line about midway between the edge and midrib. Malacca and Philippines.

T. b. interrupta (interrupted). *fronds*, pinnae smaller than in the type. *sori* interrupted and much nearer the edge.

T. furcata (forked). *rhiz.* somewhat creeping, densely tomentose. *fronds* 6in. to 18in. long, once or twice dichotomously forked or sub-pinnatifid; lobes linear, erecto-patent, much acuminate, entire, 4in. to 8in. long, ½in. to ¾in. broad, coriaceous, minutely scaly below. *sori* sub-marginal, continuous or interrupted. West Indies, &c., 1824. SYNS. *Cuspidaria furcata*, *Pteropsis furcata*.

T. lanceolata (lance-shaped). *rhiz.* creeping, very stout. *st.* 1in. to 2in. long, firm, erect. *fronds* 6in. to 12in. long, 1in. to 2in. broad, gradually narrowed from the centre to both ends, the edge entire but often crisped, firm, coriaceous, with a distinct midrib; areolæ immersed. *sori* in continuous or interrupted lines near the edge of the contracted upper third or quarter of the frond. West Indies and Guatemala, 1813. SYNS. *Neurodium lanceolatum*, *Paltonium lanceolatum*.

TETSIA. A synonym of **Coraylina**.

TAGETES (a name of mythological derivation, from *Tagus*, one of the Etruscan deities). Marigold. ORD. *Compositæ*. A genus comprising about a score species of mostly hardy, erect and branched or diffuse, annual herbs, natives of the warmer parts of America. Flower-heads yellow or orange, long-pedunculate or densely corymbose; ray florets one-seriate, solitary, or rarely deficient; disk hermaphrodite; involucrel bracts one-seriate; receptacle

Tagetes—*continued*.

flat, often small; achenes linear, glabrous or pilose. Leaves opposite, pinnately dissected or rarely undivided and serrulated. The best-known species are here described. For culture, and further remarks respecting *T. erecta* and *T. patula*, *see* **Marigold**.

T. corymbosa (corymbose) A synonym of *T. patula*.



FIG. 2. FLOWERING BRANCHLET OF TAGETES ERRECTA.

T. erecta (erect).* African Marigold. *f.* heads citron-yellow, twice the size of those of the French Marigold; involucre sub-angular; peduncles one-headed, thickened at the apex. July.



FIG. 3. FLOWERING BRANCH OF TAGETES

-continued.

T. pinnatisect; segments lanceolate, serrated; serratures, especially those of the upper leaves, aristate. Stems and branches erect. A. 2ft. Mexico, 1596. See Fig. 2.

T. florida (flowery). A synonym of *T.*

T. glandulifera (gland-bearing). *f. heads* pale yellow, fascicled-corymbose; involucre cylindrical. October. *l. alternate*, pinnatisect; segments thirteen to seventeen, linear-sub-lanceolate, acuminate at each end, 1/4 in. or more long. Stems and branches erect, the latter short. A. 4ft. South America, 1826.

T. lucida (shining). Sweet-scented Mexican Marigold. *f. heads* yellow; involucre cylindrical. August. *l. lanceolate*, argutely serrated, aristate-serrated at base. Stems erect, scarcely branched. A. 1ft. Mexico and South America, 1798. Half-hardy. (A. B. R. 359; B. M. 740.) This species varies in having the lower leaves obtuse, and the upper ones acute and narrower. SYN. *T. florida* (S. B. F. G. ser. ii. 35).

T. patula (spreading). French Marigold. *f. heads* fuscous-golden or fulvous; involucre smooth; peduncles elongated, one-headed, nearly cylindrical. August. *l. pinnatisect*; segments linear-lanceolate, serrated; serratures, especially the upper ones, aristate. Stems erect; branches spreading. A. 1 1/2 ft. Mexico, 1573. See Fig. 3. (B. M. 150.) SYN. *T. corymbosa* (B. M. 3830; S. B. F. G. 151).

T. signata (distinct). Striped Mexican Marigold. *f. heads* yellow; involucre oblong-ovate, five-angled; peduncles one-headed, scarcely thickened above. Summer. *l. pinnatisect*, segments six pairs, oblong-lanceolate, incised-serrated, the lower serratures aristate. Stems erect, branched. A. 1 1/2 ft. Mexico.



FIG. 4. TAGETES SIGNATA PUMILA, showing Habit and detached Portion of Inflorescence.

T. s. pumila (dwarf). This is of dwarfier, more compact habit than the type. See Fig. 4. (L. H. 1863, p. 11.)

T. tenuifolia (slender-leaved). *f. heads* yellow, unspotted; ray florets ample, nearly round; involucre obovate, smooth, shorter than the disk; achenes black. August. *l. opposite* or alternate, pinnatisect; segments thirteen to seventeen, linear, serrated, the serratures of the upper leaves aristate. A. 2ft. Mexico and Peru, 1797. Plant erect, slightly branched. (B. M. 2045; S. F. G. 141.)

TAIL-FLOWER. A common name for *Anthurium*.

TAILS. The long, feathery or hairy terminations of certain fruits.

TAINIA (from *tainia*, a band or fillet; in allusion to the shape of the lip). SYNS. *Ania*, *Mitopetalum*. ORD. *Orchidææ*. A small genus (six or seven species) of stove orchids, natives of the East Indies, South China, and the Malayan Archipelago. Flowers pedicellate, scattered, rather large or mediocre; sepals and petals narrow, slightly acute or long-acuminate; lip erect; column rather long; pollen masses eight; scape florid, tall, leafless, few-sheathed at base; raceme terminal, simple. Stems at length thickened into pseudo-bulbs. Only two species call for mention here. For culture, see *Calanthe*.

T. bicornis (two-horned). *f. sepals* and petals green, with a reddish tinge; lip yellow, blotched with red, the middle lobe emarginate, apiculate, not spurred, having two lamellæ at base; anthers two-horned. March. *l. oblong-lanceolate*, fleshy, shorter than the scape. Ceylon, about 1842. SYN. *Ania bicornis* (B. R. xxx. 8).

T. latifolia (broad-leaved). *f. green* and brown; petals slightly spreading; lip unguiculate, produced with the column in a connate, trilobed sac, the lateral lobes obtuse, the middle one acute, shorter; scape 2ft. long. *l. oblong*, plicata, shorter than the scape. Sylhet, 1852. SYN. *Calanthe viridiflora* (B. M. 4669).

TALAUMA (the vernacular name of the South American species). ORD. *Magnoliaceæ*. A genus embracing about fifteen species of mostly stove, evergreen trees; three or four are natives of tropical America, and the rest inhabit tropical Asia and Japan. Flowers and leaves as in *Magnolia*; but the fruit differs in the fusion of its constituent carpels, and in the irregularly circular mode of splitting. The under-mentioned species are well worth cultivating on account of their beautiful and fragrant flowers. A compost of loam, peat, and sand is most suitable. Propagation may be effected by layers, or by inarching on some of the stronger-growing *Magnolias*. Epined cuttings, with the leaves intact, will sometimes root if inserted in a pot of sand, under a glass, in heat.

T. Candollii (De Candolle's). *f. cream-coloured*, large; petals nine to twelve, the outer one short; peduncles one-flowered, rather drooping, and, as well as the petioles of the younger leaves, clothed with rufous hairs. June and July. *l. oblong*, acuminate at both ends. A. 6ft. Java, 1828. (B. M. 4251; B. R. 1709.)

T. C. Galeottiana (Galeotti's). *f. dull yellow*, 3in. in diameter; sepals and petals narrower than in the type. *l. 4in.* to 7in. long, narrowly elliptic-lanceolate. (B. M. 6614.)

T. Hodgsoni (Hodgson's). *f. creamy-white*, large, terminal, solitary; sepals reddish-tinted outside, thick; petals six, the inner ones smaller. Winter and spring. *f. large*; carpels sub-tetragonal, argutely beaked. *l. ample*, obovate-oblong, coriaceous, glabrous, the margins slightly sinuated. Himalayas. A medium-sized tree. (L. H. 1857, 141.)

T. Plumieri (Plumier's). *f. white*, large, terminal, solitary; petals ten to twelve. All the year. *l. oval-oblong*, glabrous, 6in. long, varying in breadth from 3in. to 5in., coriaceous. A. 12ft. West Indies, 1629.

T. pumila (dwarf). *f. cream-coloured*, drooping, very fragrant at night; petals six to nine. All the year. *l. elliptic*, acuminate at both ends, smooth, reticulate-veined. A. 2ft. to 4ft. Amboyna and Java, 1786. The correct name of this plant is *Magnolia pumila* (A. B. R. 226; B. M. 977; L. B. C. 1555).

TALBOTIA ELEGANS. A synonym of *Vellozia elegans*.

TALEA. A cutting or small branch used for propagation.

TALEWORT. An old name for *Eragrostis officinalis*.

TALIERA. A synonym of *Corypha* (which see).

TALIGALEA (said to be the native name in Guiana). *Amazonia* is now the correct name of this genus. ORD. *Verbenaceæ*. A genus comprising six species (which may be reduced to four) of stove sub-shrubs, natives of tropical America. Flowers yellow or sulphur-coloured, racemose or panicle; calyx coloured, loosely campanulate, membranous, five-cleft; corolla tube elongated, straight or incurved at base, the limb five-cleft, sub-bilabiate, with short, spreading or reflexed lobes. Leaves alternate, toothed or rarely entire; upper ones few, small. For culture of the only species introduced, see *Clerodendron*.

T. punicea (reddish-brown). *f. pale sulphur-yellow*, with large, bright red bracts; racemes nodding, clothed with red-purple hairs. May and June. *l. slender*, 6in. to 12in. long, oblong- or elliptic-lanceolate, shortly acuminate, unequally toothed. Stem erect, simple or slightly branched. A. 2ft. to 3ft. Brazil, 1894. The correct name of this plant is *Amazonia calycina*. (B. M. 6915.) SYN. *Amazonia punicea* (Gn. xvii. 130; E. G. 1886, 337).

TALINUM (said to be the name given to the plant by the negroes of Senegal, who eat it as a salad; but it may have been invented by Adanson). ORD. *Portulacææ*. A genus comprising about eleven species of stove, greenhouse, or hardy, fleshy, highly glabrous, sometimes suffrutescent herbs, inhabiting tropical and warm regions: two are African and Asiatic, and the rest American. Flowers disposed in terminal panicles, cymes, or racemes, rarely solitary, axillary or lateral;

Talinum—continued.

sepals two, deciduous or rarely sub-persistent; petals five, hypogynous, ephemeral; stamens five or numerous. Leaves alternate or nearly opposite, flat; stipules wanting. The best-known species are here described. They are pretty succulents, and will thrive in any light soil, but they prefer sandy peat. Cuttings are a ready means of increase for the shrubby species. *T. reflexum* may be multiplied by seeds.



FIG. 5. UPPER PORTION OF PLANT, AND PORTION OF DETACHED INFLORESCENCE, OF *TALINUM TERETIFOLIUM*.

T. Arnotii (Arnot's)* *f.* pale golden-yellow, lin. in diameter; petals obovate, acute; peduncles axillary, one-flowered, longer than the leaves, spreading, with a small bract above the middle. Summer. *l.* attenuated, almost sessile, 1½ in. long and nearly as broad, orbicular-oblong, rounded at both ends, apiculate at the tip, fleshy, the margins quite entire. Branches 1½ ft. long, succulent. Trunk or rootstalk cylindrical, woody, 5 in. to 6 in. long. South Africa, 1867. Greenhouse sub-shrub. (B. M. 6220.)

Talinum—continued.

T. cuneifolium (wedge-shape-leaved). *f.* of a reddish-violet colour, disposed in a terminal panicle; lower peduncles three flowered. July and August. *l.* flat, wedge-shaped, obtuse mucronate. Stem erect, 1½ ft. high. India, Arabia, and Africa. Greenhouse sub-shrub.

T.

mostly opposite, oval, abruptly tapering towards the petiole-form base. Stem erect, almost simple, 1 ft. to 2 ft. high. West Indies, 1776. Stove-sub-shrub. (A. B. R. 253.)

T. reflexum (reflexed). *f.* yellow, in a terminal panicle; peduncles usually opposite, dichotomous, bractless. August to October. *l.* flat, lanceolate or oval, obtuse, usually opposite. Stem erect, 1 ft. high. South America, 1800. Stove biennial. (B. M. 1543.)

T. teretifolium (terete-leaved). *f.* pale pink, ½ in. broad; stamens fifteen to twenty; peduncle 3 in. to 6 in. long, naked, bearing an open cyme. June to August. *l.* linear, cylindrical. Leafy stems low, tuberous at the base. North America, 1823. Greenhouse perennial. See Fig. 5. (B. R. xxix. 1; L. B. C. 819.)

T. triangulare (triangular). *f.* red or white, arranged in terminal, corymbiferous cymes; petals rounded, ½ in. long; stamens about thirty. August and September. *l.* alternate, obovate-lanceolate, tapering towards the sub-sessile base. Stem simple, about 2 ft. high. West Indies, 1739. Stove sub-shrub.

T. t. crassifolium (thick-leaved). *l.* usually broader, often emarginate and mucronate. Stem higher and branched.

TALIPOT PALM. A common name for *Corypha umbraculifera* (which see).

TALISIA (said to be the native name of some members of the genus in Guiana). *SYN.* *Comatoglossum*. *ORD.* *Sapindaceae*. A genus including about eighteen species of stove, evergreen trees, inhabiting Brazil, New Grenada, and Guiana. Flowers dioecious or small, in branched panicles; sepals erect, biseriate; petals five, rarely more, unguiculate, the margins villous; stamens eight, rarely five or seven. Leaves alternate, exstipulate, abruptly pinnate; leaflets alternate and opposite, coriaceous, oblong, acuminate, entire. *T. guianensis*, the only species introduced, thrives in a compost of turfy loam and peat. Large cuttings, with the leaves intact, will root in sand, under a glass, in moist heat.

T. guianensis (Guiana). *f.* rose-coloured, disposed in decoumpound racemes; calyx shorter than the petals. June. *l.* leaflets many pairs, ovate-lanceolate, acuminate, coriaceous, quite smooth on both surfaces. A. 4 ft. Guiana and Cayenne, 1824. (A. G. 136.)

TALLIES. Another name for labels made of wood, cast iron, porcelain, and other substances, for permanently attaching to plants or trees. See **Labels**.

TALLOW SHRUB. A common name for *Myrica cerifera* (which see).

TALLOW-TREE, CHINESE. A common name for *Stilkinia sebifera*.

TALLOW-TREE, SIERRA LEONE. A common name for *Pentadesma butyracea* (which see).

TALPA EUROPEA. See **Mole**.

TAMARIND-TREE. See *Tamarindus indica*.

TAMARINDUS (from the Arabic, *tamr*, a ripe date, and *Hind*, India; literally, Indian Date). ORD. *Leguminosæ*. A monotypic genus. The species is a large, stove, unarmed tree. Its medicinal virtues, as far as the fruits are concerned, are well known. The bark, wood, leaves, and flowers are all economically valuable. A compost of fibrous loam and sand is most suited to the requirements of *T. indica*. Seeds, which are annually imported from the East and West Indies, should be sown on a hotbed, and the young plants, when about 3 in. high, inserted singly in pots. Cuttings also root readily in sand, under a glass, in heat.

T. indica (Indian). Tamarind-tree. *f.* few together in copious, lax racemes at the ends of the branchlets; petals yellow, striped with red, less than ½ in. long, only the three upper ones developed; pedicels articulated at the base of the calyx. June and July. *fr.* pods 3 in. to 6 in. by 1 in. or more, three to ten-seeded, ligulate. *l.* abruptly pinnate, with twenty to forty close, opposite, oblong, obtuse, glabrescent leaflets. *A.* 40 ft. to 60 ft. Tropics (probably indigenous in Africa), 1633. (B. F. S. 184; B. M. Pl. 82.) SYNS. *T. occidentalis*, *T. officinalis* (B. M. 455). The West Indian pods are generally shorter than those grown in the East Indies.

T. occidentalis (Western). A synonym of *T. indica*.

T. officinalis (official). A synonym of *T. indica*.

TAMARISCINEÆ. A natural order of shrubs, sub-shrubs, and rarely trees or durable herbs, found mostly in the temperate and warmer regions of the Northern hemisphere, and also in South Africa. Flowers often white or pink, regular, often hermaphrodite, fleshy, small or showy, variously disposed; sepals three, rarely four, free or connate at base, closely imbricated; petals five, rarely four, inserted under the disk, imbricated, free, or the base cohering in a tube; disk hypogynous or loosely perigynous, ten-glandular, crenate or angular, rarely obsolete; stamens five or numerous, inserted on the disk, free or variously connate at base; anthers two-celled; ovary free. Capsule dehiscent, coriaceous. Leaves alternate, small, sometimes scale-like, entire and often fleshy or impressed-dotted; stipules none. *Tamariscineæ* contain tannin, resin, and a volatile oil, which render them bitter and astringent. The order embraces five genera—*Fouquieria*, *Hololachne*, *Myricaria*, *Reaumuria*, and *Tamarix*—and scarcely forty species.

TAMARISK. See *Tamarix*.

TAMARIX (the old Latin name used by Pliny). Tamarisk. ORD. *Tamariscineæ*. A genus comprising about twenty species of very elegant, greenhouse or hardy bushes or small trees, distributed where the order extends. Flowers white or pink; sepals four or five, rarely six, free; petals inserted under the disk, free or lightly connate at base; stamens four, five, eight, or ten; anthers apiculate; disk more or less lobed; inflorescence of lateral or terminal spikes or dense racemes. Leaves minute, scale-like, amplexicaul or sheathing. The manna of Mount Sinai, which consists wholly of mucilaginous sugar, is produced by a variety of *T. gallica*. Sandy loam is most suitable to the culture of the greenhouse sorts. *T. gallica* will thrive under almost any conditions, and is admirably suited for ornamenting shrubberies; it is also invaluable as a seaside plant, and is very extensively employed along the South Coast. Propagation may be readily effected by cuttings, inserted in sand, under a bell glass, the greenhouse kinds in heat.

T. africana (African). A synonym of *T. parviflora*.

T. articulata (jointed). *f.* pink, ½ in. in diameter, sub-sessile; spikes slender, more or less interrupted, usually sessile. July. *l.* reduced to a very short sheath, with a minute tooth. Branches fastigiate, elongated, slender, cylindrical, jointed. *A.* 10 ft. to 25 ft. India. A greenhouse bush or coniferous-looking tree. SYNS. *T. orientalis*.

T. discolor (diseous). *f.* pink, ½ in. in diameter, diseous; spikes dense, panicled, ½ in. long, about equalling their peduncles. June. *l.* sheathing, glabrous, green, obliquely truncate and acuminate. Branches with drooping extremities; ultimate

Tamarix—continued.

branchlets elongated, spreading-fastigate. *A.* 6 ft. India, 1823. A small, greenhouse tree.

T. gallica (French). Common Tamarisk. *f.* white or pink, in catkin-like, obtuse spikes ½ in. long; disk acutely five-angled. July to September. *l.* on the branchlets extremely minute, closely imbricate, triangular, auricled, keeled; those on the older wood ½ in. long, subulate. Branchlets excessively slender and feathery. *A.* 5 ft. to 10 ft. India to Europe. Hardy shrub or small tree.



FIG. 6. FLOWERING BRANCH OF TAMARIX GALLICA INDICA.

T. g. indica (Indian). *f.* lobes of the disk entire or nearly so. *l.* semi-amplexicaul. Branchlets divaricate. Greenhouse. See Fig. 6.

T. g. Pallasii (Pallas). *f.* rosy-pink; lobes of disk deeply emarginate. *l.* shortly decurrent. Branchlets erect. Thibet, &c.

T. orientalis (Eastern). A synonym of *T. articulata*.

T. parviflora (small-flowered). *f.* pink, small; spikes or racemes lateral, crowded, nine to ten lines long. Summer. *l.* small, lanceolate, subulate, a little keeled, acute. South-eastern Europe, Levant. Hardy shrub. (F. d. S. 393.) SYNS. *T. africana*, *T. tetrandra*, of gardens (E. H. 1865, 401).

T. tetrandra (four-anthered). *f.* white; racemes lateral, nearly ½ in. long. July. *l.* lanceolate, amplexicaul; adult ones diaphanous at apex. *A.* 6 ft. to 8 ft. Caucasus, 1821. Hardy shrub.

T. tetrandra (four-anthered), of gardens. A synonym of *T. parviflora*.

TAMNUS. A synonym of *Tamus* (which see).

TAMONEA (from *Tamone*, the name of the genus in Guiana). SYNS. *Ghinia*, *Ichnia*, *Kampferia*, *Leptocarpus*. ORD. *Verbenaceæ*. A small genus (four species) of erect, stove herbs or sub-shrubs, natives of tropical America. Flowers small, few in a spike, corolla limb spreading, five-cleft. Leaves opposite, small, sub-sessile. *T. spicata* and *T. verbenacea* have been introduced, but are now probably lost to cultivation.

TAKONEA (of Anblet). Included under *Miconia* (which see).

TAMUS (the old Latin name used by Pliny). SYN. *Tamnus*. ORD. *Dioscoreaceae*. A small genus (two species) of greenhouse or hardy, tuberous-rooted twiners; one is a native of the Canary Islands, and the other is broadly dispersed over Europe, North Africa, and temperate Asia. Flowers dioecious; racemes axillary; males often elongated, loose, the flowers disposed in small, few-flowered racemes, or solitary and pedicellate at the sides of the rachis; females very short, few-flowered, sometimes reduced to a sessile fascicle. Berry sub-globose, succulent, indehiscent. Leaves alternate, cordate, entire or three-lobed. *T. communis* is the only species calling for description here. It thrives in any ordinary soil, and may be increased by divisions of the root; or by seeds, raised in a cold frame.

T. communis (common). Black Bryony; Lady's Seal; Murrain Berries, &c. *f.* $\frac{1}{2}$ in. in diameter; female racemes 1 in. shorter than the males, recurved, few-flowered. May and June. *fr.* red, oblong, $\frac{1}{2}$ in. long. *l.* ovate-cordate, acuminate, 2 in. to 3 in. long, on long petioles, obscurely laterally lobed, five to seven-nerved, the tips bristly; stipules reflexed. Stem many feet long, angular, branched. Rootstock ovoid, black, fleshy. Europe (Britain), &c. (Sy. Kn. B. 1508.)

TAN, or TANNERS' WASTE. This consists of the bark of various trees, chiefly the Oak, Larch, and Willow. The tannin is extracted for the purpose of tanning leather, and a large quantity of refuse remains to be disposed of. This refuse is frequently employed for making hotbeds, as it gives a steady heat for a considerable time, the heat being more easily regulated, and retained longer, than that obtained from pure stable-yard manure. In general, however, a mixture of manure and dead leaves is preferred to Tan, as, when it has lost its heat, and has to be replaced in the hotbed, this mixture forms a valuable manure for the soil; while Tanners' Waste decays slowly, and is of little value as manure. Analysis shows that the nitrogenous matters of the fresh bark are almost entirely removed from it in the processes of extracting the tannin; while some of the tannin remains, and hinders decay of the refuse. Nearly half the weight of the Tan is water; and the ash, or mineral compounds in the Tan, consists very largely of Carbonate of Lime, and of Silica; the valuable Phosphates and Potash salts being present in it only in very small quantity. If employed as manure, Tan should be made up into a compost with earth, lime, and farmyard manure, and the whole should be saturated occasionally with liquid manure, and allowed to ferment for a considerable time before it is used.

TANACETUM (said to be an altered form of *Athanasia*, from *athanatos*, immortal; in allusion to the persistent flowers). Tansy. ORD. *Compositae*. A genus embracing about thirty species of mostly hardy, erect, often odorous, annual or perennial herbs, often suffrutescent at base, natives of Europe, North Africa, Central and Northern Asia, and North America. Flower-heads yellow, small or mediocre, corymbose, or rarely solitary and long-pedunculate, disk-formed; involucre hemispherical or campanulate, rarely ovoid, the bracts many-seriate; receptacle flat or slightly convex, naked; achenes and florets often glandular. Leaves alternate, variously dissected, or rarely entire and toothed. The species are not possessed of much beauty. Those here described are perennials, thriving in ordinary soil. Propagated by divisions.

T. Balsamita (Balsamita). Costmary. *f.* heads yellow, in branched corymbs; ray very small or absent. Autumn. *l.* elliptic, obtuse, minutely and regularly crenate-dentate, the radical ones stalked, often sub-cordate. *h.* 2 ft. to 3 ft. Orient (naturalized in several European countries). SYN. *Balsamita vulgaris*.

T. elegans (elegant). A synonym of *T. huronense*.

T. huronense (Lake Huron). *f.* heads golden-yellow, twin or sub-corymbose; involucre campanulate; florets thickened at base and apex. Summer. *l.* bipinnate; lobes short, rounded, entire

Tanacetum—continued.

or three-lobed, the young revolute. Stem erect, branched, and (as well as the young leaves) silvery-velvety. *h.* 1 ft. North America. SYN. *T. elegans* (F. d. S. 1191).

T. leucophyllum (white-leaved). *f.* heads golden-yellow, corymbose; involucre hemispherical, with imbricated bracts; florets slightly exceeding the involucre; peduncles solitary in the axils of the upper leaves. Summer. *l.* sessile or shortly petiolate, roundish-ovate; lower ones bipinnatisect; upper ones pinnatisect. Stems ascending. *h.* 9 in. Turkestan. Plant silvery-silky. (H. G. 1064.)

T. vulgare (common). Buttons; Common Tansy. *f.* heads many, $\frac{1}{2}$ in. in diameter, corymbose; peduncle stout. August and September. *l.* 2 in. to 5 in. long, once or twice pinnatifid, oblong, glandular-dotted; upper ones half-amplexicaul; lower ones petiolate. Stem 2 ft. to 3 ft. high, grooved and angled, leafy. Europe (Britain), &c. (F. D. v. 871; Sy. En. B. 716.) A variety with curled leaves is cultivated as an ornamental plant for garnishing dishes.

TANGHIN. See *Tanghinia*.

TANGHINIA (*Tanghin* is the native name of the plant in Madagascar). ORD. *Apocynaceae*. A monotypic genus. The species is a small, glabrous, stove, evergreen tree, included, by Bentham and Hooker, under *Cerbera*. Its fruit is known as the Ordeal Nut of Madagascar. For culture, see *Cerbera*.

T. venenifera (poison-bearing). Ordeal-tree. *f.* in large, terminal cymes, each supported by a couple of bracts; corolla salver-shaped, with rose-coloured lobes and a green, funnel-shaped tube, which is hairy within. May. *fr.* purplish, tinged with green, ellipsoid, 2 in. to 3 in. long, containing a hard stone. *l.* smooth, alternate, lanceolate, rather thick, about 6 in. long, clustered towards the points of the branches and directed upwards. *h.* 20 ft. Madagascar, 1826. (B. M. 2698, under name of *Cerbera Tanghin*.) The seeds of this plant furnish a powerful poison, and were formerly largely used as an ordeal by the kings of Madagascar. For a full and very interesting historical account, see Mr. Telfair's letter published in the "Botanical Magazine" at the figure quoted.

TANK. A cistern or reservoir, which, on a large or small scale, is invaluable in every garden for collecting and preserving water until required for use. Every horticultural structure should be provided with a Water-tank in some convenient position into which the rain-water that falls on the roof should be conducted, and an additional means of supply provided, if possible, to use when this fails. Tanks may be built, in any size desired, with bricks and cement, or purchased, ready for fixing, made of galvanised iron or slate.

TANKERVILLIA. A synonym of *Phaius* (which see).

TANNER'S-TREE. An old name for *Coriaria myrtifolia* and other species.

TANSY. See *Tanacetum vulgare*.

TAONABO. A synonym of *Ternstroemia* (which see).

TAPE GRASS. See *Vallisneria spiralis*.

TAPEIONITES. Included under *Sinningia* (which see).

TAPER. The opposite of angular. See *Terete*.

TAPIOCA-PLANT. A common name for *Manihot utilissima* (which see).

TAPOGOMEA. A synonym of *Cephaelis* (which see).

TAP-ROOTED. Having a large, simple, conical root, forming a centre round which the divisions are arranged.

TAR. Of late years, Tar has come to be regarded as a most valuable remedy against the ravages of many insects in gardens; and it is also used for the protection of farm crops. References have been made to it in treating of the remedies for insect attacks under the names of various plants; but it may be of use to give here a summary of the best methods of employing it.

As a preventive of attack, Tar is employed against such larvae as conceal themselves underground during the day, and crawl up tree-trunks at night. It is also used to prevent the ascent of the females of the Winter Moths (see *Hybernia* and *Winter Moth*), and other

TEPHRITIS ONOPORDINIS. See *Celery Fly*.

TEPHRO. A term which, used in Greek compounds, signifies ash-grey.

TEPHROSIA (from *tephros*, ash-coloured; alluding to the colour of the leaves). North American Hoary Pea. Including *Requienia*. ORD. *Leguminosæ*. A large genus (about ninety species) of stove, greenhouse, or half-hardy herbs, sub-shrubs, or rarely shrubs, broadly dispersed over the warmer regions of the globe. Flowers red, purple, or white, in leaf-opposed racemes, or solitary or in pairs in the axils; calyx tube campanulate, the teeth distinct, sub-equal; petals clawed; standard sub-orbicular; keel incurved, not beaked; stamens diadelphous. Pods flattened, two-valved. Leaves usually odd-pinnate; leaflets opposite, often silky beneath. Several of the species are economically valuable, but few of them are very ornamental. A selection from those introduced is here given. All thrive in a compost of sandy peat and loaf mould. Propagation may be readily effected by seeds; or by cuttings, inserted in sand, under a bell glass, those of the stove species in heat.

T. candida (whitish). *f.* reddish or white, $\frac{1}{2}$ in. to 1 in. long; standard densely silky; racemes copious, terminal and lateral, elongated, $\frac{1}{2}$ in. to $\frac{3}{4}$ in. long. July. *l.* shortly petiolate, $\frac{1}{2}$ in. to $\frac{3}{4}$ in. long; leaflets nineteen to twenty-five, ligulate, acute, $\frac{1}{4}$ in. to $\frac{1}{2}$ in. long. India, 1816. A low, stove shrub.

T. capensis (Cape). *f.* purple, $\frac{1}{2}$ in. long, the standard pubescent; racemes interrupted, attenuated, distantly many-flowered; peduncles elongated, slender. July. *l.* rather long-petiolate; leaflets three to six pairs, elliptic, cuneate-oblong, or lanceolate, obtuse or acute. Stems procumbent or trailing, 2ft. to 3ft. long. South Africa, 1825. Greenhouse sub-shrub.

T. grandiflora (large-flowered). *f.* red, fulvouscent on the outside, eight to ten lines long; peduncles terminal and leaf-opposed, fasciculate-corymbose at summit. June. *l.* shortly petiolate; leaflets five or seven pairs, cuneate or linear-oblong, obtuse or acute, retuse or mucronulate. A. 1ft. to 2ft. South Africa, 1774. An erect, greenhouse shrub. (B. R. 769, under name of *Galega grandiflora*.)

T. pallens (pale). *f.* pink, four to five lines long, the standard pubescent, the other petals glabrous; racemes dense, many-flowered; peduncles curved, $\frac{1}{2}$ in. to $\frac{3}{4}$ in. long. July. *l.* shortly petiolate, very spreading or recurved; leaflets five to nine pairs, narrow, cuneate-oblong, $\frac{1}{2}$ in. long, recurved-pointed. South Africa, 1787. An erect or ascending, greenhouse sub-shrub.

T. purpurea (purple). *f.* pale red. $\frac{1}{2}$ in. to $\frac{3}{4}$ in. long, silky; racemes copious, elongated, all leaf-opposed, $\frac{1}{2}$ in. to $\frac{3}{4}$ in. long, loose, the lower flowers fascicled. July. *l.* shortly petiolate, $\frac{1}{2}$ in. to $\frac{3}{4}$ in. long; leaflets thirteen to twenty-one, narrow-oblong, obtuse, glabrescent above, obscurely silky beneath. A. 1ft. to 2ft. Throughout the tropics, 1768. Stove perennial.

T. suberosa (slightly bitten). *f.* pink; vexillum with a very short, callous claw, broadly oval; peduncles terminal and axillary, racemose, shorter than the leaves. July. *l.* shortly petiolate, $\frac{1}{2}$ in. to $\frac{3}{4}$ in. long; leaflets 1 in. to 1 $\frac{1}{2}$ in. long, oblong-lanceolate or lanceolate, very pale, silky-caescent. A. 4ft. South Africa, 1818. Greenhouse shrub.

T. virginiana (Virginian). *f.* yellowish-white, marked with purple, large and numerous, clustered in a terminal, oblong, dense raceme or panicle. June and July. *l.* leaflets seventeen to twenty-nine, linear-oblong. Stem erect and simple, 1ft. to 2ft. high, leafy to the top. North America, 1765. Half-hardy perennial.

TERAMNUS (from *teramnos*, soft; in reference to the pods and leaves). SYN. *Glycine* (of Wight and Arnott). ORD. *Leguminosæ*. A small, tropical genus of slender, twining, stove herbs. Flowers small, fascicled or racemose; standard ovate, narrowed at base, exappendiculate. Leaves pinnately trifoliate, stipellate. Two species have been introduced, but they are not very ornamental, and are probably no longer in cultivation.

TERATOPHYLLUM. Included under *Acrostichum*.

TEREBINTH-TREE. A common name for *Pistacia Terebinthus* (which see).

TEREBINTHUS. A synonym of *Pistacia* (which see).

TEREDO. Any disease in plant life caused by the boring of insects.

TERETE. Free from angles; cylindrical or nearly so; tapering.

TERGEMINATE. "When each of two secondary petioles bears towards its summit one pair of leaflets, and the common petiole bears a third pair at the origin of the two secondary petioles; as in *Mimosa tergemina*" (Lindley).

TERMINAL. Proceeding from the end.

TERMINALIA (from *terminus*, end; alluding to the disposition of the leaves). Myrobalan-tree. Including *Badamia*, *Buceras*, *Bucida*, *Catappa*, *Fatras*, *Myrobalanus*, and *Pentaptera*. ORD. *Combretaceæ*. A large genus (eighty to ninety species) of stove, evergreen, erect shrubs or trees, broadly spread over the tropics. Flowers green or white, rarely coloured, small, sessile, in spikes or heads; calyx five-toothed or five-lobed; petals wanting; stamens ten, biseriate. Leaves alternate, rarely nearly or quite opposite, often clustered at the tips of the branches, often stalked and entire. A few of the introduced species are here described. The bark of *T. Buceras* is greatly esteemed by tanners. Loam and peat form the most suitable compost for these plants. Propagation may be effected by cuttings, inserted in sand, and plunged in heat, under a glass. With the exception of *T. sericea*, all the species here described are trees.

T. angustifolia (narrow-leaved). A synonym of *T. Benzoin*.

T. Arjuna (Arjuna). *f.* spikes usually panicled. *l.* sub-opposite, oblong or elliptic, usually $\frac{1}{2}$ in. to $\frac{3}{4}$ in., sometimes 10 in., long, suddenly narrowed at base, often cordate, obtuse or very shortly acute at apex, nearly glabrous beneath when old; petioles rarely more than $\frac{1}{2}$ in. long, with two glands near the apex. A. 60ft. to 80ft. India. (B. F. S. 28.) SYN. *Pentaptera Arjuna*.

T. Benzoin (Benzoin). *f.* racemes axillary, pedunculate, as long as the leaves. *l.* crowded at the thickened tips of the branches; oblong-lanceolate, crenate, obtuse or cuspidate, glabrous, sub-coriaceous, $\frac{1}{2}$ in. to $\frac{3}{4}$ in. long, narrowed into glandular petioles. A. 30ft. to 40ft. Mauritius, 1824. A milky juice is said to flow from this tree, which, when dried, is used as incense in Mauritius. SYNS. *T. angustifolia*, *T. mauritiana*.

T. Buceras (Buceras). *f.* rather distant; spikes cylindrical, silky or villous-pubescent. *l.* variable, obovate or spatulate-lanceolate, glabrous above, silky and glabrate beneath. A. 20ft. to 30ft. West Indies, 1793. A monostrucosity of the flowers, transformed into long, cylindrical, arcuate bodies, is peculiar to this species. SYN. *Bucida Buceras* (B. R. 907).

T. Catappa (Catappa). Olive Bark-tree; Malabar Almond-tree. *f.* in short-peduncled, slender, spike-like, axillary racemes. *l.* crowded near the ends of the branchlets, shortly petiolate, obovate, obtuse, entire, membranous, $\frac{1}{2}$ in. to 1 $\frac{1}{2}$ in. long, glabrous or pilose beneath, with two glands near the base of the midrib. A. 60ft. to 80ft. Tropical Asia, &c., 1778. (B. M. 3004.)

T. Chebula (Chebula). Negroes' Olive-tree. *f.* spikes terminal, often panicled. *l.* not clustered, often sub-opposite, ovate or elliptic, usually acute and rounded at base, $\frac{1}{2}$ in. to $\frac{3}{4}$ in. long, more or less hairy when young; petioles about 1 in. long, often with two glands near the summit. A. 80ft. to 100ft. India, 1796. (B. F. S. 29; B. F. S. 27.)

T. latifolia (broad-leaved). *f.* spikes simple, pedunculate, cylindrical. *l.* approximate at the tips of the branches, obovate-oblong, $\frac{1}{2}$ in. to 1 $\frac{1}{2}$ in. long, glabrate or pubescent beneath, tapering into petioles 1 in. long, often with small glands or tufts of hair in the vein-axils beneath. A. 80ft. to over 100ft. West Indies, &c., 1800.

T. mauritiana (Mauritian). A synonym of *T. Benzoin*.

T. sericea (silky). *f.* spikes silky, pedunculate, shorter than the leaves. *l.* alternate, crowded at the tips of the branches, oblong or obovate-oblong, $\frac{1}{2}$ in. to $\frac{3}{4}$ in. long, mucronulate, quite entire, clothed with silky, appressed hairs on both surfaces, narrowed into short petioles. A. 6ft. and upwards. South Africa, 1816. Shrub.

TERMINALIS. A synonym of *Dracæna*.

TERNATE. A whorl of three; three things in opposition round a common axis; e.g., a leaf consisting of three leaflets.

TERNATEA. Included under *Clitoria*.

TERNATELY-DECOMPOUND. Compound in a ternate manner.

TERNATELY-VERTICILLATE. Having three leaves in a whorl.

TERNSTRÆMIA (named after Christopher Ternström, a Swedish naturalist and traveller in China, who

Ternstroemia—continued.

died in 1745). **SYN.** *Taonabo*. Including *Reinwardtia* (of Korthals). **ORD.** *Ternstroemiaceæ*. A genus comprising about twenty-five species of stove, evergreen trees or shrubs, of which five or six are found in the warmer parts of Asia and the Indian Archipelago, and the rest in tropical America. Sepals five, closely imbricated; petals five, imbricated, connate at base; stamens indefinite, adnate to the base of the corolla; peduncles one-flowered, recurved, axillary or lateral, solitary or sub-fasciculate, bibracteolate. Leaves coriaceous, entire or crenate-serrate. A selection of the few introduced species is given below. All are shrubs. They thrive in well-drained, fibrous loam, and are readily propagated by cuttings of the half-ripened young shoots, inserted under a bell glass, in bottom heat.



FIG. 15. FLOWERING BRANCH OF *TERNSTROEMIA ELLIPTICA*.

T. elliptica (elliptic-leaved). *f.* white; sepals rounded; peduncles drooping. July. *l.* variable, spatulate or elliptic, 3in. long, rather blunt, quite entire, obsolete veined. *A.* 6ft. West Indies, 1818. See Fig. 15. **SYN.** *T. peduncularis*.

T. peduncularis (pedunculate flowered). A synonym of *T. elliptica*.

T. sylvatica (sylvan). *f.* white; petals not lined; anthers apiculate; bracts ovate, acute, under the calyx. July. *l.* lanceolate, obtusely acuminate. Branches smooth. *A.* 2ft. Mexico, 1840.

T. venosa (veined). *f.* white; pedicels aggregate, axillary, a little shorter than the petioles. June to August. *l.* oblong, serrulated, veined. *A.* 6ft. Brazil, 1824.

TERNSTROEMIACEÆ. A natural order of trees and shrubs, rarely climbing, mostly inhabiting tropical America and Eastern Asia. Flowers regular, hermaphrodite or rarely diclinous, showy or mediocre, rarely small; petals five, rarely four, six, or seven, free or shortly coalescing at base, the inner ones often larger; petals five, rarely four or six to nine, hypogynous, free or often coalescing at base in a ring or short tube, imbricated or twisted; stamens usually numerous; anthers basifixed and erect, or versatile, two-celled; disk none; ovary free; peduncles axillary, one or many-flowered, or the flowers in terminal, axillary racemes, rarely disposed in elongated panicles; bracteoles under the calyx often two. Fruit sometimes fleshy, coriaceous, or slightly woody and in-

Ternstroemiaceæ—continued.

dehiscent, or a loculicidal or septicidal, dehiscent capsule. Leaves alternate or very rarely opposite, simple and undivided, or rarely digitately three to five-foliolate, entire or often serrated, coriaceous or rarely membranous, penninerved; stipules wanting or very rarely minute and highly caducous. The most important economical product of this family is Tea, *Camellia theifera* (= *Thea chinensis*). Although two centuries have not passed since Tea was first used in Europe, the annual importation now exceeds twenty-two millions of pounds. The order comprises about thirty-three genera and 260 species. Examples: *Camellia*, *Caryocar*, *Freziera*, *Ternstroemia*.

TERPNANTHUS. A synonym of *Spiranthera* (which see).

TERRACE. A raised space of ground, sometimes formed round a mansion, or on the side of sloping ground, usually for the purpose of making a level walk. In some cases, it is necessary to have some arrangement of this sort; but, in many other instances, after having been made at great cost, Terraces have been found most objectionable, because of the walls interfering with views of landscape from the mansion and also preventing the latter from being seen to advantage when approaching it. A Terrace retained in position by a strongly-built wall, on which flower-vases, &c., are fixed, is more likely to constitute a double block of this sort than when a sloping grass bank is substituted; if the latter can be arranged, it is, therefore, to be preferred when the formation of a Terrace is really necessary. A Terrace-walk may sometimes be introduced with advantage on rising ground.

where an exceptionally good view is at command, that cannot, perhaps, be seen from elsewhere; but the formation of Terraces as architectural features, apart from the necessity of having them, often assists, if it does not entirely succeed, in destroying beautiful landscape. The advantages and disadvantages should, therefore, receive full consideration.

TESSARIA (named after Luis Tessari, Professor of Botany, &c., at Ancona, writer of works on "*Materia Medica*"). **SYNS.** *Gynheteria*, of Willdenow (*Gynheteria* of Sprengel), *Phalacromesus*, *Polypappus*. **ORD.** A small genus (five species) of hardy, Western American shrubs. Flower-heads small, cymose, sometimes disposed in an ample corymb; involucrel bracts many-seriate; ray florets purplish, pale on the outside. Leaves alternate, entire or toothed. Probably none of the species are now cultivated in this country.

TESSELLATED. Chequered; when colours are disposed in small squares.

TESTA. The skin or integument of a seed.

TESTACELLA (a diminutive of *testa*, a shell; in allusion to the small size of the shell). A genus of Slugs which must be regarded as beneficial in gardens, inasmuch as they feed exclusively on earthworms, following them into their burrows. The body is long and

Testacella—continued.

slender, so as to pass easily along the burrows. On the hinder part of the back is a small, depressed, ear-shaped shell, about $\frac{1}{4}$ in. long, which protects the rear of the animal when in the burrows. This external shell at once distinguishes these animals from the true Slugs, which do mischief in gardens. Two species are known in England.

is dirty-yellow, with brown specks, rarely pale yellow, sometimes entirely black; when extended, it is about three inches long. It is said to swallow the worms alive. This species is known to occur in many localities in the South of England, and has been found as far north as Kirkcaldy, in Fifeshire.

T. Maugei is a native of South-west Europe, but has naturalised itself near Bristol. It is dark brown, and the shell is larger than in *T. haliotideæ*.

TESTACEOUS. Brownish-yellow; resembling unglazed earthenware in colour.



FIG. 16. TESTUDINARIA ELEPHANTIPES.

TESTUDINARIA (from *testudo*, a tortoise; alluding to a supposed resemblance in the outside roots). ORD. *Dioscoreaceæ*. A small genus (two species) of greenhouse twiners, endemic in South Africa. Flowers dioecious,

Testudinaria—continued.

small, racemose in the axils, resembling those of Leaves alternate, caudate or sub-deltoid. *T. elephantipes*, the species best known to cultivators, is an interesting plant, succeeding well in thoroughly-drained, sandy loam. During the period of rest, it should be kept dry. Increased by imported roots.

T. elephantipes.* Elephant's Foot; Hottentot Bread; Tortoise-plant. *f.* greenish-yellow, sometimes dark-spotted, rather long-pedicellate; male racemes axillary, solitary, $\frac{1}{2}$ in. to $\frac{1}{3}$ in. long, simple, sometimes simply branched below; females axillary, solitary, pedunculate, few-flowered, scarcely $\frac{1}{2}$ in. long. July. *l.* broadly cordate-ovate, sub-reniform, with a stout mucro, seven to nine-nerved, complicated. *h.* 10ft. 1774. See Fig. 16. (B. R. 921; B. M. 1347, under name of *Tamus elephantipes*.)

TETA. A synonym of *Peliosanthes* (which see).

TETRA. This term, used in Greek compounds, signifies four: e.g., Tetrypyrenus, four-stoned.

TETRACARPUM. A synonym of *Schkuhria* (which see).

TETRACERA (from *tetra*, four-fold, and *keras*, a horn; alluding to the curved shape of the four capsules). SYN. *Euryandra*, *Wahlbomia*. ORD. *Dilleniaceæ*. A genus including about two dozen species of glabrous or scabrous-pubescent, stove, climbing shrubs or rarely trees, dispersed over tropical regions. Flowers paniculate; sepals four to six, spreading; petals equalling the sepals in number, or rarely fewer; carpels three to five (rarely one or two *f.*). Leaves parallel-penniveined. The few species introduced, having no recommendation beyond their botanical features, are probably lost to cultivation.

TETRACHOTOMOUS. When a stem ramifies in fours.

TETRADENIA (of Nees). Included under *Litsea* (which see).

TETADIUM (from *tetradion*, a quaternion; the parts of flowers and fruit are in fours). ORD. *Rutaceæ*. A monotypic genus, now included, by Bentham and Hooker, under *Evodia*. The species is a stove, evergreen tree, requiring culture similar to *Brucea* (which see).

T. trichotomum (trichotomous-racemed). *f.* whitish, disposed in large, sub-terminal, trichotomous panicles; calyx short, four-parted; petals four, longer than the calyx; stamens four. April and May. *l.* smooth, imparipinnate; leaflets quite entire. *h.* 20ft. Cochin China, 1822. The proper name of this species is *Evodia fraxinifolia*.

TETRADYNAMIA. A Linnean class, characterized by the flowers being tetradynamous.

TETRADYNAMOUS. "Having six stamens, of which two are longer than the four others, which stand in pairs on opposite sides of an ovary; as in Crucifers" (Lindley).

TETRAGASTRIS. A synonym of *Medwigia* (which see).

TETRAGONAL. Four-angled.

TETRAGONIA (from *tetra*, four, and *gonia*, an angle; alluding to the fruit). SYN. *Demidovia*. ORD. *Ficoideæ*. A genus comprising about a score species of greenhouse or hardy, prostrate or somewhat climbing herbs or sub-shrubs, mostly South African, a few being also found on the shores of Eastern Asia, Australia, and temperate South America. Flowers green, yellowish, or reddish, axillary, solitary or few, sessile or on long pedicels, sometimes sub-spicate; calyx lobes three to five; petals none. Leaves alternate, oblong, linear, ovate, or deltoid, entire, rather thick; stipules absent. *T. expansa*, the only species calling for description here, is grown in gardens as a substitute for summer Spinach. For culture, &c., see *New Zealand Spinach*.

T. expansa (expanded). New Zealand Ice Plant; New Zealand Spinach. *f.* yellow, small, on very short pedicels or almost sessile in the axils, solitary or twin. *l.* petiolate, the larger ones

Tetragonia—*continued*.FIG. 17. BRANCHLET OF *TETRAGONIA EXPANSA*.

ovate, triangular, or broadly hastate, 2in. to 4in. long, entire, obtuse or acute the smaller ones narrower. Australia, New Zealand, &c. Plant hardy, decumbent or prostrate, often extending to several feet. See Fig. 17. (B. M. 2362.)

TETRAGONIACEÆ. Included under *Ficoideæ*.

TETRAGONOLOBUS. Included under *Lotus* (which see).

TETRAGONOTHECA (from *tetragonos*, quadrangular, and *theke*, a case; alluding to the four-angled grains). ORD. *Compositæ*. A small, North American genus (three species) of tall, erect, hardy, perennial herbs. Flower-heads yellow, rather large, solitary or loosely corymbose, heterogamous; ray florets ligulate, spreading; involucre explanate, with four bracts in one series; achenes thick, triangular, glabrous or slightly pilose. Leaves opposite, amplexicaul, deeply toothed or incised-pinnatifid. Only one species has been introduced. It is an interesting plant, thriving in any light, rich soil. Propagation may be effected by divisions, or by seeds.

T. hellanthoides (Sunflower-like). *f.* heads pale yellow, large, pedunculate, terminating the branches; involucre 2in. or more in diameter. August. *l.* 3in. to 6in. long, repandly and unequally toothed, or with coarse, sharp, salient teeth. Stem 2ft. to 3ft. high, terete. 1726.

TETRAHIT. A synonym of *Galeopsis* (which see).

TETRAHITUM. A synonym of *Stachys* (which see).

TETRAMERIUM. A synonym of *Farameæ* (which see).

TETRAMICRA (from *tetra*, four, and *micros*, small; in allusion to the four smaller divisions of the anther). Including *Lepiotes*. ORD. *Orchidææ*. A genus including about half-a-dozen species of stove, terrestrial or epiphytal orchids, natives of tropical America, from Brazil to the West Indies. Flowers mediocre, pedicellate; sepals and petals sub-equal, free, spreading; lip affixed to the base of the column, free, spreading, the lateral lobes shortly clawed, the middle one broad, entire; column erect, broadly two-winged above or from the base; raceme simple, loose; peduncle terminal, elongated, slender, rigid. Leaves linear, fleshy, semi-terete or

Tetramicra—*continued*.

very short and thick. Stems leafy, scarcely thickened, not pseudo-bulbous. The best-known species are here described. They thrive under conditions which suit *Sophranitis*. They may be grown on blocks of Tree-fern stem with a little sphagnum round the collar of the plant, or in baskets of fibrous peat, sphagnum, potsherds, and a few pieces of charcoal, intermixed. Cool treatment best suits the species described below, and all like a light place; they do well when suspended near the roof of the cool Orchid house. They are propagated by division.

T. bicolor (two-coloured). *f.* solitary; sepals and petals white linear-oblong; lip having two very short lateral lobes, and an oblong front lobe nearly as long as the petals, white, streaked with purple on the disk; ovary very long, pedunculiform. Winter. *l.* solitary, terminating the stems, terete, recurved, fleshy, grooved above. Rhizome creeping, throwing up several slender stems about 1in. long, almost cylindrical. Brazil, 1831. SYN. *Lepiotes bicolor* (B. K. 1625), *L. b.* var. (B. M. 3734).

T. rigida (rigid). *f.*, sepals and petals greenish; lip rosy, purple-striped, exerted, the lateral segments spreading, the middle one roundish-obovate, large; scape distantly sheathed, few-branched above or simple. March. *l.* few, 4in. to 8in. long, half-cylindrical, linear, channelled, acuminate, recurved. *h.* 1ft. to 2ft. West Indies. Plant rigid. SYN. *Brassavola elegans* (B. M. 3098).

T. serrulata (serrulated). *f.* as in *T. bicolor*, but three or four times larger; lip white, with lines of brilliant lake radiating from the base, where it has two short, rounded auricles; scapes terminal, axillary, purple. April and May. *l.* cylindrical, fusiform, grooved, glaucous-green, dotted with purple. Stems sometimes two-leaved. Brazil. SYN. *Lepiotes serrulata* (L. S. O. 11).

TETRANEMA (from *tetra*, four, and *nema*, a filament; the genus is characterised by having four stamens). ORD. *Scrophularinææ*. A monotypic genus. The species is a pretty, dwarf, perennial, greenhouse herb. In spring, it should be potted in a compost of leaf mould and sandy loam, and placed in the greenhouse, where it will bear a profusion of flowers during the greater part of the summer. The atmosphere of a warm greenhouse is necessary during winter. Propagation may be effected by seeds, or by divisions.

FIG. 18. *TETRANEMA MEXICANA*, showing Habit and detached Flower.

T. mexicana (Mexican). Mexican Foxglove. *f.* shortly pedicellate, on axillary, scape-like peduncles; calyx five-parted; corolla purplish-violet, variegated with a paler colour; stamens four. *l.* sub-radical, opposite, obovate or oblong, loosely crenate-toothed, angled at base, glabrous. Stems very short, or in cultivation slightly elongated and ascending. Mexico, 1843. See Fig. 18. (B. M. 1879, 16; B. M. 4070; B. R. xxix. 52.)

TETRANTHERA. A synonym of *Litsea* (which see).

TETRANTHUS (from *tetra*, four, and *anthos*, a flower; in allusion to the four flowers—two male and two female—in each head). ORD. *Compositæ*. A small genus (two species) of dwarf, creeping, stove herbs, confined to Domingo. Flower-heads whitish, very small, on solitary, filiform peduncles. Leaves opposite, petiolate, ovate. *T. littoralis*, the only species introduced, is probably now lost to cultivation.

TETRANYCHIDE. A family of Mites, which feed on living plants, on the leaves of which webs are spun by them. The commonest and most hurtful species is *tetranychus*, commonly known as the "Red Spider."

TETRANYCHUS TELARIUS, or **RED SPIDEE**. This is not a Spider, but a true Mite. It is frequently most injurious to cultivated plants, and is peculiarly hurtful to certain fruit-trees (e.g., Plum), to Hollyhocks, and to many of the more delicate greenhouse plants. A good deal of doubt exists as to whether there is only one species of Red Spider, liable to variation in colour, and in other minor points, or whether there are several closely-related species. It matters little to gardeners whether there are more than one or no, since the habits, harm done by them, and remedies against them, are the same for all, and will be discussed here as if there were but one. The creatures are too small to be seen with the unaided eye, save as minute, moving specks on the leaves; but often their numbers render the effects produced by them conspicuous. Their colour is usually some shade between rust-red and brick-red, but some (probably immature) are greenish, with brown specks on the sides. The body is oval, without any separation between the thorax and abdomen (unlike the structure in Spiders). There are four pairs of nearly equal legs, of which two pairs are turned forwards and two backwards. On the upper part of the body, near the front, are two minute eyes, and a beak or sucker, for boring into, and sucking juices from, the leaves of plants. Near the hinder end of the body, on the lower surface, is a conical wart, which is an organ used for spinning threads.

The name Spider has probably been given to these mites because of their powers of spinning. The females lay eggs; from these emerge larvæ, which differ from the adults in their size, and in having only six legs. The mites, when they establish themselves upon plants, spin webs of very fine texture on the backs of the leaves. They then, by means of their suckers, bore into the leaf-cells and suck out the sap. The leaves become yellowish or greyish-green, marbled with paler patches on the upper surface; the glistening web covering the lower surface renders it grey. A severe attack by Red Spider kills the leaves, which fall prematurely; the fruit crop is lessened; and the young branches formed the next year are stunted and weakened.

Prevention. Attacks of Red Spider are worst when the growth of plants is checked by drought and heat; hence, any measures that promote growth—such as frequent syringing—diminish the risk to some extent. Plants that show symptoms of being attacked, should be at once separated from the rest, and specially treated. Free access of air is much to be recommended. Soot, caustic lime, sand impregnated with spirits of tar, or other similar substances, may be laid round the bases of the stems of the plants to be protected, to prevent the mites from getting access to them. Poles and other supports should have their surfaces planed quite smooth, to prevent the mites from harbouring in crevices, and to allow of being thoroughly washed.

Remedies. Sulphur, in the form of Flowers of Sulphur, is almost a certain cure for Red Spider, and for some Fungi. It is sometimes dusted dry on the leaves, but is better employed in solution, e.g., 1lb. of sulphur, boiled with 2lb. of quicklime in four gallons of water; or the sulphuret of lime may be employed, in the proportion of 4oz. of sulphuret to 2oz. of soft soap and one gallon of boiling water. The sulphuret and the soap should be thoroughly mixed, and must be well stirred while the water is being poured on them. The plants may be dipped into the mixture; and it may be applied to the bark with a stiff brush. Various other washes have been found useful; e.g., Gishurst Compound, Veitch's Chelsea Blight Composition, and solutions prepared from quassia-wood. Fumigation with tobacco-smoke, or with sulphur and chalk, mixed in water and painted on the hot-water pipes, is also recommended. To cleanse infested walls, the following method may be employed with success: Add clay to a solution of soot

Tetranychus telarius—continued.

in water till the mixture is of the consistency of thick paint; then add 1lb. of flowers of sulphur, and 2oz. of soft soap, to each gallon; well mix the whole, and carefully paint the entire surface of the walls with the preparation.

TETRAPASMA. A synonym of *Discaria* (which see).

TETRAPELTIS. A synonym of *Otochilus* (which see).

TETRAPOGON (from *tetra*, four, and *pogon*, a beard; in reference to the bearded flowers). ORD. *Gramineæ*. A genus consisting of four species of hardy, tufted, often stoloniferous grasses, natives of North Africa, Abyssinia, and Western Asia. Spikelets two or three-flowered, clustered, secund, or nearly distichous; spikes one, two, or three at the apices of the peduncles; glumes two, the lower one empty; stamens three. Leaves flat. *T. villosus*, the only species introduced, is of no horticultural value.

TETRAPTERYS (from *tetra*, four, and *pteron*, a wing; the samaras are four-winged). ORD. *Malpighiaceæ*. A genus comprising about fifty-two species of usually climbing, stove shrubs, natives of tropical America, mostly Brazilian. Flowers yellow or reddish; calyx five-parted, with eight glands, rarely ten or none; petals clawed; stamens ten, all perfect, the alternate ones longer; umbels or racemes often panicled, terminal, rarely sub-sessile. Leaves opposite, entire, often transparent, not glandular; stipules two, variable. The species are rather ornamental, but extremely difficult to bring into flower in this country, and it is doubtful whether those described below are still in cultivation. A compost of peat and sand forms the most desirable soil for them. Ripened cuttings will root in sand, under a hand glass, in heat.

T. citrifolia (Citrus-leaved). A synonym of *T. inaequalis*.

T. discolor (discoloured). *f.* yellow; pedicels hoary-pubescent, articulated at the middle; umbels four-flowered, paniculate. May. *l.* elliptic or elliptic-oblong, bluntish or slightly acute, coriaceous, glabrous; stipules interpetiolar, deciduous. Guiana and Trinidad, 1827.

T. inaequalis (unequal). *f.* yellow; petals articulated at or below the middle; umbels four-flowered, paniculate. May. *l.* ovate or elliptic, acute, coriaceous; stipules interpetiolar, deciduous. Brazil and Jamaica, 1818. SYN. *T. citrifolia*.

TETRAQUETROUS. Having four very sharp and almost winged corners or angles.

TETRASTICHOUS. Having a four-cornered spike.

TETRATHECA (from *tetra*, four, and *theke*, a cell; the anthers are sometimes four-celled). ORD. *Tremandrea*. A genus embracing eighteen species of small, very pretty, glabrous or glandular-hairy, greenhouse, Australian shrubs. Flowers four or five-parted, rarely three-parted, possessing the peculiarity of only opening during bright sun and on fine days, but closing on the approach of evening, or when rain is imminent; stamens sub-biseriate. Leaves alternate, whorled, or scattered, Heath-like and entire or flat and toothed, or reduced to minute scales. A selection of the introduced species is here presented. They are rather difficult to cultivate. A compost of fibry peat, with plenty of silver sand intermixed, is most suitable. Water must be very carefully administered at all times, and only soft rain-water should be used. Propagation may be effected by cuttings of the young wood, inserted in sand, under a bell glass, and kept well shaded.

T. ciliata (hair-fringed). *f.* pink; sepals bearing a few glandular hairs or bristles; petals about $\frac{1}{2}$ in. long. July. *l.* almost all whorled in threes or fours, broadly ovate or nearly orbicular, obtuse or slightly acute, rarely exceeding $\frac{1}{2}$ in. in length, the margins flat or scarcely recurved, ciliated or nearly glabrous. Stems slender, erect, or diffuse, 1ft. to 3ft. long.

Tetratea—*continued*.

- T. ericifolia** (Heath-leaved). *f.* pink, on slender pedicels usually longer than the leaves; sepals not reflexed. July. *l.* mostly whorled, narrow-linear with the margins clove-like revolute, or rarely oblong-lanceolate and more open, mostly under $\frac{1}{2}$ in. in length. *A.* 1 ft. or less. 1820. Plant diffuse. (S. E. B. i. 20.)
- T. ericoides** (Heath-like). A synonym of *T. pilosa*.
- T. glandulosa** (glandular). A synonym of *T. pilosa denticulata*.
- T. hirsuta** (hairy).* *f.* pink, rather large, on slender pedicels $\frac{1}{2}$ in. to 1 in. long; sepals lanceolate; petals oblong. March. *l.* mostly alternate, a few whorled, ovate-lanceolate to oblong-linear, obtuse, $\frac{1}{2}$ in. to 1 in. long, the margins recurved, more or less hirsute above, villous or pubescent beneath. Stems rigid and erect. 6 in. to 18 in. high, often hispid with reddish hairs. 1843. (B. R. 1844, 67; P. M. B. xiii. p. 53.)
- T. juncea** (Rush-like). *f.* purple; sepals four, small, ovate, obtuse; petals four, about $\frac{1}{2}$ in. long; pedicels in the upper axils. July. *l.* few, small and distant, scale-like, rarely $\frac{1}{2}$ in. long. Stems erect or ascending, slender, Rush-like or wiry, 1 ft. to 2 ft. long, with two or three acute angles or very narrow wings. 1803.
- T. nuda** (naked). *f.* crimson, on slender pedicels; sepals and petals five each. May. *l.* very minute and distant, or a very few linear or oblong ones two or three lines long. Rhizome woody, with numerous erect, slender, rigid, but Rush-like stems, 9 in. to 18 in. high, often ending in an almost pungent point. 1843.
- T. pilosa** (pilose).* *f.* purple, rather small, on pedicels usually shorter than the leaves; petals narrow. July. *l.* usually linear, with the margins much revolute, four to six lines long, but in very luxuriant shoots sometimes broadly lanceolate or oblong, with an obtuse base. *A.* 1 ft. to 1 1/2 ft. 1823. Plant Heath-like. (F. d. S. 1065, under name of *T. ericoides*.)
- T. p. denticulata** (denticulate-leaved). *f.* calyx and pedicels slightly glandular-hairy. *l.* narrow, revolute, occasionally opposite. 1822. (S. E. B. i. 21, under name of *T. glandulosa*.)
- T. thymifolia** (Thyme-leaved). *f.* purple; sepals ovate-lanceolate, seldom reflexed. July. *l.* almost all whorled in threes or fours, ovate-elliptic or lanceolate, the margins more or less recurved or revolute. *A.* 1 ft. to 3 ft. 1824. Plant very pubescent or hirsute. (S. E. B. i. 22.)
- T. verticillata** (whorled). A synonym of *Platythea galioides*.

TETRAZYGIA (from *tetra*, four, and *zugos*, a yoke; alluding to the fourfold arrangement of the parts of the flower). ORD. *Melastomaceae*. A genus comprising about thirteen species of stove, usually furfuraceous shrubs or trees, inhabiting the West Indies. Calyx tube urceolate or globose, constricted above the ovary, the limb four or five-lobed; petals four or five, obovate, obtuse; stamens eight or ten, equal, the filaments subulate; panicles or corymbs terminal, many-flowered. Leaves petiolate, oblong, ovate, or ovate-lanceolate, entire or denticulate, three to five-nerved. The species here described are well worth cultivating. They require similar treatment to that recommended for *Melastoma*.

- T. angustiflora** (narrow-flowered). *f.* white, large, but with a narrow calyx; petals five, rarely four, four to five lines long; panicles racemiform, oblong, the primary branches terminated by corymbiform cymes. May. *l.* elliptic or elliptic-lanceolate, abruptly acuminate, $\frac{3}{4}$ in. to 5 in. long, entire, whitish-downy beneath. Branchlets (and inflorescence) powdery-downy. *A.* 20 ft. 1823. Tree. (B. M. 4383, under name of *T. elaeagnoides*.)
- T. discolor** (two-coloured). *f.* white, small, densely crowded in a corymbiform panicle; petals oval. May. *l.* ovate or ovate-lanceolate, entire, sharp-pointed, $\frac{3}{4}$ in. to $\frac{1}{2}$ in. long, white beneath with adpressed, scaly down. *A.* 3 ft. 1783. A low shrub.
- T. oleagnoides** (Oleaster-like). *f.* pink or white, disposed in a corymbiform, or sometimes racemiform, panicle; petals four, three to four lines long. June. *l.* elliptic-lanceolate or lanceolate, sharply acuminate, narrower than those of *T. angustiflora*, whitened beneath by tomentose down. *A.* 2 ft. or more. 1848. Shrub.

TEUCRIUM (the old Greek name used by Dioscorides, probably from Teucer, King of Troy, who is said to have first used the plant medicinally). Germander. Including *Potium*, *Scordium*, and *Scorodonia*. ORD. *Labiatae*. A large genus (nearly 100 species) of greenhouse or hardy herbs, sub-shrubs, or shrubs, of variable habit, dispersed over the temperate and warmer regions of the globe. Calyx tubular or campanulate, rarely inflated, five-toothed; corolla limb quasi-bilabiate, obliquely five-lobed, the two upper lobes very small, the two lateral larger, the lowest largest; stamens four; whorls two or rarely many-flowered, axillary, or disposed in spikes, racemes, or heads. Nutlets obovoid, reticulate-wrinkled. Leaves

Teucrium—*continued*.

- entire, toothed, or incised, sometimes multifid; floral ones conformed or reduced to bracts. *T. Botrys*, *T. Scordium* (Water Germander), and *T. Scorodonia* (Wood Sage), are British plants. *T. Chamædryas*, an escape from gardens, has become naturalised. *T. Pseudo-Scorodonia* (Bastard Wood Sage), an inconspicuous species nearly allied to the British *T. Scordonia*, is now and then met with in gardens. Few of the species have any horticultural merit, but several are of medicinal value. All thrive in any moderately good soil. The shrubs may be increased by cuttings, inserted in sandy soil, under a glass, in spring or summer; the perennials by divisions.
- T. betonicum** (Betony-like). *f.* purplish; corolla tube exerted, pubescent outside, the throat inflated and incurved; whorls two-flowered, secund, loosely racemose; racemes $\frac{3}{4}$ in. to 6 in. long. May to August. *l.* ovate-oblong, $\frac{1}{2}$ in. to 1 1/2 in. long, on rather long petioles, crenate, woolly below or on both sides; floral ones shorter than the calyx. Branches cano-tomentose. *A.* 1 1/2 ft. Madeira, 1775. Greenhouse, evergreen shrub. (B. M. 1114.)
- T. bicolor** (two-coloured). *f.* blue; peduncles short, axillary, one-flowered, the upper ones sub-racemose. July. *l.* ovate, oblong, or lanceolate, nearly 1 in. long, entire or cut, sometimes trifid; young ones often linear, entire or trifid; floral ones usually exceeding the flowers. Branches 1 ft. to 2 ft. long, acutely tetragonal. *A.* 1 ft. Chill, 1826. Greenhouse, glabrous perennial. SYN. *T. orchidum* (B. R. 1256).



FIG. 19. FLOWERING STEM OF TEUCRIUM CHAMÆDRYAS.

- T. Chamædryas** (Chamædryas).* Wild Germander. *f.* rosy, $\frac{3}{4}$ in long, the lower lip spotted with white and red; whorls about six-flowered, in the axils of leafy bracts, or sub-second in leafy, terminal spikes. July to September. *l.* petiolate, ovate, included-crenate, $\frac{1}{2}$ in. to 1 1/2 in. long, gradually narrowed into the petioles. Stem 6 in. to 18 in. long, ascending, much branched. Rootstock creeping. Europe (naturalised in Britain). A hispidly-hairy perennial. See Fig. 19. (Sy. En. B. 1084.)
- T. fruticosum** (shrubby).* Tree Germander. *f.* blue, on one-flowered peduncles shorter than the tomentose calyx; racemes terminal or lateral on short branchlets, few-flowered. Summer. *l.* ovate, obtuse, entire, flat, very shortly petiolate, glabrous above, white or rufescent-tomentose beneath. Branches divaricate. *A.* 2 ft. to 3 ft. South Europe, 1869. Greenhouse or half-hardy, evergreen shrub. (Ref. B. 204; S. F. G. 527.) SYN. *T. latifolium* (B. M. 245).
- T. hircanicum** (Hyrcanian). *f.* purple, on short, erect, villous pedicels; corolla villous outside; spikes simple, dense, $\frac{3}{4}$ in. to 5 in. long. September. *l.* petiolate, ovate-cordate, $\frac{1}{2}$ in. to $\frac{3}{4}$ in. long, deeply crenate, obtuse, scarcely pubescent above, softly sub-canescent beneath. Stems 1 ft. to 2 ft. high, pubescent, scarcely branched. Persia, 1763. Hardy perennial. (B. M. 2013.)
- T. latifolium** (Broad-leaved). A synonym of *T. fruticosum*.
- T. Marum** (Marum). Cat Thyme. *f.* reddish-purple, in pairs at the axils of the upper leaves, forming an oblong, generally rather crowded, nearly one-sided inflorescence; corolla with the median lobe sub-orbicular; calyx hairy, with shortly acuminate, lanceolate, nearly equal teeth. Summer. *l.* shortly stalked,

Tenacium—continued.

entire, oval or lanceolate, green, pubescent above, white-woolly beneath. Stems shrubby, erect. A. lit. Western Mediterranean region. Hardy. Cats have a strange liking for this plant.

T. orchideum (Orchid-like). A synonym of *T. bicolor*.

T. orientale (Eastern). *f.* blue, disposed in a loose, sometimes hispid-pilose panicle; pedicels or peduncles one-flowered, nearly twice as long as the acutely-toothed calyx. July. *l.* once or twice pinnatisect, the lower ones 1½ in. to 2 in. long, broadly ovate in outline, the floral ones minute; segments linear, entire or incised. A. lit. Levant, 1725. A hardy, sometimes loosely pubescent or canescent, erect perennial. (B. M. 1279; L. B. C. 1871.)

TEYSSEMANNIA (so called in honour of J. E. Teyssmann, a Dutch gardener, who published a "Catalogus Plantarum," in 1838). ORD. *Palmæ*. A monotypic genus. The species is a dwarf, unarmed, stove Palm, closely allied to *Corypha*, from which it differs mainly in habit. The natives of Sumatra use the leaves of this Palm for thatching their houses, a purpose for which, from their large size and entire form, they are admirably adapted. For culture, see *Corypha*.

T. altifrons (tall-leaved). *f.* spathe papery-coriaceous, sheathing the fuscous-tomentose peduncle and the spadix branches; spadix rather short, with deflexed branches. *fr.* as large as an apple, globose or depressed-globose, one-celled, one-seeded. *l.* erect, elongated-rhomboid, obtuse, acute at base, 5 ft. to 7 ft. long, 1½ ft. wide, induplicate plicate, lacinated on the margins, the segments obtusely bifid; petioles carinate at back, obsoletely concave in front, the angles rounded, uncinat-prickly. Caudex subterraneous. Sumatra.

THALAMIA. A synonym of *Phyllocladus* (which see).

THALAMIFLOERUS. When the stamens arise immediately from the thalamus.

THALAMUS. The receptacle in a flower; the part on which the carpels are placed.

THALASIUM. A synonym of *Panicum* (which see).

THALIA (named in honour of J. Thalinus, a German physician and botanist, who died in 1588). SYN. *Peronia*. ORD. *Scitamineæ*. A genus embracing about five species of stove, greenhouse, or hardy herbs, natives of tropical America, one species extending as far as the Southern United States, and one being found in tropical Africa. Flowers in pairs, pedicellate, loosely spicate; sepals three, free, equal, membranous, equalling or much shorter than the corolla; petals three, free or very shortly connate at base, equal or the dorsal one scarcely broader; androecious tube short, the lobes petaloid, very irregular; panicle terminal; bracts spreading under the branchlets, deciduous. Leaves few, ample; floral ones sometimes conformed. *T. dealbata*, the only species that calls for description here, is an aquatic plant, sufficiently hardy to withstand the severity of our winters, provided it be planted about 2 ft. beneath the surface of the water. It is a very elegant subject for aquaria. Propagation may be effected by division of the rootstock.

T. dealbata (whitened). *f.* purple, small; valves of the spathe unequal, ovate, coriaceous; spikes erect; panicle erect, dense, smooth, the branches not longer than the lanceolate, deciduous bracts at their base; scape terete, Reed-like, 3 ft. to 5 ft. high. June to September. *l.* distichous, long-petiolate, cordate-ovate, acute, 6 in. to 8 in. long; petioles 1 ft. to 2 ft. long. South Carolina, &c., 1791. Plant dusted over with a minute, white powder; otherwise smooth. See Fig. 20. (B. M. 1590.)

T. sanguinea (blood-coloured). A synonym of *Stromanthe sanguinea*.

THALICTRUM (the old Greek name used by Dioscorides, probably derived from *thallo*, to grow green; alluding to the bright colour of the young sprouts). Meadow Rue. ORD. *Ranunculaceæ*. A genus embracing about thirty species of hardy herbs, with perennial stems, nearly all inhabiting North temperate and frigid regions. Flowers green, yellow, purple, or white, often polygamous, paniculate or rarely racemose, usually small with the stamens conspicuously exerted, or rarely larger with smaller anthers; involucre and petals wanting; sepals

Thalicttrum—continued.

four or five, petaloid; achenes often compressed. Leaves ternately decomposed; cauline ones, when present, alternate. Among the species, three of which are included in the British Flora, there are several well deserving of a place at the back of the flower border. A representative selection of the most desirable kinds is presented below. Any fairly good garden soil is suitable. The plants may be multiplied by divisions.

T. alpinum (alpine). *f.* few; sepals four, purplish; racemes drooping, afterwards erect, simple. July and August. *l.* biternate; leaflets ½ in. to 1 in. long, sub-orbicular, glaucous beneath, obtusely lobulate. Stem 4 in. to 10 in. long, often stoloniferous. Europe (Britain), Asia, and North America. (B. M. 2237; Sy. En. B. 2.)

T. anemonoides (Anemone-like).* Rue Anemone. *f.* several in an umbel; sepals five to ten, white, rarely pinkish, oval, ½ in. long. Early spring. *l.* bi- or tritermately compound; leaflets roundish, cordate at base, long-petiolulate. Stem arising from a cluster of thickened, tuberous roots. A. 6 in. North America,

T. a. flore-pleno (double-flowered). This only differs from the type in having double flowers. (F. d. S. 1155; L. B. C. 770.)



FIG. 20. THALIA DEALBATA.

Thalictrum—continued.

- T. aquilegifolium** (Columbine-leaved). * Feathered or Tufted Columbine. *f.* disposed in a corymbose panicle; sepals white, fugacious; stamens usually purple, sometimes white. May to July. *l.* tripinnate; leaflets sub-orbicular, smooth, deeply toothed; stipules ovate, twin. Stem fistular, purple, mealy. A. 1ft. to 3ft. Europe and Asia, 1731. (B. M. 1818; J. F. A. 318.)
- T. a. atropurpureum** (dark purple). * Stamens and stems dark purple.
- T. a. formosum** (beautiful). Stamens dark purple, dilated at apex. (B. M. 2025.)
- T. a. roscum** (rosy). *f.*, sepals rose-coloured. 1880.



FIG. 21. PANICLE OF THALICTRUM FLAVUM.

- T. flavum** (yellow). * False Rhubarb; Fen Rue, &c. *f.* often umbellate, erect, crowded; sepals pale yellow, small; anthers bright yellow; panicle compound, sub-corymbose or pyramidal. July and August. *l.* ternately bi- or tripinnate; leaflets 1in. to 1½in. long, three-lobed. Stem 2ft. to 4ft. high, stout. Rootstock yellow, creeping. Europe (Britain) and Asia. See Fig. 21. (Sy. Kn. B. B.)
- T. glaucum** (glaucous). *f.* crowded in an erect, compound panicle; sepals four or five, yellow. June and July. *l.*, leaflets ovate-orbicular, three-lobed; lobes deeply toothed. Stem erect, round, striated, mealy. A. 2ft. to 5ft. South Europe, 1798.
- T. minus** (lesser). * *f.* yellow, green, drooping, in lax panicles. Summer. *l.* triangular, three or four-pinnate; leaflets variable, acute or obtusely-lobed, often glaucous. Northern hemisphere (Britain). (Sy. Kn. B. B.) Some of the forms of this species make desirable border or pot plants on account of their beautiful Maidenhair-like foliage.
- T. petaloidcum** (petaloid-sepaled). *f.* corymbose; sepals white, nearly round; filaments flesh-coloured; anthers yellow. June and July. *l.* ternately decomposed; leaflets smooth, ovate, obtuse, entire or three-lobed. Stem round, almost naked. A. 1½ft. Dahuria, 1799. (L. B. C. 891.)
- T. tuberosum** (tuberous-rooted). * *f.* loosely corymbose; sepals five, white, oval, blunt. June. *l.* crowded, petiolate, bi-tripinnate; leaflets orbicular, three-lobed, smooth. Root gumose. A. 1ft. Spain, 1713.

THALLUS. A fusion of leaves and stem into one general mass.

THAMNEA (from *thamnos*, a shrub; alluding to the nature of the plant). ORD. *Bruniaceæ*. A monotypic genus. The species is a pretty, little, greenhouse under-shrub. It thrives in a compost of peat and sand. Propagation may be effected by cuttings, inserted in sand, under a glass.

Thamnes—continued.

- T. uniflora** (one-flowered). *f.* white, small, terminal, solitary; calyx adnate with the ovary, five-lobed; petals five, with two-keeled claws and an ovate, spreading limb; stamens five, included. April. *l.* very small, somewhat rhomboidal, short, blunt-keeled, closely pressed, spirally inserted; upper ones rather longer, forming an involucre to the flower. Branches filiform, erect, fastigate. A. 1ft. South Africa, 1810.

THAMNOCHORTUS (from *thamnos*, a shrub, and *chortos*, grass; alluding to the habit of the plants). Shrubby Grass. ORD. *Restiaceæ*. A genus comprising ten species of greenhouse, perennial herbs, confined to South Africa. Flowers dioecious, arranged in spikelets. Flowering stems from a creeping or short and erect rhizome, Rush-like, undivided. *T. dichotomus* has been introduced, but it possesses no horticultural merit.

THAMNOPTERIS. Included under *Asplenium*.

THAPSIA (the old Greek name used by Theophrastus, so called from the Island of Thapsos). Deadly Carrot. Including *Melanoselinum* and *Monizia*. ORD. *Umbellifera*. A small genus (four species) of greenhouse or half-hardy, perennial (or biennial?), tall herbs, sometimes having a very elongated, shrubby stem, natives of the Mediterranean region and Madeira. Flowers yellowish, dirty-white, or purplish, in compound, many-rayed umbels; calyx teeth small; petals inflexed at apex, shortly acuminate; involucre often wanting. Leaflets pinnately decomposed; segments incised-pinnatifid. *T. garganica* has long been celebrated among the Moors for its healing qualities. The species thrive in loamy soil. They may be increased by seeds, or by breaks from the carrot-like root.

T. decipiens (deceiving). Black Parsley. *f.* white; petals obovate, emarginate; involucre composed of many cut leaves. June and July. *l.* tripinnate; leaflets ovate, acuminate, serrated, the ultimate ones usually confluent; petioles sheathing. Stem terete, simple, naked below, shrubby. A. 6ft. Madeira, 1857. (B. M. 5670.)

T. edulis (edible). *f.* white, small, disposed in compound, many-rayed umbels, furnished with partial and universal involucre of entire leaflets. May. *l.* large, decomposed, fern-like, in tufts, from 1ft. to 3ft. in length (including the stalks). A. 4ft. Madeira, 1857. The roots, which have long, curved, horn-like divisions, and are black outwards and white within, are eaten in Madeira. SYN. *Monizia edulis* (B. M. 5724.)

T. garganica (Garganian). Drias-plant. *f.* yellow; involucre few-leaved. July and August. *l.* bi-tripinnatisect, shining; segments linear, acute, elongated, quite entire along the margins, decurrent or confluent. Stem terete, glabrous. A. 2ft. to 4ft. Mediterranean region, 1683. (B. M. 6293; S. F. G. 287.)

T. villosa (villous). *f.* yellow; involucre and involucre almost wanting. June and July. *l.* tripinnate, and, as well as the petioles, villous; leaflets oblong, sinuately pinnatifid, the lower ones deflexed. Stem terete, glabrous. A. 3ft. to 4ft. South Europe, 1710.

THATCH PALMS. A native name for various species of *Euterpe*, *Sabal*, *Thrinax*, &c.

THEA. Included under *Camellia* (which see).

THECA. A synonym of *Tectona* (which see).

THECA. A spore-case; a sac, tube, shell, or any kind of case containing spores.

THECOSTELE (from *theka*, a receptacle, and *stela*, a column; in allusion to the shape of the gynostegium). ORD. *Orchidææ*. A monotypic genus. The species, a stove, epiphytal Orchid, native of Malacca and the Malayan Archipelago, and bearing a simple raceme of mediocre flowers, is as yet unknown in cultivation.

THELA. A synonym of *Plumbago* (which see).

THELEBOLUS (from the Greek words *thela*, a nipple, and *bollo*, I throw; in allusion to the form of the Fungus, and to the mode of ejecting the spores, described below). A small genus of Fungi, which spread over decaying leaves and sticks, and upon the soil in woods during winter. Only one species (*T. terrestris*) is known to be British, and this is by no means common. It forms yellowish patches, sometimes several inches in breadth, composed of a woolly mycelium, on which are numerous smooth, hemispherical bodies; each of these

Thalebolus—continued.

is about $\frac{1}{16}$ in. in diameter, and is surmounted above by a prominent, round mouth. In these bodies the spores are formed, and when they are ripe for being scattered they are pushed, or thrown, from the mouth in a mass which resembles a small nipple in form; hence the name of the genus. When the spores have all been ejected, the top of the Fungus sinks in, so that it resembles a cup. This plant is not of any practical importance to gardeners, though the yellow patches formed by it render it very conspicuous.

THELEPHORA (from *thelē*, a nipple, and *phero*, to bear; in allusion to nipple-like growths on the surface of the hymenium in some of the species). A genus of Fungi, most of which grow on the ground in woods. A few, however, are found on tree-trunks or stumps, and at times do mischief to the wood, burrowing between and through the annual rings of growth. *Thelephora* belongs to the group of Mushrooms in regard to the structure of the hymenium, or part on which the spores are formed, and in four spores being formed from each large cell of the hymenium (see **Mushrooms**); but it differs from the true Mushrooms, in having the hymenium smooth, or bearing mere ridges or warty growths, instead of being spread over gills; and the texture is firm and dry—indeed, almost leathery.

The reproductive organs of *T. laciniata* appear on the diseased trunks in the form of horizontal, semicircular plates, attached by the middle to the bark or wood; a number of such plates uniting, and overlapping one another, to form a mass $\frac{1}{2}$ in. or more across. They are covered above with a coat of fibrous or scaly hairs, prolonged round the margins; and each bears the downy, warty hymenium on its lower surface. The whole mass is dull rusty-brown. This Fungus is usually found among the leaves and other plant-remains in the soil in woods; but it often grows closely around the stems or branches of young trees, and thereby kills small or weakly plants, although it is not a true parasite. It is unsafe to form nurseries for seedlings where *T. laciniata* abounds, though this species is seldom dangerous to older trees.

Dr. Hartig, the well-known German writer on the diseases of trees, has described (in the "Lehrbuch der Baumkrankheiten") a disease of Oak-trunks, widely met with in Germany, which he attributes to a Fungus, named by him *T. Perdis*. The specific name is the Latin word for a partridge, and alludes to the fact that the wood in which it grows often resembles in its mottlings the plumage of a partridge. The diseased wood turns to a deep red-brown, with numerous white spots of mycelium. These spots soon become closed cavities, which are lined with the pale threads of the Fungus. The wood rots, turning dark brown, and the cell walls and cell contents decay. The reproductive organs, which are the most readily recognised parts of the Fungus, are semicircular plates from $\frac{1}{16}$ in. to $\frac{1}{2}$ in. across, and of a brown-yellow colour; and they grow on the surface of dead branches, or in hollow spaces in the trunks. These plates continue to increase in size year after year. Though so frequent in Germany, *T. Perdis* does not appear to have been recorded as British.

Another Fungus formerly known as *T. hirsuta*, but now named *Stereum hirsutum*, is very frequent in Britain, on stumps and dead wood of many species of trees. It also is regarded by Dr. Hartig as at times very hurtful to Oak-wood. In general appearance it is much like a true *Thelephora*, but differs in having between the hymenium and its support (pileus) a fibrous layer that is not present in *Thelephora*. The reproductive bodies of *Stereum hirsutum* are somewhat like those of *T. laciniata* in general form; but they are usually pale, and are covered above with grey or pale down, and the hymenium

Thelephora—continued.

is yellowish. Where this Fungus gains an entrance into an Oak-trunk, the wood becomes brown, at first on one side, then gradually all round, in concentric layers. In the brown wood there next appear snow-white or yellowish, longitudinal streaks, which, in cross-sections of the trunk, show themselves in the form of small spots. Where air gains free access, through cracks, &c., the wood may become uniformly yellowish, the middle layer of the wall between the cells is dissolved out, and the tenacity of the wood is destroyed by the cells thus becoming separated. Fortunately, *Stereum hirsutum* does not often attack healthy trees. As is the case with almost all internal parasites, comparatively little can be done to cure the evil in a tree; though timely removal of diseased branches may prevent the mycelium from reaching the trunk. But, except in the case of choice specimens, the wise course is to remove and burn, without delay, such trees as show signs of being occupied by the Fungi, in order to prevent the latter from spreading to healthy plants.

THELESPERMA (from *thelē*, a nipple, and *sperma*, seed; alluding to the nipple-like protuberances on the achenes). SYN. *Comidium*. ORD. *Compositæ*. A small genus (four or five species) of stove or greenhouse, glabrous herbs or sub-shrubs; one is found in extra-tropical South America, and the rest are Mexican. Flower-heads mediocre, heterogamous, on long peduncles; involucre duplex; ray florets, when present, yellow; disk often purplish; achenes glabrous, smooth or tubercled. Leaves opposite, or the upper ones alternate, linear, often filiform, once or twice pinnatifid or the uppermost ones undivided. The species are probably not now in cultivation in this country.

THELIGONUM. See **Thelygonum.**

THELYGONUM (an old Greek name, from *thelygonos*, begetting girls; it was said by Pliny to give the power of producing female offspring). Sometimes spelt *Theligonum*. SYN. *Cynocrambe*. ORD. *Urticaceæ*. A monotypic genus. The species, *T. Cynocrambe* (Dog's Cabbage), is a hardy, slightly fleshy, procumbent, annual herb, broadly dispersed over the Mediterranean region. It is occasionally cultivated as a potherb, but has no value from a horticultural standpoint.

THELYMITRA (from *thelys*, a woman, and *mitra*, a cap; alluding to the hood-shaped column). Woman's-cap Orchid. Including *Mardonaldia*. ORD. *Orchidæ*. A genus comprising about twenty species of greenhouse, terrestrial Orchids, with ovoid tubers; one is broadly dispersed through Australia, New Zealand, New Caledonia, and the Malayan Archipelago, three or four are indigenous to New Zealand, and the rest are all Australian. Flowers blue, purple, red, or yellow, occasionally white, usually several in a terminal raceme; sepals, petals, and lip, all nearly equal and spreading; column rather short, erect, broadly winged; pollen masses granular; bracts shorter than the flowers. Leaves linear, lanceolate, or rarely ovate, sometimes rather thick, but not terete. Stems simple, one-leaved. A selection of the introduced species is given below. All of them are Australian. For culture, see **Bletia**.

T. carnea (fleshy). *f.* pink, one to three; sepals and petals oval-elliptic, oblong, or obtuse, usually about four lines long. May. *l.* narrow-linear. Stem slender, often flexuous, less than $\frac{1}{2}$ in. to nearly 12 in. high. 1820.

T. Forsteri (Forster's). A synonym of *T. longifolia*.

T. gramineæ (grass-like). A synonym of *T. longifolia*.

T. ixioideæ (Iris-like). *f.* blue, pedicellate, usually forming a raceme $\frac{1}{2}$ in. to $\frac{1}{2}$ in. long; sepals, petals, and lip, elliptic-oblong, nine to ten lines long. May. *l.* long-linear or linear-lanceolate, flat or channelled, with one to two shorter ones. Stem usually above 1 ft. high. 1810. (S. E. B. 28.)

T. longifolia (long-leaved). *f.* blue, lilac, or pink, rather large, several in a raceme; column wing produced behind and over

the anther into a broad hood, usually conspicuous from its dark colour. May. *l.* long, narrow. *A.* variable, usually about 1ft. 1824. *SYNS.* *T. Forsteri*, *T. graminea*, *T. pauciflora*.

T. pauciflora (few-flowered). A synonym of *T. longifolia*.

T. variegata (variegated). *f.* purple, two to four, large; sepals and petals lanceolate, shortly acuminate or acute, $\frac{1}{2}$ in. to 1 in. long, variegated. May and June. *l.* with a villous sheath, the blade usually glabrous, linear, much dilated at base and often undulated. Stem not very stout, 1ft. high or rather more. *SYNS.* *Macdonaldia spiralis*, *M. variegata*.

T. venosa (veined). *f.* blue, six to ten; sepals and petals $\frac{1}{2}$ in. to $\frac{3}{4}$ in. long; column broadly winged. April. *l.* long, narrow. Stem 1ft. to 2ft. high. 1826. *SYN.* *Macdonaldia venosa*.

THELYPOGON. A synonym of **Telipogon** (which see).

THEMISTOCLESIA (named in honour of the Greek statesman Themistocles). Including *Centrostemma*. *ORD.* *Vacciniaceæ*. A small genus (four species) of glabrous, villous, or pubescent, stove, evergreen shrubs, with slender, pendulous branchlets, inhabiting the Andes of Peru, Bolivia, and Venezuela. Flowers disposed in short racemes; calyx tube continuous with the pedicel, campanulate or obconical, the limb minutely five-toothed; corolla tubular, the base or middle of the tube slightly swollen, the limb small, with five recurved teeth; stamens ten, as long as the corolla. Leaves alternate, sub-sessile, rounded or cordate at base, ovate, long caudate-acuminate, coriaceous. *T. coronilla*, the only species calling for description here, thrives in a compost of turfy loam, peat, and sand. It may be increased by cuttings, which readily root in sand or soil, with or without the protection of a glass.

T. coronilla (small-crowned). *f.*, calyx short, pale green; corolla dark red and shining, glabrous, narrow-urceolate or tubular and inflated below, obscurely five-angled; pedicels axillary, solitary or in pairs. January. *l.* numerous, spreading and deflexed, $\frac{1}{2}$ in. long, obtuse, entire, often glabrescent above, pale beneath. Branches stout, and, as well as the leaves, peduncles, and calyces, softly hairy. Venezuela, 1866. A small shrub. (*L. H. n. s. 33.*) *SYN.* *Thibaudia coronaria* (*B. M.* 5576).

THENARDIA (named by Kunth in honour of his friend L. J. Thenard, a Frenchman, who wrote on the chemical physiology of plants). *ORD.* *Apocynaceæ*. A monotypic genus. The species is an interesting, glabrous, stove, climbing shrub, requiring similar treatment to that recommended for **Dipladenia**.

T. floribunda (bundle-flowered). *f.* pink, broad, in nearly umbelliform cymes; calyx somewhat five-parted; corolla tube very short, sub-rotate, the lobes five, broad, spreading, twisted; pedicels elongated. June. *l.* opposite, $2\frac{1}{2}$ in. to $3\frac{1}{2}$ in. long. Branches terete, slender. *h.* 10ft. Mexico, 1825.

THEOBROMA (from *theos*, god, and *broma*, food; referring to the well-known produce of the seeds of *T. Cacao*). *SYN.* *Cacao*. *ORD.* *Sterculiaceæ*. A (about half-a-dozen species) of stove trees, inhabiting the warmer parts of America. Flowers rather small; calyx five-cleft or five-parted; petals five, emarginate-concave and contracted into a claw at base, produced above into a spatulate hood; stamens opposite the sepals; peduncles axillary or lateral, one-flowered and fasciated or racemously many-flowered. Fruit often large, drupaceous, with a woody, five-celled stone; seeds enveloped with pulp. Leaves ample, oblong, undivided, penninerved or three to five-nerved at base. To dilate on the immense economic value of the seeds of *T. Cacao* would be beyond the scope of this work. It may be remarked, in passing, that the annual European consumption of Cacao seeds, in the form of chocolate, &c., is estimated at nearly 40,000,000lb., the Spaniards being the largest consumers. *T. Cacao* will thrive under the same treatment as that recommended for **Tiorea**.

T. Cacao. Cacao or Cocoa Plant; Chocolate Nut Tree. *f.* fasciated; calyx rose-coloured, the segments lanceolate, acuminate, exceeding the yellowish corolla. May. *fr.* yellow or reddish, ovoid-oblong, $\frac{1}{2}$ in. to $\frac{3}{4}$ in. long, containing fifty to a hundred seeds. *l.* oblong, acuminate, glabrous, quite entire *h.* 16ft. to 18ft. Trinidad, &c., 1739. (*L. B. C.* 546.)

THEODOLITE. An expensive levelling instrument, used by land surveyors for determining important levels and ascertaining the relative heights of objects widely separated from each other. It is provided with a telescope, mounted so that it can be moved to any angle, and a spirit level and adjusting screws for fixing the instrument in its proper position when in use. If the employment of a Theodolite is requisite in a garden, a surveyor generally supplies the instrument and superintends its management.

THEOPHRASTA (named after Theophrastus, the celebrated Greek botanist, who lived about 370-285 B.C.). *ORD.* *Myrsinææ*. A monotypic genus. The species is a glabrous, stove, evergreen shrub, with robust, erect, nearly simple stems. It thrives in a compost of peat and loam. Cuttings of half-ripened shoots will root in sandy loam, with a surface consisting wholly of sand, if placed in bottom heat, under a bell glass.

T. imperialis (imperial). A synonym of *Chrysophyllum imperiale*.

T. Jussæi (Jussieu's). *f.* white, rather large, numerous in short racemes; calyx of five ovate, erect segments; corolla cylindrical-campanulate, five-lobed at apex, the lobes spreading; stamens five, affixed to the base of the corolla. *f.* sub-terminal, clustered, spreading, very shortly petiole, linear-oblong, spiny-toothed, reticulate-nerved. *h.* 5ft. St. Domingo, 1818. (*B. M.* 4239.)

T. longifolia (long-leaved). A synonym of *Clavija ornata*.

T. macrophylla (large-leaved). A synonym of *Clavija Keiskeiana*.

T. smaragdina (emerald-green). A synonym of *Deherainia smaragdina*.

THERA (Carpenter Moths). A genus of slender-bodied Moths, from 1 in. to 1 $\frac{1}{2}$ in. in spread of front wings, which are grey, with a broad, brown cross-band in the centre. The larvae feed on the leaves of *Coniferae*; but seldom do appreciable harm. See also **Pinus**.

THERESIA. Included under *Fritillaria*.

THERMIA. A synonym of **Thermopsis** (which see).

THERMOMETER. An instrument used for measuring the intensity of heat; one of the most useful and essential in gardens, particularly in glass houses, where the occupants have to be subjected to temperatures regulated to meet their several requirements. An ordinary Thermometer consists of a fine glass tube, with a bulb at one end. In this either some mercury or spirit is placed, and, as it expands or contracts in the tube, the amount of rise or fall in the temperature is indicated. When a Thermometer is made, all air is expelled from the tube and the end is hermetically sealed. The space not filled with the mercury or spirit is thus rendered vacuum, or nearly so, and there is no resistance to the expanding substance when the temperature rises. Every Thermometer tube is provided with a frame of some sort, on which the scale of degrees is marked, to denote the temperature which the expanding or contracting substance indicates. Fahrenheit's scale is in general use in this country; there are two others, known respectively as Reaumur's and the Centigrade; the last-named is generally adopted on the Continent. Fahrenheit's scale fixes the freezing-point at 32 deg., and the point at which water boils at 212 deg. In Reaumur's scale, freezing-point is Zero, and boiling-point 80 deg. In the Centigrade scale, the freezing-point is Zero, as in Reaumur's, but boiling-point is 100 deg. The three are, therefore, quite different to read, because of the spaces on the scales between freezing and boiling-points being differently divided.

There are various kinds of Thermometers in use where meteorological observations are taken; many of these are made in special ways, for special purposes: thus, a Maximum registers the highest, and a Minimum the lowest, temperature which has been experienced since the indicators in either of the instruments were last set;

Thermometer—continued.

a Solar Radiation is specially made for indicating the highest temperature in the sun's rays; and there is also a Minimum, for laying on the grass. In all gardens, a minimum registering Thermometer is most desirable, for ascertaining the lowest degree reached in frosty weather during any given period; it should be suspended in a position with north aspect, where there is a fair exposure. Ordinary Thermometers, if correctly graduated to the scale, are well adapted for all horticultural purposes under glass. There are also special ones made for use in Mushroom-beds, or other places where there is bottom heat.

THERMOPSIS (from *Thermos*, a Lupine, and *opsis*, resemblance; the species are not unlike Lupines). SYN. *Thermia*. ORD. *Leguminosæ*. This genus embraces about a dozen species of hardy, perennial herbs, natives of North America and Asia (Siberia and Himalayas). Flowers yellow or rarely purple, rather large, in terminal or leaf-opposed racemes; calyx teeth or lobes sub-equal, or the two upper ones connate in one; standard sub-orbicular; keel equalling, or slightly longer than, the wings; stamens free; pedicels solitary. Pods sub-sessile or shortly stipitate. Leaves perfectly alternate, digitately trifoliolate; stipules leafy. The following species have been introduced. They are elegant subjects, but rather difficult to preserve. They succeed best in a light, rich soil. Propagation is most safely effected by means of seeds; for when the plants are separated at the roots, they often decline.



FIG. 22. THERMOPSIS MONTANA, showing Habit and detached Flower.

T. barbata (bearded).* *fl.* six to twelve, shortly pedicellate, opposite or ternate; corolla deep purple, lin. long. June. *l.* sessile, sub-glabrescent, often opposite; leaflets oblanceolate; stipules resembling the leaflets both in texture and shape. Stems 1ft. or more high, copiously dichotomously branched. Rootstock woody. Himalayas, 1854. (B. M. 4863.)

T. corgonensis (Corgon). *fl.* yellow, twin on the racemes, nearly sessile; calyx villous. June and July. *l.* sessile or very shortly petiolate; leaflets ovate, acute; stipules constituting with the leaflet a kind of half-whorl. *h.* 1ft. to 2ft. Corgon Alps, 1820.

T. fabacea (Beech-like). A synonym of *T. montana*.

T. lanceolata (lance-shaped). *fl.* yellow, twin or somewhat whorled; calyx cleft to the middle; bracts large; racemes terminal. June and July. *l.* nearly sessile, the lower and the highest ones often simple; leaflets oblong-lanceolate, silky-puberulent on both sides; stipules half the length of the

Thermopsis—continued.

leaflets. *h.* 1ft. Kamschatka, 1779. SYN. *Podalyria lupinoides* (B. M. 1389).

T. montana (mountain).* *fl.* yellow, alternate; racemes terminal. June and July. *l.* petiolate; leaflets broadly oval; stipules broadly ovate, obtuse, shorter than the petioles. *h.* 1ft. to 2ft. North America, 1818. See Fig. 22. (B. M. 3611; B. R. 1272; L. B. C. 1856.) SYN. *T. fabacea*.

T. nepalensis (Nepal). A synonym of *Piptanthus nepalensis*.

THEROLEPTA. A synonym of *Marshallia* (which see).

THEROPOGON (from *theros*, summer, and *gon*, a board; in allusion to the time of flowering and the tuft-like appearance of the plant). ORD. *Liliaceæ*. A monotypic genus. The species is a greenhouse, herbaceous perennial, of tufted habit, with grass-like leaves and the general habit of *Auhericum*, of frequent occurrence in the Himalayas. The most suitable soil for the cultivation of this plant is one composed of sandy loam and leaf mould. Propagation may be effected by seeds, sown on a hotbed, during spring; or by divisions.

T. pallidus (pale).* *fl.*, perianth white, sometimes tinged with red, three to four lines long, the segments broad, imbricated; pedicels solitary; raceme terminal, loose, 2in. to 3in. long, ten to twenty-flowered; scape slender, firm, shorter than the leaves. Spring. *l.* six to eight, nearly 1ft. long, persistent, glabrous, two to three lines broad, distinctly ribbed, green above, glaucous beneath. 1875. (B. M. 6184.)

THESIUM (*Thession* was the old Greek name used by Theophrastus for this or some similar plant; probably derived from *Thoson*, the legendary hero). ORD. *Santalaceæ*. A large genus (over 100 species) of stove, greenhouse, or hardy herbs, natives of temperate and tropical regions: two are found in Brazil; the rest are wholly absent in America. Flowers spicate or racemose, or one to a peduncle, or forming a compound, cymose inflorescence. Leaves alternate, linear, often small, sometimes reduced to minute scales. A few of the species have been introduced, but they are unworthy of cultivation.

THESPESIA (from *thespesios*, divine; *T. populnea* is frequently planted about churches in the tropics). ORD. *Malvaceæ*. A small genus (about half-a-dozen species) of stove trees or tall herbs, found in tropical Asia, the Pacific Islands, and Madagascar. Flowers often yellow, showy; calyx not conspicuously dotted, truncate, rarely five-cleft; ovary five-celled. Leaves entire or angular-lobed. Two species have been introduced; both are trees. They thrive in a compost of loam and peat. Ripened cuttings will root freely in sand or mould, under a hand glass, in heat.

T. grandiflora (large-flowered). *fl.* red, 4in. to 5in. in diameter, on pedicels 4in. long. May. *l.* ovate, rather cordate, slightly acuminate. *h.* 30ft. Porto Rico, 1827. In habit, this species resembles *T. populnea*.

T. populnea (Poplar-like). Mahoe; Portia-nut Oil-plant; Umbrella-tree. *fl.* at first yellow, with a purple central spot, but changing altogether to purple before they die off in the evening; pedicels 1½in. to 2in. long; peduncles equalling the petioles. June. *l.* roundish-cordate, acuminate, five to seven-nerved, covered beneath with dot-like scales. *h.* 40ft. Tropics of Old World, 1770.

T. p. guadalupensis (Guadaloupe). *fl.*, petals narrower than in the type, fringed at base; pedicels 1in. long. Cultivated in Guadaloupe.

THEVETIA (so called after Andr. Thevet, 1502-1590, a French monk, who travelled in Brazil and Guiana). ORD. *Apocynaceæ*. A genus embracing about eight species of glabrous, stove, American shrubs or small trees, extending from Paraguay to Mexico. Flowers yellow, large, in terminal cymes; calyx five-parted, with acute, spreading segments; corolla funnel-shaped, the cylindrical tube abruptly expanded into a campanulate throat, the lobes broad and twisted; stamens inserted at the apex of the tube. Drupe broader than long. Leaves alternate, one-nerved or slenderly penniveined. Three species are known to cultivation. They thrive

Thevetia—*continued*.

in fibrous loam. Propagation may be effected by cuttings, inserted in sand, under a bell glass, in heat.

T. Ahouai (Ahouai). *f.* pale yellow, on thick pedicels; corolla ribbed, with spreading lobes; pedicels thick, as long as the calyx; cymes terminal, contracted, many-flowered. June. *l.* oblong-ovate, acute, acuminate at base, 4in. long, highly glabrous above, sparsely pilose beneath. *h.* 20ft. Brazil, 1739. SYN. *Cerbera Ahouai* (A. B. R. 231; B. M. 737).

T. nerifolia (Oleander-leaved). Exile Oil Plant. *f.* saffron-yellow, about 5in. long; calyx segments about half the length of the cylindrical part of the corolla, which is one-third the length of the cymes sub-terminal, much shorter than the cymes, sometimes one-flowered. June. *l.* linear, glabrous, shining above, 5in. to 6in. long. *h.* 12ft. Tropical America and West Indies, 1735. SYN. *Cerbera Thevetia* (B. M. 2309).

T. Yocotli (Yocotli). *f.* similar to those of *T. nerifolia*, 3in. long; corolla lobes three times the length of the tube; cymes sub-terminal, one to three-flowered. June. *fr.* green, warted, the size of a small apple. *l.* narrow-linear, acuminate at both ends, the margins revolute, glabrous above, slightly pilose beneath. *h.* 8ft. Mexico, 1800.

THIBAUDIA (named in honour of Thiebaut de Herneaud, Secretary of the Linnean Society of Paris, and a botanical writer). ORD. *Vacciniaceæ*. A genus to which only a couple of species are referred by Bentham and Hooker; they are very elegant, stove shrubs, natives of the Andes of New Grenada and Peru. Flowers scarlet, pedicellate, numerous, in axillary racemes; calyx tube continuous with the pedicel, terete, the limb short, obtusely five-lobed or five-toothed; corolla tubular, terete, the limb of five small, sub-erect lobes; stamens ten, as long as the corolla tube; pedicels bracteate at base, and sometimes bracteolate. Leaves alternate, persistent, petiolate or sub-sessile, coriaceous, pinninerved, entire. The species thrive in a compost of turfy loam, peat, and sand. Cuttings will readily root in sand or soil, with or without the protection of a glass. Other species formerly included here will now be found under *Prolesia*, *Psammisia*, *Themistoclesia*, &c.

T. scoribunda (bundle-flowered). *f.* glabrous, on very long pedicels; racemes solitary, nearly 2in. long, with imbricated bracts at base. *l.* oblong-lanceolate, acuminate, reticulate-veined. Branches nearly terete, smooth, greyish. New Grenada.

T. pichinchensis (Pichincha). *f.* seven lines long; calyx furfuraceous-tomentose, the teeth mucronulate; corolla glabrous; racemes shorter than the leaves. *l.* very shortly petiolate, oval-oblong or sub-lanceolate, obtuse and acuminate, rounded at base, 3in. to 4in. long. *h.* 6ft. to 12ft. Pichincha, 1849.

THICK-LEAF. A common name for *Crassula* (which see).

THIEBAUTIA. A synonym of *Bletia* (which see).

THIMBLEBERRY. See *Rubus occidentalis*.

A common term which refers to the work of reducing the number of seedlings of any description when they are too much crowded for the proper development of all. It should be attended to, amongst seedlings, at an early stage, if it is necessary at all, else the whole lot may become drawn, and thereby weakened. Thinning-out also applies to the cutting of shoots or branches—as, for instance, on fruit-trees—and to the reduction in quantity of various other subjects when the space is only available for a portion of the whole.

THISTLE. A common name for the species of *Carduus* and *Cnicus*, and other plants.

THISTLE, BLESSED. See *Silybum Marianum*.

THISTLE, COTTON. See *Onopordon Acanthium*.

THISTLE, GLOBE. See *Echinops*.

THISTLE, GOLDEN. See *Scolymus hispanicus*.

THISTLE, HEDGEHOG. See *Melinocactus*.

THISTLE, HOLY. See *Silybum Marianum*.

THISTLE, MELON. See *Melocactus*.

THISTLE, OUR LADY'S MILK. See *Silybum Marianum*.

THISTLE, SOW. See *Sonchus*.

THLADIANTHA (from *thladias*, compressed, and *anthe*, a flower; owing, it is said, to the plant being first described from a pressed specimen!). ORD. *Cucurbitaceæ*. A genus including three or four species of climbing, greenhouse or hardy herbs, natives of North China, Java, and the Himalayas. Male flowers golden, rather large, solitary or racemose; calyx tube shortly campanulate, the bottom shut by a horizontal scale, the segments five, lanceolate; corolla campanulate, five-parted, the segments revolute about half-way down; filaments five. Female flowers solitary; calyx and corolla as in the males; ovary oblong; style deeply trifid, with three reniform stigmas. Fruit green, oblong, fleshy, many-ribbed. Leaves ovate-cordate, with a deep sinus, denticulate. *T. dubia*, the only species introduced, will thrive in almost any soil, but perhaps succeeds best when planted against a sunny wall.

T. dubia (doubtful).* *f.*, males approximate; calyx teeth very narrow; petals 2in. long; filaments minutely hairy; racemes 2in. to 3in. long, with prominent bracts; female peduncle 2in. to 3in. long, more or less hairy, the ovary densely woolly. *fr.* 1½in. by ¾in., glabrous, obtuse at both ends. *l.* deeply cordate-ovate, acute, undivided, 4in. by 2½in., denticulate, not angular, usually villous beneath; petioles 1in. to 1½in. long. Hardy. India and China, 1864. (B. II. 1872, 6; B. M. 2309) in both these figures, however, the female flower and fruit belong to another species.

THLASPI (probably from *Thlaspis*, the old Greek name for Cress, used by Dioscorides, from *thlas*, to bruise; its seeds being bruised as a condiment). Bastard Cross; Besom Weed; Penny Cress. ORD. *Cruciferae*. A genus comprising from twenty-five to thirty broadly-distributed species of annual or perennial, scapigerous herbs. Flowers white, pink, or pale purple, racemose. Radical leaves rosulate; cauline ones hastate-auriculate. None of the species are worth cultivating. *T. alpestre*, *T. arvense* (Boor's or Mithridate Mustard), and *T. perfoliatum* are British weeds.

THOMASIA (named in memory of Peter and Abraham Thomas, collectors of Swiss plants in the time of Haller). ORD. *Sterculiaceæ*. A genus comprising twenty-five species of very elegant, Australian, greenhouse shrubs, with the habit of *Lasiopetalum*, but with the leaves often lobed or cut. Flowers often tomentose; calyx usually purple, bluish, or white, five-lobed; petals none, or minute and scale-like; stamens five, alternate with the sepals, free or slightly connate at the base; bracts narrow, deciduous; bracteoles under the calyx three; racemes leaf-opposed, simple or rarely cymosely branched. Stipules leafy. The under-mentioned species are well worth cultivating in every collection. They thrive in a compost of loam, peat, and sand. Cuttings of the ripened wood will root freely in sand, under a gla

T. foliosa (leafy). *f.* small, on slender pedicels; petals none; racemes numerous, often branched, slender, hirsute. June. *l.* petiolate, ovate-cordate, deeply sinuate-lobed, rarely above 1in. long, sprinkled with stellate hairs above, more densely hirsute beneath. *h.* 3ft. 1823.

T. glutinosa latifolia (glutinous, broad-leaved). *f.* pink, pretty, disposed in racemes; stamens, as well as a blotch at the base of the petals, dark brownish. Summer. *l.* stalked, cordate, acute, covered with stellate hairs. 1885. An attractive plant. (R. G. 1186.)

T. grandiflora (large-flowered). *f.*, calyx red, spreading to about 1in. in diameter, not divided to the middle; petals none; racemes terminal. June. *l.* mostly ovate-lanceolate or oblong, or the lowest ovate, obtuse, ½in. to 1in. long, entire, cordate or obscurely three-lobed at base, glabrous or sprinkled with a few stellate hairs. *h.* 3ft. 1840.

T. macrocarpa (large-fruited).* *f.*, calyx red, opening to about 1in. in diameter, loosely woolly-hirsute outside; racemes tomentose-hirsute, few-flowered. June. *l.* broadly ovate-cordate,

Thomasia—continued.

obtusè, 1½ in. to 2 in. long, irregularly angular-toothed or shortly lobed, pubescent above when young, at length glabrous, tomentose beneath. A. 3 ft. or more. 1842. (B. M. 4111, under name of *T. stipulacea*.)

f. rather small, on very short pedicels; calyx purple, about ½ in. in diameter; petals small, occasionally wanting; racemes longer than the leaves. June. *l.* oblong or nearly linear, obtusè, ½ in. to 1 in. long, entire, sprinkled with stellate hairs above, more hirsute beneath, or rarely nearly glabrous. A. 2 ft. 1803. SYN. *Lasiopetalum purpureum* (B. M. 1755).

T. quercifolia (Oak-leaved). *f.* rather small; calyx purple, the lobes not reaching the middle, broad and obtusè; petals none; racemes simple. May. *l.* ovate, usually deeply three-lobed, the lateral lobes short, divaricate, and often obtusely three-lobed, the middle one longer, often three-lobed, the whole leaf rarely exceeding 1 in., sprinkled with stellate hairs above, rigidly hirsute beneath. A. 2 ft. 1803. SYN. *Lasiopetalum quercifolium* (A. B. R. 459; B. M. 1486).

T. solanacea (Solanum-like). *f.*, calyx white, more or less tomentose, about ½ in. in diameter, divided to rather below the middle; petals usually wanting; racemes pedunculate, several-flowered, occasionally branched. June. *l.* deeply cordate-ovate, obtusè, mostly 1½ in. to 3 in. long, rather deeply sinuate-lobed, scabrous or hirsute above, softly and densely tomentose or hirsute beneath. A. 3 ft. and upwards. 1803. SYN. *Lasiopetalum solanaceum* (B. M. 1486).

T. stipulacea (prominent-stipuled). A synonym of *T. macrocarpa*.

THOMSONIA (named in honour of Dr. A. T. Thomson, author of "An Introduction to Botany"). SYN. *Pythium*. ORD. *Aroidæ* (*Araceæ*). A genus including only a couple of species of stove, tuberous, perennial herbs, natives of the Himalaya and Khasya Mountains. Flowers monœcious, the males and females closely contiguous; spathe coriaceous, deciduous, oblong, boat-shaped, with an indistinct tube; spadix sessile, nearly equalling the spathe; peduncle elongated. Leaves long-petiole, triplicate; segments pinnatifid; pinnae oblong-lanceolate, acute. For culture,

T. Hookeri (Hooker's). *f.*, female inflorescence rather shorter than the male; peduncle elongated, slender. *l.* seven-pedatisect; segments oblong-lanceolate, acuminate, cuneate-narrowed at the base, distant, gradually becoming smaller; petiole elongated, slender, spotted. Tuber small. A. 2 ft. Churra, 1840.

T. nepalensis (Nepal). *f.*, spathe greenish, oblong-cymbiform, obtusè, coriaceous, thick; spadix green, the perfect male flowers purplish-yellow, the sterile ones yellow. *l.* trisected; middle segment pseudo-dichotomous, the partitions pinnatifid; the segments alternate, oblong-lanceolate, acuminate, cuneate at base, decurrent; nerves of the lateral segments numerous, spreading; petioles reddish below, irregularly spotted and mottled with fuscous-green. Tuber large. A. 2 ft. Nepal, 1816.

THORN. A common name for various species of *Acacia*, *Cratægus*, &c.

THORN. The same as **Spine** (which see).

THORN APPLE. See *Datura Stramonium*.

THORN BROOM. See *Ulex europæus*.

THORN, CHRIST'S. See *Paliurus aculeatus* and *Zisypus Spina-Christi*.

THORN, GARLAND. See *Paliurus aculeatus*.

THORN, GOAT'S. See *Astragalus Tragacantha*.

THORN, JERUSALEM. See *Parkinsonia aculeata*.

THOUINIA (named in honour of André Thouin, 1747-1824, Professor of Agriculture at Paris). SYNS. *Thyana*, *Varyasia*. ORD. *Sapindaceæ*. A genus consisting of about a dozen species of stove, erect or climbing shrubs or trees, inhabiting tropical America. Flowers small or minute, racemose, cymose, or paniculate; calyx five-parted; petals four, five, or absent; stamens eight to ten. Leaves alternate, exstipulate, trifoliate or pinnate, rarely one-foliate. Only one species has been introduced. For culture, see **THEOREA**.

Thouinia—continued.

T. pinnata (pinnate-leaved). *f.* white, disposed in terminal panicles, and having five petals and eight stamens. June. *l.* pinnate; leaflets oblong, slightly emarginate. A. 8 ft. St. Domingo, 1823. Erect.

THOUSAND-LEGS. A common name for **Millipedes** (which see).

THREE BIRDS ORCHIS. See *Pogonia pendula*.

THREE FACES UNDER A HOOD. See *Viola tricolor*.

THRIFT. See *Armeria*.

THRINAX (from *thrinax*, a fan; alluding to the form of the leaves). ORD. *Palmæ*. A genus comprising about ten species of stove, mediocre or dwarf, unarmed Palms; one is a native of Florida, and the rest inhabit the Antilles. Flowers sometimes long and slender, pedicellate; spathe many, papery-coriaceous, out; spadices elongated, the rachis clothed with a tubular sheath, the primary branches alternate, paniculate, the branchlets slender. Fruit small, pea-like. Leaves terminal, orbicular or truncate at base, falcately plicate and multifid; segments induplicate bifid; petioles slender, biconvex. Trunks solitary or tufted, annulated below, above covered with the persistent bases of fallen leaves. The genus includes some very beautiful plants, the best-known of which are here described. They succeed best, when young, in a compost of loam, peat, and sand; they get older, turfy loam and sand is preferable. Propagated by seeds, which, like all Palm seeds, should be obtained when freshly imported, sown in well-drained pots or pans of sandy loam, and plunged in bottom heat.

T. argentea (silvery). Broom Palm; Silver Thatch, &c. *f.*, partial spathe three or four only; spadix 1 ft. long, slightly paniculate. *fr.* small. *l.* shorter than the petioles, silvery-silky beneath; divisions united at the base; ligule concave, somewhat crescent-shaped. Trunk 12 ft. to 15 ft. high, 2 in. to 3 in. thick. West Indies, 1830.

T. barbadosis (Barbados). *f.*, spadix paniculate, 2 ft. long. *fr.* ½ in. in diameter. *l.* green, glabrous, very large, fan-shaped or digitate-multipartite; segments lanceolate, acuminate; petioles covered with a thick felt of small, white scales, and edged with black, hooked, ascending spines. Trunk 12 ft. high. Barbados, 1875.

T. elegans (elegant). A garden synonym of *T. radiata*.

T. excelsa (tall). *f.*, spathe rusty-tomentose; spadix with spreading-recurred branches, its axis 1 ft. long, naked below. *fr.* globose, ½ in. in diameter. *l.* 4 ft. to 5 ft. long, pale green above, hoary-glaucous beneath by minute, appressed down, about fifty-cleft; divisions about 2 ft. long, 1 in. to 3 in. broad, united to about one-third their length. A. 7 ft. and upwards. Jamaica, 1800.

T. gracilis (slender). A garden synonym of *T. radiata*.

T. graminifolia (grass-leaved). A synonym of *T. multiflora*.

T. multiflora (many-flowered). *f.*, primary spathe twelve to fifteen, tubular, obliquely opening, acute, longitudinally nerved; secondary spathe funnel-shaped, compressed at base; spadices erecto-patent. *l.* six to ten, erecto-patent, sub-orbicular, petalately radiate; segments forty or more, united half-way, the middle ones 2 ft. to 3 ft. long, 2 in. broad at base, the free part ensiform, long-acuminate, flat, acutely bifid at apex; sheaths 6 in. to 9 in. long. Caudex 6 ft. to 8 ft. high, 4 in. to 5 in. thick, deeply and irregularly annulate. Haiti. SYN. *T.* (L. H. n. s.)

T. parviflora (small-flowered). *f.*, Palmetto Thatch; Royal Palmetto Palm. *f.*, perianth minute; spadix 2 ft. to 3 ft. long, paniculate. *fr.* dry, rather rough, ½ in. in diameter. *l.* pubescent, glabrate and green beneath, 10 in. to 2 ft. long; divisions united one-sixth to one-quarter their length; ligule deltoid. Trunk 10 ft. to 12 ft. high. Jamaica, 1778.

T. pumilio (dwarf). *l.* digitately multipartite; segments ensiform, acuminate, green on both sides, the middle nerve ferruginous-ramentaceous beneath, the secondary ones six to eight, impressed on both sides; ligule triangular. Trunk short or mediocre. Trinidad, 1830.

T. radiata (rayed). *f.*, spadix 2 ft. to 3 ft. long, paniculate. *l.* green, glabrous or puberulous beneath, 1 ft. to 2 ft. long; divisions united to or beyond one-third their length; ligule broadly rounded, with a short, blunt appendage at the middle. Trunk short. Trinidad, 1838. See Fig. 23, p. 30. SYNS. *T.* and *T. gracilis* (of gardens).

THRINXIA. Included under *Leontodon*.

THRIPS (a Greek word for a moth). The name given to a group of small insects that often do much harm to cultivated plants, by gnawing the surface of flowers and tender twigs and leaves, thus causing withered and distorted spots to appear on them. The genus *Thrips*, along with certain closely-related genera,

-----*s*-----*continued.*
 velopment of the species of *Thrips* are much like the save in colour (which is usually yellow), and the wings being entirely absent from the larvæ, and represented only by short the pupæ. The structure just described renders the order intermediate between *Orthoptera* (to which Grass-



FIG. 23. *THRINAX RADIATA* (see page 29).

ranked in a family known as the *Thysanoptera* (from fringed, and *ptera*, wings), or as *Physopoda* (from *physis*, a bladder, and *poda*, feet). Both names allude to characteristic features in the structure of the fully-developed insects. Thrips are very common in flowers, crawling about the interior of the corolla tube, and over the stamens, or living upon or in the fruits, or on the lower surface of the leaves. They feed upon the more delicate parts of the plants, causing them to become withered and blighted. The mature insects are very small, and are black or dark-coloured. They are long and narrow, and are furnished with four straight, narrow wings, which are fringed with long hairs, and have few, if any, veins (see Fig. 24). They have three pairs of legs, on which the last joints end in a bladder-like swelling without claws. The mouth is provided with parts suited for piercing delicate tissues of plants, and for sucking their juices. The earlier stages in the de-

hoppers, Locusts, &c., belong) and *Hemiptera*. See **Insects.**



FIG. 24. *THRIPS* (magnified).

Many species have been described, so much alike as to render it very hard to distinguish them from each

Thrips—continued.

other; but gardeners do not require to spend time in determining their identity, as the habits of all are much alike, and the treatment is similar for all. The genera are distinguished chiefly by the presence or absence of veins in the wings, the hairy coating on the body, and differences of minor importance. One of the most hurtful kinds is *Heliothrips hamorrhoidalis* (? *H. Adonidum*, Hal.), which injures plants in hothouses, as well as in winter gardens. The leaves become paler in colour, or turn black, and fall off. The young twigs also are frequently attacked and killed. This species is dark brown, with the tip of the body red-brown, and the eyes and limbs pale yellow. It is only about $\frac{1}{16}$ in. long.

Remedies. Smoking the plants with tobacco, as for Aphides, or with insect-powder, washing them with infusion of tobacco, dipping them in soapy water, and keeping them for a time in the open air in summer, are methods that have been tried with success. There are no good remedies against the species of *Thrips* that feed on plants cultivated in the open air; but, fortunately, their attacks are seldom very hurtful to hardy plants. Choice subjects may be freed from their attacks by drawing the leaves between the finger and thumb, with sufficient pressure to crush the soft larvæ, but not to injure the leaves.

T. Phylloxera has been observed, in the United States of America, depositing eggs in the galls of *Phylloxera vastatrix* (see **Grape or Vine Louse**). The larvæ hatched from these eggs destroy multitudes of the *Phylloxera*.

THRIXSPERMUM. A synonym of **Sarcochilus** (which see).

THROAT. The orifice of a gamopetalous flower.

THROAT-ROOT. See **Campanula Cervicaria**.

THROATWORT. See **Trachelium**. The name is also applied to *Campanula Cervicaria* and *Digitalis purpurea*.

THRUST-HOE. Another name for the Dutch Hoe, a tool which the workman pushes from him when using

FIG. 25. THRUST-HOE.

it (see Fig. 25). It is well adapted for light work on a fairly even surface, and for hoeing flower-beds, &c., when it is necessary to loosen the surface, while standing upon the adjoining walk, instead of on the soil. See **Hoes and Hoeing**.

THRYALLIS (the old Greek name used by Theophrastus for *Verbascum*; it means a wick, and was appropriate enough to the original plant, but not to the present). ORD. *Malpighiaceæ*. A small genus (three species) of stove, climbing, stellately hoary-pubescent, Brazilian shrubs. Flowers yellow; calyx five-parted, without glands; petals shortly clawed, glabrous, the limb fringed; stamens ten, all perfect; pedicels bibracteolate, articulated above the base; corymbs paniculate, axillary and terminal, effuse. Leaves opposite, entire, glabrous above, whitish beneath; petioles biglandular; stipules inconspicuous. Only one species is known in gardens. It thrives in a compost of loam and peat. Ripened cuttings will root in sand, under a hand glass, in heat.

T. brachystachys (short-spiked). *f.* disposed in short, paniculate racemes. August. *l.* ovate-lanceolate, glaucous-green above, white beneath. 1823. (B. R. 1162.)

THRYPTOMENE (from *thrypto*, to break or crush; in allusion to the humble, Heath-like aspect of the plant). ORD. *Myrtaceæ*. A genus comprising seventeen species

Thryptomene—continued.

of greenhouse, Heath-like, glabrous, Australian shrubs. Flowers small, axillary, solitary or rarely in twos or threes; calyx five-lobed, persistent; petals five, persistent, usually connivent over the stamens; stamens five or ten. Leaves opposite, small, entire. The only species introduced was formerly included under **Backea** (which see for culture).

T. saxicola (rock-loving). *f.* white, on slender pedicels $\frac{1}{2}$ in. long, in the upper axils. July. *l.* obovate-oblong, flat, obtuse or slightly acute, $\frac{1}{2}$ in. long, the midrib scarcely conspicuous. *f.* 3ft. to 4ft. (rarely diffuse or prostrate?). 1824. SYN. *Backea saxicola* (B. M. 3160).

THUJA. See **Thuja**.

THUNBERGIA (named after of C. P. Thunberg, 1743-1822, a traveller in Batavia and Japan, and afterwards Professor at Upsala). Including *Hexacentris* and *Meyenia* (of Nees). ORD. *Acanthaceæ*. A genus embracing nearly thirty species of beautiful, stove, twining or dwarf and sub-erect, annual or perennial herbs, inhabiting South and tropical Africa, Madagascar, and the warmer parts of Asia. Flowers purple, blue, yellow, or white, shortly pedicellate, solitary in the axils, or disposed in terminal racemes; calyx annular, short, truncate or ten to fifteen-toothed; corolla conspicuous, the tube ventricose,



FIG. 26. THUNBERGIA ALATA, showing Habit and Portion of Flowering Branch.

curved, the limb oblique, of five rounded lobes, twisted to the left in bud; stamens four, didynamous near the base of the corolla tube; disk cushion-shaped or annular; bracts at the base of the pedicels leaf-like; bracteoles large, the margins coherent, at least when young. Capsule thickly coriaceous, suddenly narrowed into a sword-shaped beak. Leaves opposite, ovate, lanceolate, cordate, or hastate. The best-known species are here described; all are perennial, except where otherwise stated. Nearly all flower during the summer months, but some of the woody ones blossom in spring or late winter. The plants are of easy culture in any moderately good soil, but thrive best in a rich compost of fibrous loam and sand, to which may be added a small quantity of well-decayed manure. If the plants are grown in a brisk, moist, stove temperature, and the pots well drained, success is assured. Attention must be directed to pruning unsightly or bare shoots, before growth commences in spring, or else the plants will become straggling. Propagated by seeds, and also by cuttings of moderately firm young wood, placed in a propagating frame, with a temperature of from 65deg. to 70deg. *T. alata* and its varieties succeed under warm greenhouse treatment, and may readily be raised from

continued.

... pots, in March or April. When large enough to pot off, the seedlings may be placed singly in other pots or in baskets, when they will soon grow into flowering specimens. A rather rich soil—loam and leaf mould or decayed manure, in the proportion of one part of the latter to two of the former—will suit admirably. In the young stages of growth, the plants should be subjected to stove treatment. When in flower, these *Thunbergias* are admirably adapted for edging groups, of plants along with other dwarf-growing subjects.

T. alata (winged).* *f.*, calyx twelve-cleft above the middle; corolla yellow, purple below, 1½ in. long, the tube curved, the limb campanulate; stigma funnel-shaped, entire, ciliated. *l.* cordate-sagittate, acute, repand, with a rather broad sinus, the lobes diverging, acute or mucronate; petioles winged. South Africa, 1823. A softly silky-villose, caespitose annual twiner. See Fig. 26. (B. M. 2591; H. E. F. 17.) There are few varieties, of which the principal are: *alba* (B. M. 3512; P. M. B. ii. 2 and iii. 28; S. B. F. (t. ser. ii. 392), with white, and *aurantiaca* (L. B. C. 1045; H. E. F. 177; B. v. 238), with deep yellow, flowers.

T. a. Doddsii (Dodds). *f.* yellowish-orange, with an eye of rich purplish-violet, large. *l.* irregularly holed with white. (F. d. S. 415.)

T. angulata (angular). *f.*, calyx twelve-parted; corolla pale blue with a yellow throat, 1 in. long, the tube very short, the limb campanulate-infundibuliform, the segments rounded; bracteoles ovate, acuminate. *l.* on long petioles, cordate-sagittate, 1½ in. long, 3 in. broad, with a deep sinus; segments truncate, slightly mucronate, long-acuminate. Madagascar, 1823. A scabrous-pubescent climber. (H. E. F. 166 and 177, f. 3; L. B. C. 1044.)

T. capensis (Cape). *f.* yellow; calyx limb many-toothed; corolla tubular-campanulate. *l.* nearly round, slightly toothed, obtuse, very shortly petiolate, and, as well as the procumbent stems, hairy. Cape of Good Hope, 1824. Annual. (L. B. C. 1529.)

T. chrysops (golden-eyed). *f.*, calyx slightly fleshy, truncate; corolla campanulate-infundibuliform, the tube yellow, much contracted at base, expanded above, the limb of a beautiful purple, with a blue ring; peduncles axillary, solitary, shorter than the petioles, one-flowered. *l.* cordate-angular, rather obtuse with a mucrone, slightly pubescent-scarious. Stem slender, puberulous. *h.* 3ft. Sierra Leone. Annual. (B. M. 4119; F. d. S. i. 5; P. M. B. 221.)

T. coccinea (scarlet).* *f.*, calyx a minute rim; corolla varying from red to orange-rose, 1 in. long, the lobes ½ in. round; racemes 6 in. to 18 in. long, loose, pendent; bracts and bracteoles ½ in. to 1 in. long. Spring. *l.* ½ in. to 8 in. long, the lower ones ovate, the upper ones oblong, obtuse, cordate or angular at the base, acuminate, toothed; petioles ½ in. to 2 in. long, or wanting in the uppermost leaves. Pendent branches often 10ft. to 25ft. long. India, &c. 1823. A large, nearly glabrous climber. (B. M. 6124; F. d. S. 2447; H. E. F. 186; L. B. C. 1186.)

T. erecta (erect).* *f.* axillary, solitary; corolla dark blue, with a rich orange throat and pale yellow tube, four times the length of the bracts. July. *l.* opposite, ovate or oblong, smooth, dark green. *h.* 6ft. West Africa, 1857. A very continuous blossomer, producing flowers nearly throughout the whole year. SYN. *Meyenia erecta* (B. H. vii. 18; B. M. 5013; F. d. S. 1093; L. H. iii. 99; H. H. 1863, 251). The variety known as *alba* has white flowers with a yellow tube, but in other respects resembles the type.

T. fragrans (fragrant).* *f.*, calyx ½ in. long, twelve to sixteen-toothed; corolla pure white, fragrant, 1½ in. long; pedicels 1 in. to 3 in. long, one or rarely two in each axil; bracteoles 2 in. long, broadly falcate-oblong. *l.* ovate or oblong, acute or obtuse, cordate or hastate at base, toothed, glabrous when mature, 2 in. to 3 in. long; petioles ½ in. to 1 in. long. Stem slender, climbing, retrorsely hairy or glabrate. India, &c., 1796. (A. B. R. 125; F. M. 325 L. B. C. 1913.)

T. f. levis (smooth). *f.*, corolla not fragrant, the tube often greenish; pedicels often two in each axil, much thickened upwards in fruit. Plant glabrous or grey-puberulous. B. M. 1881, under name of *T. fragrans*.)

T. grandiflora (large-flowered). *f.*, calyx nearly entire; corolla blue, 2 in. to 3 in. long and broad; pedicels ½ in. to 3 in. long, opposite or fasciated; racemes usually stout, rarely slender and

... often angularly lobed, pubescent, rarely 1 in. long. India, &c., 1820. A large climber. (B. M. 2366; B. R. 495; L. B. C. 324; P. M. B. vii. 221.)

T. Harrisii (Harris). A synonym of *T. laurifolia*.

T. Hawtayneana (Hawtayne's). *f.* axillary; calyx a mere ring; corolla violet-purple, with a yellowish tube, 1½ in. long, nearly glabrous; pedicels short, solitary, with a tuft of hairs at their base; bracteoles ½ in. to 1 in. long, ovate-oblong. *l.* sessile, cordate-elliptic or cordate-ovate, acute, entire, 3 in. long, 1½ in. broad. Stem slender. India, &c., 1839. A handsome, nearly glabrous

ubergeria—continued.

climber. SYN. *Meyenia Hawtayneana* (B. iv. 188; P. M. B. vi. 147).

T. Kirkii (Kirk's). *f.* in short, two-flowered cymes; corolla 1½ in. long, the lobes violet-blue, spreading, but not horizontally, broadly obovate, retuse. September. *l.* 1½ in. to 3 in. long, shortly petiolate, lanceolate, sub-acute or obtuse, entire or with each side dilated into an obtuse lobe. *h.* 2ft. to 3ft. Eastern Tropical Africa, 1876. Shrub. (B. M. 6677.)



FIG. 27. FLOWERING BRANCH OF THUNBERGIA LAURIFOLIA.

T. laurifolia (Laurel-leaved).* *f.* as in *T. grandiflora* (which this species closely resembles). *l.* elliptic or oblong, acuminate, sinuate or denticulate, palmately three-nerved. India, &c., 1856. Plant glabrous, or the new parts puberulous. Perennial. A tall climber. See Fig. 27. (B. M. 4985; L. H. 1857, 151; R. G. xiv. 475.) SYN. *T. Harrisii* (B. M. 4986; F. d. S. 1275; R. G. ix. 281).

T. mysorensis (Mysore). *f.*, corolla 1½ in. long, the mouth 2 in. in diameter, the tube purplish, the limb yellow (in cultivation, sometimes with a red border, as in L. & P. F. G. iii. 88); pedicels ½ in. to 1½ in. long; racemes elongated, pendent; bracteoles 1 in.

Thunbergia—continued.

long, falcate-elliptic, often coherent on one side, purplish-green. Spring. *l.* elliptic, acuminate, toothed, cuneate or rounded at base, 6in. long, palmately three-nerved. Branches pendent. Mysore, 1854. An extensive climber. SYN. *Hexacentris mysorensis* (B. M. 4786; F. d. S. 752, 942; L. J. F. iii. 285; R. G. 280).

T. natalensis (Natal). *l.* horizontally drooping, large, handsome; corolla tube yellow, 2in. long, curved upwards; limb blue, large, the lobes obovate, horizontally spreading; peduncles axillary, solitary, erect, single-flowered. July. *l.* opposite, the pairs rather approximate, sessile, ovate, acute or sub-acuminate, sinuate-serrate, glabrous above, hairy on the midrib and veins beneath. Stem erect, 2ft. or more high, shrubby below. Natal, 1857. (B. M. 5082.)

T. Vogeliana (Vogel's). *l.* deep bluish-violet, with a yellow throat, about as large as those of *T. erecta*, but of greater substance. Summer. *l.* large, ovate or oblong, narrowed or rounded at base, dark green. Fernando Po, 1865. A handsome, erect-growing species. SYN. *Meyenia Vogeliana* (B. M. 5389).

THUNIA. Included under **Phaius** (which see).

THUYA (from *Thuis*, the old Greek name used by Theophrastus). Arbor-Vitæ. Sometimes spelt *Thuja*. Including *Biota*. *Chamaecyparis* is included, by Bentham and Hooker, under *Thuja*, but for garden purposes it is kept distinct in this work. ORD. *Coniferae*. A genus comprising about a dozen species of hardy, evergreen trees or shrubs, natives of North America and extra-tropical Eastern Asia. Flowers monœcious; males terminal, solitary; female catkins ovoid or oblong, rarely globose. Leaves small, opposite, scale-like, appressed, quadrifurciously imbricated, all sub-equal, or those on the flattened branchlets deeply keeled. Cones ovoid or oblong, rarely globose; mature ones rarely exceeding ½in. in length. The species are readily raised from seeds, sown in spring, under glass, and the seedlings afterwards hardened off and planted out in the open ground. Cuttings, too, of half-ripened shoots, are easily struck; these may be put in heat, under bell glasses, or kept in a cool, shaded frame. About the middle of August is perhaps the best time for propagating without heat. Some of the variegated and other dwarf-growing forms are frequently grafted on seedling stocks of the common types.

T. acuta (acute). A synonym of *T. orientalis*.

T. Doniana (Don's). A synonym of *Libocedrus Doniana*.

T. gigantea (gigantic).* White Cedar. *l.* in alternate, opposite pairs, closely imbricated; those on the branches more distant, decurrent, acute; those on the branchlets very flat, closely placed, irregularly imbricated in four rows, much shorter, more rounded, spiny-pointed. *cones* small, oval, tapering to both ends, nodding, solitary at the extremities of the smaller branchlets. Branches spreading, irregularly scattered; branchlets flattened, short, slender, flexible, undivided. *h.* 50ft. to 150ft. North-west America. A fine, graceful tree. See Fig. 28.

T. g. atrovirens (dark green). Branches spreading; branchlets open, broad, and flat. A fine, robust, very dark glossy-green variety.

T. g. erecta (erect). A much closer and more upright-growing kind than the type.

T. g. pumila (dwarf). A distinct variety, more diffuse in habit than the type, and much smaller in all its parts; the branchlets are also much closer-set, and of a brighter green.

T. g. variegata (variegated). A handsome, variegated variety, with a considerable portion of the branchlets pale yellow, distributed irregularly all over the plant.

T. gigantea (gigantic), of Carrière. A synonym of *Libocedrus decurrens*.

T. luteovirens (pleasing green). A synonym of *Thuyopsis dolabrata luteovirens*.

T. occidentalis (Western).* American Arbor-Vitæ; White Cedar. *l.* very small, in opposite pairs, ovate-rhomboid, blunt-pointed, closely imbricated and flattened, thickly pressed along the branchlets in four rows; those on the older branches more distant, acute, decurrent, dull yellowish-green. *cones* obovate, ½in. long, on short footstalks. Branches distant, horizontal, irregularly scattered along the stem; branchlets laterally spreading. *h.* 40ft. to 50ft. North America, 1596. A large bush or tree. Gordon, in "The Pinetum," enumerates the following varieties:

T. o. alba (white). Tips of the young branchlets silvery-white during spring and early summer.

T. o. argentea (silvery). Some of the branchlets in this variety are silvery-white.

Thuja—continued.

T. o. aurea (golden). A nice, golden, self-coloured variety, of American origin.

T. o. compacta (compact). Bagshot Park Arbor-Vitæ. A conical-shaped and very compact variety.

T. o. cristata (crested). Branchlets small, deep green, closely arranged, spreading, frequently recurved, cockscomb-shaped towards the ends of the branches.

T. o. densa (dense). *l.* regularly imbricated, ovate, compressed, glossy-green, quadrifurcious. Branches short, stout, compact; branchlets horizontal, flat, fan-shaped, of a rich, glossy colour.

T. o. Elwangeriana (Elwanger's).* *l.* dimorphous, scale-like, and closely imbricated in four rows, or linear, acute, and spreading. Branches sub-erect; branchlets slender. A dwarf-growing, dense bush.



FIG. 28. THUYA GIGANTEA.

T. o. globosa (globular). A dwarf, dense, globular bush, resembling the type except in size.

T. o. gracilis (slender). Branches long and slender, regularly on all sides; branchlets open, rather thinly placed, furnished with rather long, slender, bright green laterals. A distinct variety.

T. o. Hoveyi (Hovey's). *l.* ovate, bright green, closely imbricated. Branches numerous, flat. Spray strap-shaped. A round, compact bush.

T. o. pendula (pendulous). Principal branches along the main stem in a reverted position; branchlets more densely clustered or

Thuja—continued.

tufted towards the ends of the branches, and in a more declining position, than in the type.

T. o. variegata (variegated). Some of the branchlets in this variety are pale yellow.

T. o. Vervaeana (Vervae's).^{*} Belgian Vitis. A pretty, gold-tinted variety, with very slender

T. o. walthamensis (Waltham Cross). A very fine, densely pyramidal bush, from 6ft. to 8ft. in height.



FIG. 29. BRANCHLET, WITH YOUNG CONES, OF THUYA ORIENTALIS.

T. orientalis (Eastern).^{*} Chinese Arbor-Vitæ. *l.* on the adult plant very small, in four rows, ovate-rhomboid, acute, imbricated, adpressed, decurrent, the outer or marginal one lapping over on both sides. *cones* ovate-elliptic, solitary at the ends of the small branchlets, $\frac{1}{2}$ in. long, composed of six scales. Branches at first somewhat vertical and horizontal, finally fastigiata, branchlets two-rowed, densely crowded along the extremities of the branches. *h.* 18ft. to 20ft. China and Japan, 1860. A low tree or pyramidal



FIG. 30. BRANCHLET, WITH ADULT CONE, OF THUYA ORIENTALIS.

mentions the following varieties, but regards *pendula* as a species: **T. o. argentea** (silvery). This only differs from *variegata* in the white colour of a portion of its branchlets.

T. o. ascotensis (Ascot). A very nice, variegated form; a good portion of the upright branchlets are bright golden.

T. o. athrotaxoides (Athrotaxis-like). A dwarf, dense bush, with curiously-contorted branchlets.

T. o. aurea (golden). Branches short, slender, assuming during winter and spring a golden-yellow colour. A very neat, dwarf, dense bush, seldom exceeding 4ft. in height.

T. o. elegantissima (very elegant).^{*} Tips of the young shoots golden-yellow during summer and autumn. The best of the golden-tinted varieties.

T. o. falcata (sickle-shaped). *cones* large. A very upright and pyramidal form, admirably suited for forming edges, to which purpose it is put by the Japanese.

Thuja—continued.

funiculata (rope-like). *l.* small, open, acute. Branchlets slender, little-divided, bright green, thinly furnished with leaves. Said to be a hybrid between the type and *T. o.*

T. o. glauca (glaucous). *l.* (as well as the branchlets) covered

the type in being much more slender, and in having much smaller and more acute leaves. Nepal.

T. o. macrocarpa (large-fruited). Branches drooping, slender; branchlets rather distant, alternate, flattened, regularly furnished laterally with small, bright green spray. A dwarf, loose-growing form, supposed to bear somewhat larger cones than the type.

T. o. monstrosa (monstrous). *l.* thickened, ovate, obtuse, rarely acute. Branchlets few, short, gross, much contorted, often four-sided.

T. o. pekinensis (Pekin). *l.* very small, the marginal ones lapping over on both sides. *cones* small, globular, $\frac{1}{4}$ in. in diameter, mostly consisting of eight scales. Branches rather long and somewhat spreading; branchlets slender. *h.* 50ft. to 60ft. Pekin, 1861. A splendid tree.

T. o. pendula (pendulous). Weeping Arbor-Vitæ. *l.* in opposite pairs, very small, rather distant, scale-like or ovate-lanceolate, loosely imbricated. *cones* globose or ovate-oblong. Branches spreading, slender, very long, recurved; branchlets thread-like, sometimes forked, loosely drooping. *h.* 10ft. to 15ft. Japan. SYN. *Biota pendula*.

T. o. pyramidalis (pyramidal). A fine variety, with a tall, narrow, fastigate head; the leaves and branches are more robust than in the type. *h.* 20ft. to 30ft.

T. o. semper-aurea (always golden). This desirable form resembles *T. o. aurea*, but retains its golden hue throughout the year.

T. o. triangularis (triangular). Branchlets arranged in a triangular manner, not flat or fan-shaped, as is usually the case.

T. o. variegata (variegated). A very beautiful variety, branchlets being bright golden and green, equally intermixed all over the plant.

T. o. Zuccariniana (Zuccarini's). A nice, compact, dwarf variety, globular in form, and bright green, which colour it retains throughout the winter.

T. plicata (folded). *l.* on adult plants ovate, blunt-pointed, regularly imbricated in four rows, quite flat, smooth, bright green above, dull glaucous-green beneath; those on the young plants very much pointed. *cones* small, solitary, nodding, scattered, ovate-oblong. Branches horizontal, rather short, spreading, scattered; branchlets long, straight, ilpearg, regularly pointed. *h.* 20ft. Nootka Sound, 1796. Tree.

T. p. minima (smallest). A compact, miniature variety. Its annual growth does not exceed $\frac{1}{2}$ in.

T. p. variegata (variegated). This differs from the type in having a portion of its leaves and lesser spray of a pale yellow, intermixed all over the plant in a variegated manner.

T. Standishi (Standish's). *l.* ovate, blunt-pointed, in opposite pairs, closely imbricated in four rows along the branchlets, deep glossy-green above, dull glaucous-white below. *cones* small, composed of valvate scales. Branches scattered, distantly placed, spreading; branchlets and smaller spray flat, alternate, two-edged, quite straight. Japan, 1861. Tree.

T. tatarica (Tartarian). *l.* in opposite, alternate pairs, closely imbricated in four rows, bluntly oval, somewhat flattened. *cones* similar to those of *T. occidentalis*. Branches thickly set, somewhat horizontal, rather flat, dense, compact, fan-shaped, thickly placed in two horizontal rows along the lesser spray. *h.* 8ft. to 10ft. A dense, conical bush, of garden origin. SYN. *T. Wareana*.

T. tetragona (tetragonal). A synonym of *Libocedrus*.

T. Wareana (Ware's). A synonym of *T. tatarica*.

THUYOPSIS (from *Thuja*, and *opsis*, resemblance; referring to the affinity of the genus). ORD. *Coniferae*. A monotypic genus. The species—a tall, hardy, evergreen tree—is included, by the authors of the "Genera Plantarum," under *Thuja* (which see for culture).

T. dolabrata (hatchet-leaved).^{*} *l.* in four rows, scale-like, decussate, broad, thick, ovate, rounded at the points, imbricated, furrowed along the middle, deep shining-green above, silvery-white beneath. *cones* small, ovate, sessile, squarrose, consisting of eight to ten woody scales. Branches vertical, open, pendulous at the ends; branchlets two-edged, very numerous, alternate. *h.* 40ft. to 50ft. Japan. Tree. See Fig. 31.

T. d. laetevirens (pleasing green). *l.* (as well as the branchlets) light shining green, very small. A very neat, erect, dense

Thuyopsis—continued.

bush, seldom exceeding from 4ft. to 5ft. in height. *SYN. Thuya latifolia.*

T. d. variegata (variegated). This form has a portion of its lesser spray and leaves of a pale yellow colour.

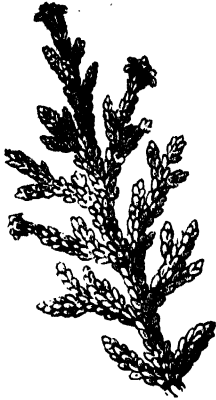


FIG. 31. BRANCHLET, WITH YOUNG CONES, OF THUYOPSIS DOLABRATA.

THYANA. A synonym of **Thouinia** (which see).

THYLACANTHA. A synonym of **Angelonia** (which see).

THYLACOPTERIS. Included under *Polypodium*.

THYMBRA (the old Greek name used by Dioscorides for Savory). *ORD. Labiatae.* A monotypic genus. The species is a hardy, suffruticose, rockwork plant, with the habit of *Thymus*. It thrives in sandy, gravelly loam, and requires the protection of a pit in winter. It may be multiplied by seeds, sown in April; or by cuttings, inserted under a handlight, in June.

T. spicata (spike-flowered). *f.* pale purple; corolla tube exserted; whorls six to ten-flowered, in a short, dense spike or clustered head; bracts ovate or lanceolate, often coloured. June and July. *l.* linear, entire; those of the sterile branches small, obtuse, sub-decussate; those of the fertile ones nearly lin. long, acute. Branches ascending, 6in. to 12in. long, scarcely pubescent. Mediterranean region, 1699. (*S. F. G.* 546.)

THYME (*Thymus*). There are two species of *Thymus* cultivated in gardens, namely Common Thyme (*T. vulgaris*) and Lemon Thyme (*T. Serpyllum vulgaris*), for the leaves and tops, which are in constant demand for culinary purposes, the aromatic flavour being generally liked. Thyme is often used as an edging for some part of the kitchen garden, a purpose for which it is admirably adapted until the plants are about three or four years old, when they require to be replaced. Propagation is easily effected by seeds, sown in April, either on a warm border, with a view to transplanting afterwards, or in drills where the plants are intended to form an edging. In either case, a space of 4in. or 6in. should be allowed between every two plants. Division is also a ready method of propagation; it should be done in March or April. The branches will also root readily into the ground, and form plants, if they are covered with a little soil; this is the best way of increasing a stock of Lemon Thyme. A light, rather dry soil, and warm situation, is most preferable for Thyme plants. A stock of branches should be cut when the plants are coming into flower, and suspended in a cool place for using in a dry state.

THYME, BASIL. See **Calamintha Acinos**.

THYME, CAT. A common name for *Teucrium Marum* and *T. Polium*.

THYMELEA (from *Thymos*, Thyme, and *Elaiā*, the Olive; in allusion to the Thyme-like foliage and the small, Olive-like fruit). *ORD. Thymelæaceæ.* A genus

Thymelæa—continued.

comprising about a score species of hardy or half-hardy, perennial or rarely annual herbs, sub-shrubs, or small shrubs, mostly inhabiting the Eastern Mediterranean region, but extending as far as the Canary Islands and Persia, a few being also found in Central Asia and Europe. Flowers small, sessile in the axils, fasciated or solitary, hermaphrodite or by abortion polygamous; perianth urocelate or rarely (especially in the male flowers) with a slender, cylindrical tube, the lobes four, spreading; stamens eight, on very short filaments; bracts small. Leaves scattered, often small or narrow. The two best-known species are here described. Both thrive in a compost of equal parts loam and peat. Propagation may be effected by cuttings. Matured shoots or side growths should be selected, in autumn, inserted thinly in well-drained pots of peaty soil, and covered with a bell glass. If kept in a cool house in winter, they will callus, and may, early in spring, be introduced to gentle heat, to encourage growth and the emission of roots. The young plants may then be potted singly, and grown on in a close, but not high, temperature, and afterwards hardened and kept quite cool during the following autumn and winter, in order to thoroughly ripen the wood.

T. hirsuta (hairy). *f.* white; fascicles axillary or terminal, few-flowered, equalling the leaves. July. *l.* coriaceous, ovate, nearly round, or oblong, obtuse, nerveless, two to three lines long, glabrous above, white-tomentose beneath. Stems 1ft. to 2ft. long, slender, fastigiate-branched. Mediterranean region, 1759. A decumbent, greenhouse or half-hardy shrub. *SYN. Passerina hirsuta* (*B. M.* 1949; *S. F. G.* 350).

T. Tartonraira (Tartonraira). *f.* white, copious, two to five glomerate in the upper axils; bracteoles whitish. June. *l.* coriaceous, obovate or obovate-oblong, nerved, imbricated, five to ten lines long. Branches copious, divaricate, rigid. South Europe, &c., 1640. A small, hardy shrub, wholly silky-canescent, whitish or fulvescent. *SYNS. Daphne Tartonraira, Passerina Tartonraira* (*S. F. G.* 354).

THYMELEACEÆ. A natural order of trees or shrubs, very rarely slender, annual herbs, broadly dispersed. Flowers hermaphrodite, or by abortion polygamous or dioecious, regular, capitate or shortly racemose or spicate, rarely solitary; perianth inferior, petaloid or rarely herbaceous; lobes or segments four or five, imbricated in aestivation, simple, or the two inner ones rarely rather smaller; scales equalling, or often twice or rarely thrice as many as, the lobes; stamens as many, or twice as many, as the lobes; filaments filiform, short; hypogynous disk annular, cup-shaped; ovary sessile or shortly stipitate; bracts variable. Fruit nearly always indehiscent, a nut, berry, or drupe. Leaves opposite, or often alternate or scattered, entire, sometimes numerous and small, sometimes ample; stipules absent. The order includes about thirty-eight genera and 360 species. Examples: *Daphne, Gnidiā, Lagetta, Phaleria, Pimelea.*

THYME, WATER. See **Elodea**.

THYMUS (from *Thymos*, the old Greek name used by Theophrastus for this plant or for Savory). *Thyme*. *ORD. Labiatae.* A genus of mostly hardy, small shrubs or under-shrubs, inhabiting Northern temperate regions, but mostly found in the neighbourhood of the Mediterranean. The number of species is variously estimated by different authors as between forty and eighty. (Calyx ovoid, ten to thirteen-nerved, bilabiate, the upper lip three-toothed, the lower bifid; corolla tube naked within, the limb obscurely bilabiate, the upper lip straight and notched, the lower one trifid; stamens four, usually exserted; whorls often few-flowered, distant and axillary or spicate. Leaves small, entire; floral ones conformed, or changed to bracts on the spikes. The species are not possessed of much beauty. They are of simple culture in ordinary soil. Increased by divisions, by slips, by cuttings, or by seeds, sown in March or April. Other species formerly included here will be found under **Calamintha**.)

Thymus—continued.

- T. Chamaedrys** (Chama-dry). *f.* light purple, sub-capitate, generally with several separate whorls beneath the terminal head. Summer and autumn. *l.* oval, elliptic-oval, or oblong-elliptical, generally rather abruptly contracted into the petiole. Stems wiry, ascending, slightly branched. Europe (Britain), &c. (Sy. En. B. 1044.)
- T. C. lanuginosus** (woolly). A pretty form in which the leaves and young shoots are clothed with long, woolly hairs.
- T. C. montanus** (mountain-loving). *l.* larger than in the species. Branchlets longer and more erect. (B. M. 2666, under name of *T. nummularius*.)
- T. citriodorus** (Lemon-scented). A synonym of *T. Serpyllum vulgare*.
- T. nummularius** (Moneywort-like). A synonym of *T. Chamaedrys montanus*.
- T. Serpyllum** (Serpyllum). Brotherwort; Wild Thyme. *f.* rose-purple, $\frac{1}{2}$ in. to $\frac{3}{4}$ in. long, on very short pedicels; whorls capitate; bracts leafy. June to August. *l.* green, flat, quite entire, $\frac{1}{2}$ in. to $\frac{3}{4}$ in. long. Stems decumbent. Rootstock woody. Europe (Britain), &c. (Sy. En. B. 1043.)
- T. S. vulgaris** (common). Lemon Thyme. *l.* smaller, with very prominent veins. This is sometimes called *T. citriodorus*. See also **Thyme**.
- T. striatus** (striated). *f.* calyx teeth thick, pungent; whorls closely approximating in an oblong head. *l.* sub-sessile, linear, rigid, narrowed at base, glabrous, ciliated; floral ones broadly cordate-ovate, striated, pubescent. Floriferous branches ascending. Greece. Half-hardy, procumbent shrub. SYN. *T. Zygis* (S. P. G. 574).
- T. vulgaris** (common). Garden Thyme. *f.* resembling those of *T. Serpyllum*, but often smaller. June. *l.* sessile, $\frac{1}{2}$ in. to $\frac{3}{4}$ in. long, linear, or ovate-lanceolate, acute, the margins revolute. *h.* 6 in. South Europe, 1543. (B. M. Pl. 205.) For culture, &c., see **Thyme**.
- T. Zygis** (Zygis). A synonym of *T. striatus*.

THYRSACANTHUS (from *thyrsos*, a thyrses, and *Acanthus*; in allusion to the form of inflorescence). Thyrses Flower. SYN. *Odontonema*. ORD. *Acanthaceae*. A genus comprising about a score species of stove, erect herbs or shrubs, natives of tropical America. Flowers red, fasciated in the axils of the bracts, pedicellate; calyx short, somewhat five-parted; corolla tube elongated; limb sub-bilabiate, four-cleft; stamens two, affixed above the middle of the tube; fascicles or cymes disposed in a thyrses. Leaves opposite, entire, often large. The species known to cultivation are described below. They thrive in a compost of about equal parts of loam and leaf soil. Propagated by cuttings, inserted, preferably in single pots, in spring, and placed in a close, warm frame. Young plants should be pinched, to encourage a bushy growth. Some of them may be cultivated in frames during the summer, but require a stove temperature in winter.

- T. barlerioides** (Barleria-like). *f.*, corolla 1 in. to 1 $\frac{1}{2}$ in. long, glabrous, the lobes ovate, obtuse; thyrses sub-sessile, composed of approximate whorls, 2 in. to 7 in. long, many-flowered, dense, interrupted at base; bracts $\frac{1}{2}$ in. long, subulate-acuminate. *l.* 6 in. to 9 in. long, 1 $\frac{1}{2}$ in. to 3 in. broad, sessile, shortly attenuated at apex, argutely acuminate, terminal. Stem erect, succulent. Minas Gerases. A pubescent perennial. (F. d. S. 986.)
- T. bracteolatus** (bracteolate).* *f.*, corolla $\frac{1}{2}$ in. long, pubescent-viscidulous, the upper lip bifid; thyrses pubescent, terminal, narrow; bracts lanceolate-subulate; bracteoles subulate; lower peduncles three or many-flowered, upper ones one-flowered. July and August. *l.* oblong-lanceolate, long-acuminate, shortly petiolate, glabrous, shining, subulate, 4 in. to 6 in. long, 1 in. to 2 in. broad. Branches acutely tetragonal. A. 2 ft. New Grenada, 1823. Shrub. (B. M. 4441.)
- T. callistachyus** (beautiful spiked).* *f.*, sepals pubescent, bristly-acuminate; corolla glabrous, the segments glandular within; upper lip bilobed, the lower one much deflexed; inflorescence straight, naked, the axis tomentose. July and August. *l.* oblong, petiolate, wrinkled, acute, below (as well as the branches) tomentose. Mexico. A 2 ft. Shrub. (L. J. F. 165; L. & P. F. G. H. 53; R. G. 1054.) SYNS. *T. lilacinus*, *Justicia litaina* (of gardens).
- T. indicus** (Indian). *f.*, calyx deeply five-cleft, the segments erect; corolla white, with a few purple lines, funnel-shaped, the mouth oblique, the limb obscurely bilabiate, the segments spreading reflexed; thyrses terminal. April. *l.* opposite, about $\frac{3}{4}$ in. long, oblong-lanceolate, pinnate-veined, acuminate, entire, dark green, gradually tapering at base into a short petiole. Stem and branches tetragonal. A. 2 ft. Bhotan, 1857. Shrub. (B. M. 5062.) The correct name of this plant is *Aryolista bengalensis*.

Thyrsacanthus—continued.

- T. Lemaireanus** (Lemaire's). A synonym of *T. striatus*.
- T. lilacinus** (Lilac-flowered). A synonym of *T. callistachyus*.
- T. nitidus** (shining). *f.*, corolla $\frac{1}{2}$ in. long, slightly bilabiate; lobes drooping, sub-equal, oblong, rather blunt, about as long as the tube; fascicles somewhat distant; raceme compound at the base. *l.* oblong or lanceolate-oblong, acuminate, $\frac{3}{4}$ in. to 8 in. long, tapering into the short petioles. A. 3 ft. to 4 ft. West Indies. Shrub. SYN. *Justicia nitida* (A. B. B. 570).
- T. rutilans** (reddish).* *f.* solitary in the axils of the bracts; corolla tubular-ventricose, the lobes sub-equal, erose; raceme terminal, axillary, 8 in. to 10 in. long, twelve to sixteen-flowered, nodding. Winter and spring. *l.* sessile, oblong-lanceolate, acuminate, acute, narrowed at base, obsolete erose-denticulate on the margins, paler beneath, sparsely pilose on both sides. A. 2 ft. Columbia, 1851. Shrub.
- T. rutilans** (reddish), of gardens. A synonym of *T. Schomburgkianus*.
- T. Schomburgkianus** (Schomburgk's)* *f.* brilliant crimson, distant, opposite; corolla 1 in. long, with a nearly regular limb, the segments ovate, scarcely spreading; raceme terminal, elongated, long-pedunculate, glandular-pubescent. Winter and spring. *l.* oval-oblong, cuspidate-acuminate, 8 in. to 12 in. long. Branches sub-tetragonal, with smooth angles. A. 3 ft. New Grenada, 1855. Shrub. (B. M. 4851.) SYN. *T. rutilans* (B. H. 1866, p. 97; F. d. S. 732; L. & P. F. G. iii. p. 75).
- T. strictus** (straight). *f.* all fasciated; corolla nearly linear-long, with an oblique, nearly regular limb, the segments oblong, acute; whorls approximate, adpressed; thyrses terminal, elongated, straight, simple, narrow, 1 ft. long; bracts subulate, nearly equaling the pedicels. February and March. *l.* oblong, acuminate, acute at base, shortly attenuated into the petioles. Stem simple, elongated. A. 3 ft. Honduras, 1840. A glabrous shrub. (B. M. 4373.) SYNS. *T. Lemaireanus*, *Aphelandra longiscapa* (of gardens), *Eranthemum coccineum* (F. d. S. 240), *Justicia longiracemosa* (of gardens), *Salpingantha coccinea* (of gardens).

THYRSANTHUS. A synonym of **Wistaria** (which see).

THYRSE. A panicle whose principal diameter is midway between the base and apex.

THYRSE FLOWER. See **Thyrsacanthus**.

THYRSOID. Resembling a thyrses.

THYRSOPTERIS (from *thyrsos*, a bunch or raceme, and *Pteris*, a Fern; the fructification is disposed in raceme bunches). ORD. *Filices*. A monotypic genus. The species is a handsome, but very rare, greenhouse Fern. For general culture, see **Ferns**.



FIG. 32. PORTION OF FERTILE FROND OF THYRSOPTERIS ELEGANS.

T. elegans (elegant). *casu.* arborescent. *fronds* decomposed, attaining a length of 5 ft. to 6 ft., one-third of which is naked; sterile portions bipinnate, with lanceolate, incised pinnules; fertile parts tripinnate, each pinna becoming a raceme of stalked involucres. *ovr.* globose; involucre cup-shaped. A. 15 ft. Juan Fernandez, 1854. See Fig. 32.

THYRSULA. The little cyme borne by the majority of the *Labiata* in the axils of their leaves.

THYRSANOTUS (from *thyrsanotos*, fringed; alluding to the three elegantly-fringed inner perianth segments). Fringed Violet; Fringe Lily. SYN. *Chlamysporum*. Including *Isandra*. ORD. *Liliaceae*. A genus including nineteen species of greenhouse perennials, all Australian, one extending to the Philippine Islands and South China. Flowers umbellate, rarely solitary; perianth maroescens, persistent, of six segments, the outer ones narrow, the inner ones with broad, coloured margins,

Thysanotus—continued.

and fringed on the edges; stamens six, or sometimes three; bracts short, imbricated; scapes leafless or nearly so, simple or variously branched. Leaves radical, grass-like. The following species have been introduced, and are very elegant subjects when in flower. They thrive in sandy loam, and may be increased by offsets.

T. dichotomus (dichotomously branched). *f.* one, two, or rarely three, in terminal umbels; perianth segments purple; stamens six. July. *l.* radical ones few, short, withering early. Stems very variable, sometimes erect, branched, 1ft. to 2ft. high, rarely almost twining. Rhizome thick, fibrous. 1838. (B. R. 1840, 14, under name of *T. intricatus*.) *T. tenuis* is probably a reduced form of this species. (B. R. 1838, 50.)

T. elatior (tall). A form of *T. tuberosus*.

T. intricatus (intricate). A synonym of *T. dichotomus*.

T. isantherus (even-anthered). A synonym of *T. tuberosus*.

T. junceus (Bush-like).* *f.* one to three in terminal umbels, and sometimes one or two sessile along the lower branches; perianth segments purple, five to six lines long; stamens six. August. *l.* radical ones few, narrow-linear, short, soon withering. Stems slender, loosely branched, erect or flexuous, 1ft. to 2ft. high, bearing sometimes a short leaf near the base. Rhizome thick, fibrous. 1804. (B. M. 2351; B. R. 656.)

T. multiflorus (many-flowered). *f.* perianth segments purple, the outer ones very acute, the inner ones rather shorter; stamens three; scapes simple, 6in. to 18in. high, bearing a single, terminal, many-flowered umbel or rarely a second one lower down. August. *l.* all radical, densely tufted, erect, rigid, much shorter than the scape. Stock densely tufted, with fibrous roots.

T. m. prolifer (proliferous). A luxuriant form, having a large, terminal umbel, frequently a second one rather lower down, and leaves sometimes exceeding the scape. (B. R. 1833, 8, and F. d. S. 1911, under name of *T. proliferus*.)

T. proliferus (proliferous). A synonym of *T. multiflorus prolifer*.

T. tenuis. See *T. dichotomus*.

T. tuberosus (tuberous-rooted).* *f.* perianth purple, sometimes six to seven lines long; stamens six; scape erect, rigid, terete, 6in. to over 12in. high, branching into a loose, irregularly dichotomous panicle, each branch having a terminal umbel of one to four flowers, and sometimes a lateral, sessile one. June. *l.* radical, not numerous, narrow-linear, very short or as long as the scape. Fibrous roots swollen into tubers. 1826. (B. R. 655, under name of *T. isantherus*.) *T. stator* is a tall, strong, many-flowered form of this species.



FIG. 33. TIARELLA CORDIFOLIA, showing Habit and detached Flower.

(from *tiara*, a Persian diadem; alluding to the shape of the capsules). ORD. *Saxifragææ*. A genus including five species of hardy, erect, slender, perennial herbs; one is a native of the Himalayas, and the rest are North American. Flowers white, on slender pedicels; calyx tube short, the limb five-lobed; petals five, entire; stamens ten, the filaments elongated;

Tiarella—continued.

racemes terminal. Leaves mostly radical, long stalked, simple or trifoliate; stipules small, adnate with the petioles. *T. cordifolia* is the best-known species. It thrives in ordinary soil, and is well suited for rockwork, or for the front of the flower border. Increased by divisions.

T. cordifolia (heart-shape-leaved).* False Mitrewort. *f.* white; petals oblong, clawed; raceme simple; scapes 6in. to 12in. high. April. *l.* cordate, acutely lobed, unequally mucronate-toothed, hirsute above, pubescent beneath. Stem thick, sending out creeping stolons after flowering. North America, 1731. Fig. 33. (B. M. 1589.)

T. Menziesii (Menzies'). A synonym of *Tolmiea Menziesii*.

TIARIDIUM. Included under *Heliotropium*.

TIBOUCHINA. Included under *Peroma*.

TICKLE MY FANCY. See *Viola tricolor*.

TICKS. These belong to the same group as Mites, viz., the *Acarida*, and are not insects, in the strict sense, at all. They are fairly numerous, and have been placed under several genera, included in the family *Ixodida*, which takes its name from the chief genus, *Ixodes*. To this genus almost all the British Ticks belong. They all live in woods and thickets, or upon low herbage, apparently feeding, for a time at least, on the juices of plants; but all Ticks seek to attach themselves to the bodies of passing animals; and, once attached, they bury their proboscis in the animal's skin, and live there for the rest of their lives, unless dislodged, sucking blood, and growing rapidly. It has been supposed that each species is parasitic upon a single species of animal; but though each usually shows a preference for some one species of host, they are able to subsist on others also, and all animals, from man downwards, are liable to their attacks. Dogs are peculiarly troubled with them; and in Britain, the one known as the Dog-tick (*I. erinaceus*) is common on dogs, cattle, &c.

In general appearance, Ticks are much alike, all being covered by a tough skin, with no division into segments. They are usually ovate or elliptical in form; each of their eight legs ends in a sucker and two claws, giving a firm grasp; and the head bears a barbed snout, which, once buried under the skin, cannot be withdrawn. The palpi, or feelers, at the sides of the mouth, contain two tubes for sucking in the fluid food. Some Ticks have eyes, others have none. Each bears a small, horny shield on the back, behind the head. The largest species, when full of blood, may become as large as a common bean; but few reach this size.

Ticks sometimes cause much annoyance to gardeners in autumn, by fixing themselves to the skin, in the manner described above. They can be got rid of by washing the affected parts with an infusion of tobacco, which stupefies them, and weakens their hold on the skin, so that they can be readily removed. If Ticks are carelessly pulled off, the head and fore limbs are often left in the wound, and are apt to cause annoying sores, if not removed at once.

TICOREA (the name of *T. fetida* in Guiana). SYN. *Oxophyllum*, *Sciurus*. ORD. *Rutacææ*. A genus embracing about half-a-score species of stove trees or shrubs, natives of Brazil and Guiana. Flowers white, yellowish-white, or scarlet, on bracteate pedicels; calyx short, four or five-lobed; corolla tubular-infundibular, the tube elongated, the limb of five valvate lobes; disk cup-like or urceolate; stamens five to eight; panicles or cymes terminating the branchlets, rarely axillary, leafless. Leaves opposite or alternate, simple or consisting of one to three entire, pellucid-dotted leaflets. Two species have been introduced. They thrive in a compost of peat, loam, and sand. Propagation may be effected by ripened cuttings, inserted in sand, under a glass, in heat.

Ticores—continued.

T. foetida (foetid). *f.* white, six or seven in a corymb, sessile along the branches; petals six times longer than the calyx. February. *l.* consisting of three equal, almost sessile leaflets, which, when bruised, emit a disagreeable smell. *A.* 10ft. Guiana, 1825. Shrub. (*A. G.* 277.)

T. jasminiflora (Jasmine-flowered). *f.* white, sessile along the branches of the rather loose panicle. September. *l.* consisting of three lanceolate, acuminate, tapering leaflets. *A.* 20ft. Brazil, 1827. Tree.

TIGAREA. A synonym of **Purshia** (which see).

TIGER IRIS. See **Tigridia**.

TIGER LILY. See **Lilium tigrinum**.

TIGER MOTHS. A name commonly applied to several moths of the tribe *Bombycina* (see **Moths**), probably on account of the bright, variegated colours of its more conspicuous members. The larvæ of all the Tiger Moths are rather thick-bodied, and are closely covered with long, stiff hairs, usually brown or black, rising from numerous prominent warts along the back and sides. They feed on low plants, chiefly herbs, and seldom do much harm in gardens, as they prefer Dock, Plantains, and other weeds, rather than cultivated plants. In autumn, and again in spring, the larvæ of the Common Tiger, and of the Ruby Tiger, are to be seen on every road, crawling in search of food or of safe retreats for the winter, or for pupation. When full grown, in spring or early summer, they spin slight cocoons on the food-plants, or among dead leaves and surface rubbish, and in them become pupæ, from which the moths emerge in two or three weeks. The species of most common occurrence in gardens are the two just mentioned.

The common Tiger (*Arctia caja*) varies in size from 2in. to 3in. across the fore wings, which are brown, with irregularly branching, pale cream-coloured lines and spots. The hind wings are red, with six or seven blue-black spots, of which three lie in a band parallel to the hind margin. The head is brown, with a crimson collar; the thorax is brown; and the abdomen is crimson, with a series of oblong, black spots down the middle, and a row of black dots along each side. This species is very apt to vary in the colour of the wings; in some the dark tints prevail, in others the pale. The larva of this Moth is known generally as the "Woolly Bear," from its dense coat of long hairs. The latter, on the back, are dark near their bases, grey near the tips; along the sides and near the head they are brown. The larvæ hibernate while small, and feed up in spring, when they subsist on a great variety of plants in gardens. The moths usually emerge about July.

The Cream-spotted Tiger Moth (*Arctia villica*) is a little like *A. caja*, but smaller, as it does not exceed 2½in. in spread of fore wings. This species is black, with



FIG. 34. CREAM-SPOTTED TIGER MOTH.

eight cream-coloured spots (see Fig. 34). The hind wings are orange-yellow, with a few small, central, black spots, and an irregular, black band along the hind margin. The larva is a good deal like the "Woolly Bear," and, like it, feeds on various herbs.

The "Wood Tiger" (*Nemophila Plantaginis*) seldom exceeds 1½in. across the fore wings. These are black, with pale spots, passing into yellow at the margins.

Tiger Moths—continued.

The hind wings are dull, deep yellow or orange, with velvety-black markings, in the form of black spots, along the hind margin, and at the base. The larva is hairy; the hairs near the end of the body are black, those in the middle of the body are red-brown. It feeds on low weeds, and is scarcely ever seen in gardens, as this moth frequents moors.

The Scarlet Tiger (*Callimorpha Dominula*) is confined to localities where the Hound's-tongue (*Cynoglossum*) grows. It reaches about 2½in. across the fore wings, which are dark olive-brown, with a metallic-green lustre, and bear about ten spots, those in the centre yellow or orange, the others cream-coloured. The hind wings are crimson, with large, black spots near the margins.

The Ruby Tiger (*Phragmatobia fuliginosa*) differs from all the above alike in size (about 1½in. across the front wings) and in colour. The fore wings are dull red-brown, with two black dots near the middle. The hind wings are dull pink near the base, smoky-brown near the margin, and have two dark dots near the middle; the fringes are pink. The head and thorax are brown; the abdomen is pink, with one central and two lateral rows of dark spots. The larvæ are yellowish-brown, smoke-coloured, or dark, and very hairy. They are often to be seen in autumn, seeking secure retreats for the winter, and in spring they emerge from their retreats to feed up. In April or May they spin loose, oval cocoons among herbage, and become dark pupæ; from these the moths emerge in June. The larvæ feed chiefly on low weeds, but may at times live on garden produce.

All the Tiger Moths have thick, heavy bodies. They fly at all hours by day, and also by night.

Should the larvæ ever become too numerous, hand-picking is the best remedy.

TIGLIUM. Included under **Croton**.

TIGRIDIA (from *tigris*, a tiger, and *aidos*, like; in reference to the spotted flowers). Mexican Tiger Flower; Tiger Iris. **SYNS.** *Beatonia*, *Hydrolenia*. **ORD.** *Irideæ*. This genus includes about seven species of greenhouse or half-hardy, bulbous plants, from Mexico, Central America, Peru, and Chili. Flowers few in a spathe, in one species (*T. pavonia*) very large; perianth concave, with no tube; segments free, the outer ones very broad, unguiculate, the inner ones much smaller and erectopatent, often obtuse, more or less undulated; filaments connate in a cylindrical tube; spathe one, terminal, or two at the axils of the floral leaves, long and unequally pedunculate. Leaves at base of stem few, narrow, or broader and plicate-veined; cauline or floral ones often two or three, scattered. *T. pavonia* and its varieties are very handsome subjects when in flower. All the species thrive best in a light, sandy soil; if planted outside, a warm, sunny position, with south aspect, should be accorded them. The roots must be lifted in the autumn, when the leaves have died down, stored away in some place where frost cannot reach them, and replanted in the following April. Propagation may be effected either by seeds or by offsets.

T. atrata (dark).* *f.*, perianth dark purple; outer segments with pale green-spotted claws and a dark brown lamina; spathe two-valved, 2½in. long. April. *l.* plicate, 1ft. to 1½ft. long. Stem 2ft. high. South Mexico, 1843. Greenhouse.

T. conchiflora (shell-flowered). A synonym of *T. pavonia conchiflora*.

T. curvata (curved). *f.*, perianth yellowish, spotted with purple; peduncles curved; spathe one-valved. April. *l.* plicate, 8in. long. Stem slender, 1ft. high. Real Del Monte, 1843. Greenhouse.

T. lutea (yellow). *f.* pedicellate, fragrant; perianth yellow, obscurely dotted, the outer segments obovate, 1in. long, obscurely crenate on the margins, the inner ones exapandiculate; spathe terminal, five or six-flowered, bivalved. June. *l.* ensiform, amplexicaul, very long-acuminate. Stem terete, glabrous, arching, 8in. to 10in. long. Peru, 1843. Half-hardy. (*B. M.* 6296.)

Tigridia—continued.



FIG. 35. INFLORESCENCE OF *TIGRIDIA MELEAGRIS*.

- T. Meleagris** (Meleagris).* *f.* in colour and form resembling *Fritillaria pycnantha*, four or five in a leafy, convolute spathe 2½ in. long; segments marked with a few broken bands of crimson, slightly unguiculate. Spring. *l.* solitary, straight-veined, plaited. Stem about 1½ ft. high. Mexico. Greenhouse. See Fig. 35. SYN. *Hydrotaria Meleagris* (B. R. xxviii. 39).
- T. pavonia** (peacock-spotted).* Flower of Tigris; Peacock Tiger Flower. *f.* on elongated pedicels; perianth golden-orange, the outer segments broadly ovate, 3 in. long, mucronate at apex, the inner ones 1½ in. long, somewhat rounded below the middle; spathe mucronate, 2½ in. long, 1½ in. wide, imbricate, plicate, acute; radical ones distichous, 10 in. to 18 in. long, sheathing at base. Stem cylindrical, dichotomous, leafy, 1 ft. to 2 ft. high. Mexico, 1796. Half-hardy. SYNS. *Ferraria Pavoni* (A. B. R. 178; L. B. C. 1424), *F. Tigridia* (B. M. 532).
- T. p. albiflora** (white-flowered).* In this variety, the ground colour of the perianth is a beautiful white.
- T. p. conchiflora** (shell-flowered). A rather dark yellow flowered form. SYN. *T. conchiflora* (F. d. S. 908, fig. 2 S. B. F. G. 123).
- T. p. speciosa** (showy). In this form, the ground colour deeper and brighter than in the type. (F. d. S. 908, fig. 1.)
- T. Van Houttei** (Van Houtte's)* *f.* issuing from spathes which terminate the branches of the stem; perianth about 1½ in. across, the outer and larger segments yellow, with a broad basal blotch and marginal veins of purple, the inner segments lilac, veined with purple. Spring. *l.* few, ensiform, plaited; upper ones shorter. *h.* about 1 ft. South Mexico, 1875. Greenhouse. (F. d. S. 2174.)
- T. violacea** (violet). *f.*, perianth violet, campanulate, nodding, the blade of outer segments rose-purple, the claw white, dotted with rose-purple, 3 in. long; inner segments deflexed, white, dotted in the middle; spathe three or four-flowered, two-valved. May. *l.* ensiform, plicate-nerved; radical ones 8 in. to 14 in. long. Stem terete, erect, 7 in. to 14 in. high, dichotomous at apex. South Mexico, 1838. Greenhouse. SYN. *Beatonia purpurea*.

TIGRIS, FLOWER OF. An old name for *Tigridia Pavonia*.

TILE-ROOT. See *Geissorhiza*.

TILESIA. A synonym of *Walffia* (which see).

TILIA (the old Latin name for the Lime, used by Virgil and Pliny). Lime-tree; Linden. ORD. *Tiliaceæ*. This genus includes about eight species of ornamental, lofty-growing, hardy, stellate- or simply-pubescent trees, inhabiting the temperate regions of the Northern hemisphere. Flowers white or yellowish; sepals five; petals five, naked or furnished with petaloid scales on the inside; stamens numerous, free or irregularly disposed in bundles; bract of the peduncle leaf-like, adnate for half its length; cymes axillary or terminal. Fruit globose, nut-like, indehiscent, one or two-seeded. Leaves often obliquely cordate, serrated. Several species are grown in this country, one being a native. The flowers contain a quantity of honey, and are consequently haunted by bees. Russian Bass or Bast Mats, so well known to gardeners, are prepared from the inner bark of various species. The smooth, light, delicately-white, and uniform wood of *T. platyphyllos* and *T. vulgaris* is in great demand by carvers, turners, and musical instrument makers.

Culture, &c. A good, loamy soil is suited to the requirements of Limes. In dry situations, the species never attain a large size, and they lose their leaves earlier than any other tree. Being a tree of the plains, rather than of the mountains, the Lime does not appear suitable for very exposed situations. Propagation is usually effected by layers, which are made in the nurseries, in autumn and winter, and become rooted, so as to admit of being taken off, in a year. Seeds are seldom ripened in this country; when obtainable, they should be sown immediately after being gathered, but the raising of plants by this means is an exceedingly slow process. Du Hamel states that "the French gardeners, when they want a supply of young Lime-trees, cut over an old one close by the surface of the ground, which soon sends up a great number of shoots; among these they throw in a quantity of soil, which they allow to remain one, two, or three years; after which they find the shoots well rooted, and of a sufficient height and strength to be planted at once where they are finally to remain." This mode is still practised in France and Belgium, both with the Lime and the Elm. The Lime-tree bears transplanting when of a considerable size; but when grown for this purpose, it should be taken up and replanted every two or three years. Trees that have stood some years without being removed should have the roots cut round, at from 3 ft. to 4 ft. from the stem, a year before transplanting, in order to stunt the growth, both of the head and roots, and to induce the production of smaller

forms are usually increased by grafting on strong plants of any of the common species.

Of foes to the Lime-tree, only a few do so much injury as to call for detailed notice here. The bark and wood are liable to attacks by Beetles, though healthy trees seldom suffer thereby. The caterpillars of several kinds of Moths, most of them small, frequently disfigure the leaves by drawing them together by webs, rolling them to form tubes, and by eating large holes in them. The more destructive species belong to the Winter Moths, the females of which either have no visible wings, or have them so small as to be useless (see *Hybernia* and *Winter Moth*). Their ravages may be lessened by shaking the branches, and collecting the caterpillars when they drop from their tubes; or, yet more effectually, by interposing an obstacle, e.g., a belt of tar, in autumn and winter, round the foot of the tree, to prevent the ascent of the female moth to lay her eggs.

Lime-trees are very liable to be injured by the growth of galls on the younger parts. A Gall-midge (*Cecidomyia floricola*) often makes galls on the branches or leaf-stalks, in the form of swellings about the size and form of a small pea, in the centre of which the larvæ may

Tilia—continued.

be found. The leaves are very liable to be galled by Mites of the genus *Phytoptus*. These Mites are extremely small, requiring a considerable magnifying power to show them; but the genus is easily recognised by having only four legs, instead of eight, as in other Mites, and by being gall-makers—a mode of life not shared by other Mites. The Mites do not in themselves afford characters by which the species can be clearly distinguished from one another; but the galls made by them are very constant in form and aspect, so that they can be readily recognised. On Lime leaves there may be found three at least, very distinct from one another. The first resembles small nails, and has received the popular name of Nail-galls. It has also received the name of *Ceratoneon extensum*. Frequently, many of these galls stand on almost every leaf of the tree. Another gall is in the form of small, round, hard warts, at the origin of the larger leaf-veins; while the third forms velvety patches, $\frac{1}{2}$ in. to $\frac{3}{4}$ in. across, on the lower surface of the leaves, so much resembling a Fungus that it was at one time described as such under the name *Erineum tiliaceum*. It consists of a patch of hairs, between which the Mites live. The hairs are at first white, but show a tendency to become brown.

Except where very numerous, these galls can hardly be regarded as doing much harm to the trees. The most likely method of limiting their attacks is to remove the affected leaves or branches, and to destroy them, as soon as possible after the first appearance of any of the galls on a plant.

T. alba (white). A synonym of *T. argentea*.

T. a. pendula (white weeping). A synonym of *T.*

T. americana (American). American Basswood or Whitewood. *f.* yellowish-white; petals truncate and crenate at apex, equalling the style, furnished with scales. July and August. *fr.* yellow, the size of a large pea. *l.* deeply cordate, abruptly acuminate, sharply serrated, somewhat coriaceous, glabrous, turning yellowish-brown in decay. *h.* 60ft. to 70ft. North America, 1752.

T. a. pendula (weeping). A garden synonym of *T. petiolaris*.

T. a. pubescens (downy). *f.* pale yellow. June. *l.* 3in. to 4in. in diameter, the under surface, when young, rather paler than the upper, but at length nearly the same colour; serratures broad and short. *h.* 50ft. to 70ft. 1725.

T. argentea (silvery).* White or Silver Lime. *f.* yellowish-white, very fragrant; petals each with a scale on the inside. June to August. *fr.* yellow, evidently ribbed. *l.* cordate, somewhat acuminate, rather unequal at base, serrated, smooth above, white-downy beneath, four times the length of the petioles. *h.* 30ft. to 50ft. Eastern Europe, 1767. (W. D. B. 71, under name of *T. alba*.)

T. a. pendula (weeping). A synonym of *T. petiolaris*.

T. cordata (heart-shaped). *f.* yellowish-white; petals without a scale at their base. Summer. *fr.* crustaceous-pubescent, globose or ellipsoid, faintly-ribbed. *l.* glabrous, glaucous, and pubescent, in the axils of the nerves beneath. Europe and Siberia. A small tree, generally with leaves smaller in size than those of either *T. platyphyllos* or *T. vulgaris*. This is the last of the three to flower. It is found here and there in woods in Britain, and is regarded by some authorities as a truly indigenous species. SYNS. *T. microphylla*, *T. parvifolia* (Sy. En. B. 287), *T. ulmifolia*.

T. dasystyla (thick-styled).* *f.*, lower part of the pyramidal style tomentose and persistent as a point. Summer. *l.* large, obliquely truncate at base or sometimes sub-cordate, slightly hairy beneath and bearded in the axils of the nerves. Buda glabrous. *h.* 30ft. to 60ft. South Tauria, 1884.

T. europæa. See *T. platyphyllos* and *T. vulgaris*.

T. e. laciniata (torn). A synonym of *T. platyphyllos folia*.

T. grandifolia (large-leaved). A synonym of *T.*

T. heterophylla (variable-leaved). American White Basswood. *f.* greenish-yellow, few in a loose cyme; petals obtuse, crenulated. July and August. *l.* 4in. to 8in. in diameter, very oblique, more or less cordate, abruptly acuminate, green and somewhat shining above, very white and velvety-tomentose and con-veined beneath. *h.* 30ft. to 50ft. North America,

T. intermedia (intermediate). A synonym of *T. vulgaris*.

T. microphylla (small-leaved). A synonym of *T. cordata*.

T. parvifolia (small-leaved). A synonym of *T. cordata*.

T. petiolaris (petiolate).* *f.* yellow-green, with five petaloid scales inserted amongst the stamens. July. *fr.* depressed,

Tilia—continued.

globose, five-lobed, warty, $\frac{1}{2}$ in. in diameter. *l.* pale green above, white, hoary-pubescent beneath; petiole as long as, or longer than, the blade. Branchlets pendulous, leafy. Trunk *h.* 50ft. Crimea (?). This greatly resembles the White Lime, but is easily recognised by its much longer leafstalks and its warted fruits. (B. M. 6737.) SYNS. *T. alba pendula*, *T. americana pendula* (of gardens), *T. argentea pendula*.

T. platyphyllos (broad-leaved).* *f.* yellowish-white; petals without a scale at their base. June. *fr.* obovate, globose, with from three to five prominent ribs when ripe. *l.* downy sometimes on both surfaces, always on the entire under surface. *h.* 70ft. to 90ft. Europe (Britain). This species is the earliest to flower. SYNS. *T. europæa* (in part), *T. grandifolia* (Sy. En. B. 285).

T. p. asplenifolia (Spleenwort-leaved). This has curiously lacinated leaves and is not so vigorous or tall a grower as the type. SYN. *T. europæa laciniata*.

T. p. aurantia (orange). In this form, the bark of the young twigs is of an orange-yellow colour.

T. p. Blechiana (Blechs's). *l.* very large. A distinct and vigorous form of garden origin.

T. p. pyramidalis (pyramidal). A form of distinctly pyramidal habit.

T. p. vitifolia (Vine-leaved).* A pretty variety, with lobed, Vine-like leaves. SYN. *T. vitifolia*.

T. ulmifolia (Elm-leaved). A synonym of *T. cordata*.

T. vitifolia (Vine-leaved). A synonym of *T. pyramidalis vitifolia*.



FIG. 36. BRANCHLET, AND DETACHED CLUSTER OF FRUITS, OF *TILIA VULGARIS*.

T. vulgaris (common).* Lime, Lin, Linden, or Line-tree. *f.* yellowish-white; petals without a scale at their base. Summer. *fr.* woody, pubescent, not ribbed when ripe. *l.* glabrous above, pubescent in the axils of the veins beneath. Europe, Caucasus (naturalised in Britain). This species begins to flower when *T. platyphyllos* is nearly past. See Fig. 36. SYNS. *T.* (in part), *T. intermedia* (Sy. En. B. 286).

T. v. variegata (variegated). This only differs from the type in having the leaves blotched with dull creamy-white. SYN. *T. europæa variegata*.

A natural rarely herbs, broadly dispersed, numerous in the tropica Flowers regular, hermaphrodite or rarely unisexual,

Tiliaceæ—continued.

axillary or terminal, often cymulose; sepals five, rarely three or four, free or connate, often valvate; petals as many or fewer, or none, alternating with the sepals, inserted around the base of the torus, entire or incised; aestivation contorted or variously imbricated, induplicate, or valvate; stamens usually indefinite; filaments free, or connate in a ring of five to ten bundles; anthers two-celled; ovary free, sessile. Fruit two to ten-celled, or, by abortion, one-celled, variable. Leaves alternate, in a few species opposite or nearly so, simple, penninerved or palmnerved, entire, toothed, or rarely lobed; stipules twin, usually small and deciduous, rarely larger and persistent or absent. Several of the species in this order furnish materials for making cord. Jute, the fibre of *Corchorus capsularis*, has, of late, become the rival of hemp in the English market, many thousands of tons being annually imported from India. The order comprises about 46 genera and 330 species. Examples: *Aristolætia*, *Corchorus*, *Prockia*, *Tilia*, *Triumfetta*.

TILIACORA (the Bengalese name). SYN. *Braunea* (in part). ORD. *Menispermaceæ*. A monotypic genus. The species is a stove, evergreen, climbing shrub, thriving in a compost of sandy loam and peat. Cuttings will root readily in sand, under a glass, in heat.

T. racemosa (racemose-flowered). fl. yellow; panicles axillary, 6in. to 12in. long, hoary, at length glabrous; branches lin. long, the males three to seven-flowered, the females simple and one-flowered. May. fr. drupe 3in. long, obovoid, stalked, sub-compressed, red. l. 3in. to 6in. long, ovate, acuminate, glabrous, acute, truncate, rounded, or sub-cordate at base, thin, the margins undulated; petioles 3in. to lin. long. East Indies, 1820.

TILL. Another name for Lentil.

TILLEA (named in honour of M. A. Tili, 1653-1740, an Italian botanist). Including *Bulliarda*. ORD. *Crasulaceæ*. A genus comprising about twenty species of aquatic or terrestrial, cosmopolitan herbs. Flowers white or reddish, minute, variously disposed. Leaves opposite, cylindrical, subulate, or flat, entire. *T. muscosa* (Mosy Redshanks) is a British plant. Several exotic species have been introduced, but their interest is of a botanical character only.

TILLANDSIA (named in honour of Elias Tillands, a Swedish botanist, and Professor of Medicine in the University of Abo). SYN. *Renaulbia* (of Linnæus). Including *Allardtia*, *Anoplophyllum*, *Bonapartea*, *Phytarrhiza*, *Platystachya*, *Vriesia*, and *Wallisia*. ORD. *Bromeliaceæ*. A large genus (according to the authors of the "Genera Plantarum," nearly 120 species) of very handsome, stove, epiphytal or rock-loving, very rarely terrestrial, glabrous or often more or less furfuraceous herbs, natives of tropical America, a few extending into North America. Flowers solitary in the bracts; sepals erect, rather rigid, free, closely imbricated; petals free, deciduous, the erect claws connivent in a tube, the blades spreading; stamens free; filaments filiform; anthers oblong-linear, erect, shorter than the petals, or sometimes exserted; bracts variable; spike terminal, simple or compound, rarely reduced to a one-flowered peduncle. Capsules oblong or linear, septicidally three-valved. Leaves narrow, entire. Most of the plants of this genus are epiphytal on trees under natural conditions; but under cultivation it is found best to treat the majority of them as pot-plants, the exceptions being such as *T. bulbosa*, *T. Gardneri*, *T. isoioides*, and *T. usneoides* (Old Man's Beard)—which last could not well be grown in a pot, and, as it makes no roots, does not require soil. These should be fastened on to blocks of cork or soft wood, and a little sphagnum placed about them to root in. Grown in pots, the strongest kinds, e.g., *T. corallina*, *T. Itatiæ*, the gigantic *T. regina*, and *T. splendens*, require a strong soil, such as fibrous loam with rotted manure added, or loam, peat, and manure. *T. Lindenii* and the whole of the *Vriesia*

Tillandsia—continued.

section thrive best in a mixture of loam, peat, and leaf mould, with a sprinkling of crushed bones added. The small, grassy-leaved kinds, of which *T. angustifolia* and *T. virginialis* are examples, may be grown in peat and sphagnum. All the species delight in abundant sunlight, a high temperature during summer, plenty of water (though the soil must not be kept saturated), and syringing overhead twice a day. In winter, they should be kept from getting quite dry, but need not be syringed. Nothing can exceed the beauty of many of the Tillandsias, when in good health, and bearing their richly-coloured flowers. There is no more beautiful plant than *T. Lindenii*, whilst *T. carinata*, *T. Morreni*, *T. psittacina*, and *T. splendens*, are most richly coloured. Propagation is effected by seeds and suckers, chiefly by the latter. They should be allowed to grow large before being detached from the parent, and inserted singly in pots just large enough to hold the sucker, using a compost of loam, peat, and leaf mould. The suckers must not be confined in a close frame for propagating, but kept moderately moist and well shaded. Spring is the best season for detaching them.

With the assistance of the following "Classified List of the Cultivated Tillandsias" (for which we are indebted to Mr. J. G. Baker, who has generously lent the manuscript of his unpublished Monograph for the purpose), the names of any of the species described below may be the more readily determined.

Leaves spaced out on a long stem	<i>Strepsia</i> .
Leaves crowded, rosulate, coriaceous, acuminate, densely lepidote.	
Inflorescence distichous	<i>Diaphoranthema</i> , <i>Phytarrhiza</i> , <i>Platystachya</i> , <i>Anoplophyllum</i> , <i>Ptychophyllum</i>
Inflorescence multifarious	
Leaves rosulate, broader and thinner, obscurely lepidote.	
Inflorescence distichous	<i>Allardtia</i> , <i>Wallisia</i> , <i>Vriesia</i> , <i>Cyathophora</i> .
Inflorescence multifarious	

Flowers solitary in the axils of the stem leaves. Stems pendulous, filiform, usneoides.

SUB-GENUS II. DIAPHORANTHEMA.

Flowers one or few; style and stamens short. Leaves subterete. Leafy stem short. bryoides, recurvata.

SUB-GENUS III. PHYTARRHIZA.

Flowers spicate or panicled; petal blade broad, spreading; style and stamens short. Leaves rosulate. crocata, Duratii, ixioides, xiphoides

SUB-GENUS IV. PLATYSTACHYS.

Flowers spicate or panicled; petal blade lingulate; stamens and style longer than the calyx. Leaves rosulate.

anceps
angustifolia
Balbisiæ
bulbosa
Caput-Medusæ
distachya
filifolia
flexuosa
glaucontha

monadelphæ
narthecioides
poli
pruinosa
setacea
streptophylla
tectorum
vernicosa
vestita
xiphostachys

Tillandsia—continued.

SUB-GENUS V. ANOPILOPHYTUM.

Flowers spicate or panicle. Leaves rosulate, narrow, acuminate

dianthoidea
didisticha
Gardneri
geminiflora
pulchra
stricta

SUB-GENUS VI. PITYROPHYLLUM.

Flowers in a capitulum in the centre of the rosette of leaves.

brachycaulos
ionantha

SUB-GENUS VII. ALLARDIA.

Differs from *Platytychys* only in leaf.

cyanea
Roehlii
virginialis

SUB-GENUS VIII. WALLISIA.

Differs from *Phytarrhiza* only in leaf.

Hamaleana
Lindeni
umbellata

SUB-GENUS IX. VRIESIA.

Petals white or yellow, large, with two scales on the claw. Leaves broad, usually lorate.

Spikes dense, simple.

Barilleti
Billbergie
carinata
chrysoptachys
Duvalliana
gladioliflora
heliconioides
incurvata
splendens
viminalis
viridiflora

Spikes lax, simple.

amethystina
corallina
ensiformis
fenestralis
guttata
Jongheii
paraibica
Platzmanni
psittacina
psittacino-carinata
psittacino-scalaris
scalaris
Warmingii
Wawraeana

Spikes disposed in a panicle.

gracilis
hieroglyphica
Morrenti
Philippo-Coburgi
regina
reticulata
Rodigasiana
tessellata

SUB-GENUS X. CYATHOPHORA.

Differs from *Allardia* in the inflorescence.

utriculata

SUB-GENUS XI. CONOSTACHYS.

Differs from *Vriesia* in the inflorescence.

Malzinei
Saundersii

T. acaulis (stemless). A synonym of *Cryptanthus acaulis*.

T. aloifolia (Aloe-leaved). A synonym of *T. flexuosa*.

T. amethystina (amethystine). *f.* yellow, 2½ in. long, distichous, distant, sub-sessile, tubular; petals twice the length of the sepals; anthers exserted; bracts greenish-yellow, small; spike distichous, the rachis pinnulate; scape slender, erect, exceeding the leaves, bracteate. *l.* 12 in. to 16 in. long, lingulate, acuminate, shining-green above, amethystine beneath. South Brazil, 1864. *SYN. Vriesia amethystina* (B. H. 1884, 15-16).

T. anceps (two-edged). *f.* 2 in. long; sepals pale yellow, keeled, imbricated; petals white and purplish, twice as long as the sepals; bracts greenish-yellow, red-margined, cymbiform, bluntly mucronate; spike oblong, solitary; scape nearly 1 ft. long. June.

Tillandsia—continued.

l. numerous, imbricated, about 1 ft. long, curved to one side, broad, sheathing, and very concave at base, becoming subulate above, dingy-green, whitish-scaly outside. West Indies and Central Mexico, 1824. *SYNS. T. setacea*, of Hooker (B. M. 3275), *T. tricolor* (B. H. 1879, 10-11), *Phytarrhiza anceps* (B. H. 1879, 20-1).

T. angustifolia (narrow-leaved). *f.* blue; sepals half as long as the erect petals; bracts imbricate-distichous; central spike 4 in., lateral ones 1½ in. to 2 in., long. August. *l.* linear from a subulate base, convolute, curved, about as long as, or longer than, the stem, lepidote. *h.* 1 ft. to 2 ft. West Indies, 1822.

T. argentea (silvery). A garden synonym of *T. Gardneri*.

T. argentea (silvery), of K. Koch. A synonym of *T. tectorum*.

T. Balbisiana (Balbis'). *f.*, sepals exceeding half the petals, all distinct; petals violet, erect, convolute, spatulate-linear, 1½ in. long; stigmata exserted; bracts green, red, and yellow, imbricate-distichous, oblong-lanceolate, acuminate, ten lines long; spike compound, compressed; lateral spikes three to eight, 2 in. to 3 in. long, appressed, alternate. *l.* lanceolate-linear from a subulate base, convolute, recurved, exceeded by the stem, lepidote. *h.* 1 ft. to 1½ ft. West Indies, 1874. (B. H. 1879, 6-7.)

T. Barilleti (Barillet-Dechamps'). *f.* yellow; bracts yellowish-olive, very numerous spotted with dark blood-colour, distichous, clustered, conduplicate, navicular, equitant; spike simple, elongated, acnicipitous; scape about as long as the leaves. *l.* green, smooth-edged, 16 in. to 20 in. long, shortly acuminate, with the margins rolled in at the middle. Andes of Ecuador, 1883. *SYN. Vriesia Barilleti* (B. H. 1883, 3).

T. Billbergie (Billbergia-like). *f.* tricoloured (green, white, and red), sessile; corolla dilated. *l.* resembling those of *Billbergia*, quite glabrous, rosulate, imbricate, dilated, amplexicaul at the base, very thin, slightly recurved, oblong-ligulate, oblique, and very shortly and abruptly apiculate, sub-coriaceous, pale green, furfuraceous at the base outside. *h.* 10 in. Mexico.

T. brachycaulos (short-stemmed). *f.* purple, about twelve in a head, which is sessile amongst the leaves. *l.* linear, channelled, recurved, 6 in. to 9 in. long, red on the upper surface, greyish-green beneath, slightly scurfy. Central Mexico, 1878. A handsome, dwarf species. (B. H. 1878, 11.)

T. brachystachys (short-spiked). A synonym of *T. carinata*.

T. bryoides (Moss-like). *f.* three or four in a small, distichous spike; style and stamens short; scape capillary, 2 in. long. *l.* small, lanceolate-subulate. Stems slender, branched. South Brazil, &c., 1880. A small, Moss-like plant. *SYN. S. polytrichoides*.

T. bulbosa (bulbous). *f.*, sepals distinct; petals violet, white at the point, 1½ in. long, recurved at the summit, convolute spatulate-linear; bracts eight to nine lines long, imbricate-distichous; spikes five to eight, sub-equal, approximate, spreading, 2 in. to 3 in. long. November. *l.* convolute-filiform, greenish, minutely lepidote; rosulate ones dilated into the roundish sheaths of the bulbous stem-base, flexuous; uppermost ones exceeding the spikes. *h.* 8 in. to 12 in. West Indies, Buenos Ayres, &c., 1823. (H. E. F. 173.) *SYN. T. paucifolia*, *T. eminens*, *T. inanis*, and *T. punila*, are mere varieties of this species.

T. Caput-Medusæ (Medusa's Head). *f.* six or seven to a spike; bracts green; spikes about four, forming a compound panicle; scape shorter than the leaves, clothed with elongated bracts. *l.* tumid at base, forming a kind of bulb, lanceolate, thick, channelled, divaricate, arched, undulated, unequal, shining, silky-grey. Mexico, 1880.

T. carinata (keeled)*. *f.* projecting ½ in. beyond the bracts; sepals pale yellow, keeled; petals pale yellow, twice as long as the sepals, coloring nearly to the dark green tips; bracts green beyond the middle, scarlet below, 2 in. long, closely imbricated, laterally much compressed; spike 5 in. long, broadly ovate, the rachis scarlet; scape scarlet, 6 in. long, stout, cylindrical, the sheaths green-tipped. November. *l.* 4 in. to 6 in. long, 1 in. to 1½ in. broad, spreading and recurved, pale green, broadly strap-shaped from a dilated, sheathing base. South Brazil, 1866. A very brilliant plant. *SYNS. T. brachystachys*, *Vriesia brachystachys* (B. M. 6014; R. G. 1866, 518), *V. psittacina brachystachys* (B. H. 1870, 8), *V. p. carinata* (B. H. 1882, 10-12).

T. chrysoptachys (golden-spiked). *f.* yellow, regular; sepals free, lanceolate; petals longer, ligulate, obtuse; bracts yellow, conduplicate; spike simple, distichous, elliptic, elongated; scape elongated, erect, bracteate. *l.* numerous, rosulate, lax, arched, coriaceous short and broad, loriciform, lingulate at base, of a pleasing green, but rosy and glaucous beneath towards the base. Stem short. Andes of Peru, 1831. (B. M. 6806.)

T. ciroinalis (crozier-like). A synonym of *T. Duratii*.

T. ciroinata (crozier-like). A synonym of *T. streptophylla*.

T. complanata (complanate). A synonym of *T. xiphostachys*.

T. corallina (coral-red)*. *f.* green, distant, refracted, each subtended by a long, purplish-crimson bract, the scape and rachis being of the same brilliant colour; petals large, with two scales on the claw; spikes distichous. *l.* oblong-ligulate, blunt and apiculate, green. Minas Geraes, 1871. *SYNS. Enacholium corallinum* (F. M. n. s. 116), *Vriesia corallina* (B. G. 1870, 671).

Tillandsia—continued.

T. c. rosea (rosy). This differs from the type in its rose-tinted flowers. SYN. *Eucholirion roseum*.

T. cordobensis (Cordoba). A synonym of *T. recurvata*.

T. crocata (saffron-yellow). *f.* of a saffron-yellow colour, about five in a short, elliptic, distichous spike; scape elongated, slender, villous, nearly naked. *l.* distichous, long, linear-subulate, recurved, covered with silky, white hairs. Stem undulated, branched. South Brazil, 1860. SYN. *Phytarrhiza crocata*.

T. cyanea (blue). *f.* blue, in a branching panicle from the centre of a rosette of strap-shaped, entire leaves. *A.* 2½ ft., when in flower. Guatemala, 1852. SYNS. *Allardtia cyanea*, *Platy-stachys cyanea*.

T. dianthoides (Dianthus-like). *f.*, corolla tubular, the tube cylindrical, the limb blue, spreading or reflexed; bracts purplish-rose, ovate-lanceolate, acute, persistent; spike loose, six to ten-flowered. *l.* amplexicaul, the outer ones recurved, the inner ones erect or inflexed, coriaceous, rigid, trigonous towards the apex, acute, entire, silky-glaucous. Stem nearly terete, simple, ascending, 3 in. to 5 in. long. Uruguay, &c., 1810. (R. G. 85.) SYN. *T. stricta*, of Lindley (B. R. 1338).

T. d. rosea (rosy). *f.* white, issuing from rosy-pink bracts; scape short. *l.* glaucous, lanceolate-subulate, recurved, channelled. 1861. SYNS. *T. recurvifolia* (B. M. 5246), *T. rosea* (B. R. 1357).

T. didisticha (twice-two-rowed). *f.* white; spikes elliptic, forming a crowded, distichous panicle; scape elongated, arched, clothed with bracts. *l.* thick and robust, disposed in a rosette, lanceolate, channelled, acuminate, cinereous. South Brazil, 1881. SYN. *Anoplophytum didistichum*.

T. distachya (two-spiked). *f.*, sepals ½ in. long, free to the base; corolla white, more than twice as long as the calyx, the petals oblanceolate, with a long claw; bracts green, oblong-lanceolate, about 1 in. long; spikes two, distichous, six to twelve-flowered; scape erect, 6 in. long, hidden by its linear, falcate leaves. *l.* twelve to fifteen in a sessile rosette, lanceolate, acuminate, about 1 ft. long, the dilated base ½ in., the middle of the lamina ½ in., broad, the face pale green, concave, glabrous upwards, thinly lepidote towards the base, the convex back thinly lepidote throughout. *A.* 1 ft. British Honduras, 1879.



FIG. 37. *TILLANDSIA DURATII*, showing Habit and detached Inflorescence.

T. Duratii (Durati's). *f.* violet; panicle compact, 3 in. to 4 in. long, composed of several dense, few-flowered spikes; scape 6 in. high. *l.* twelve to twenty, spreading, 6 in. to 9 in. long, gradually tapering to a thick, subulate, channelled more or less circinate tip, everywhere densely silvery-lepidote. Uruguay, 1879. See Fig. 37. SYNS. *T. arcuata*, *T. revoluta* *Wallisia Duratii*.

Tillandsia—continued.

T. Duvaliana (Duval's). *f.* yellow, green at apex; bracts scarlet below, green above, conduplicate, keeled, beaked, equitant; spike simple, elongated-elliptic, about eighteen-flowered; scape erect, about 1 ft. high. *l.* membranous, short, lanceolate, green above, tinged with red beneath, the sheath broad. South Brazil, 1884. SYN. *Vriesia Duvaliana* (B. H. 1884, 7-8).

T. eminens (eminent). A form of *T. bulbosa*.

T. onisiformis (sword-shaped). *f.* of a reddish-yellow colour. June. *l.* tongue-shaped, yellow-green, about 1 ft. long, the edges entire. *A.* 1½ ft. Brazil.

T. erubescens (blushing). A garden synonym of *T. ionantha*.

T. erythraea (red). A form of *T. bulbosa*.

T. fenestralis (fenestrate). *f.*, sepals long, elliptic, convolute in a tube; petals pale yellow, longer, very broad; spike distichous, elongated; scape erect, long, robust. *l.* coriaceous, about 12 in. long, broad, arched, concave, pale, beautifully marked with pellucid reticulations in the upper half, rounded-mucronate at apex, slightly spotted with red at base. Parana, 1875. Plant tufted. (B. M. 6898.) SYN. *Vriesia fenestralis* (B. H. 1884, 4-5; I. H. n. s. 215).

T. filifolia (thread-leaved). *f.* pale blue, small, distichous, with reflexed petals; inflorescence paniculate, not unlike that of some of the species of *Stactis*, with lax, drooping branches. *l.* subulate, filiform, spreading. Mexico, Vera Cruz, &c., 1871. A very elegant, dwarf, densely-tufted plant. SYN. *T. stactiflora* (B. H. 1871, 12).

T. flexuosa (flexuous). *f.* rosy, distant; sepals 1 in. long; petals 2 in. long, linear, spreading at the summit; bracts rosy, distichous, spreading, oblong-lanceolate, bluish; spike with a few long, spreading branches, or simple. *l.* linear, acuminate, subulate at base, recurved, shorter than the stem, lepidote with minute scales or greenish, transversely zonate beneath. *A.* 1½ ft. to 3 ft. West Indies, &c., 1790. (B. R. 749.) SYNS. *T. aloifolia* (H. E. F. 206), *T. tenuifolia* (of Jacquin).

T. Gardneri (Gardner's). *f.*, sepals glabrous; petals pale purplish, small; spikes four to eight, short, distichous, crowded; bracts lepidote; scape 2 in. to 4 in. high, densely sheathed with linear-subulate, lepidote leaves. *l.* 6 in. to 8 in. long, flat in the lower part, narrowed from a ½ in.-broad base to a reflexing, subulate, convolute point, everywhere densely covered with silvery scales. South Brazil, &c., 1879. SYNS. *T. argentea* (of gardens), *Anoplophytum incanum* (B. H. 1881, 11).

T. geminiflora (twin-flowered). *f.* madder-coloured; sepals shorter than the petals, the limb of which is reflexed; filaments sigmoid towards the apex; bracts red, lanceolate, mucronate, rather longer than the sepals; spike oblong, sub-compound; scape erect, clothed with red, green-tipped, acuminate sheaths. February. *l.* ovate-lanceolate, channelled, acuminate, the outer ones spreading recurved. South Brazil, &c., 1840. SYNS. *T. rubida* (B. R. 1842, 63), *Anoplophytum geminiflorum* (B. H. 1880, 11).

T. gigantea (gigantic). A form of *T. regina*.

T. gladioliflora (gladiolus-flowered). *f.* greenish-violet; spike simple; bracts green, closely imbricated. *l.* broadly ligulate, abruptly acuminate, glabrous. Costa Rica, 1863.

T. glaucophylla (glaucous-leaved).* *f.*, sepals greenish-white; petals purple, almost white at apex, convolute, erect; filaments banded with purple; lower bracts red, the rest green tinged with yellow and red; spikes four or five, 5 in. long; scape red, 1 ft. or more long. August. *l.* imbricated round a rather tumid base, spreading, recurved, 1 ft. to 1½ ft. long, gradually tapering from a broad and rather concave base to a slender point, sub-farfnose or flocculose. Santa Marta, 1847. SYN. *Vriesia glaucophylla* (B. M. 4415; F. d. S. 432).

T. gracilis (slender). *f.* remote, sessile, distichous; petals oblong, slightly dilated and scarcely spreading at apex; bracts reddish at base, greenish towards the apex; panicle loose, erect, the branches erecto-patent, five to eight-flowered, 6 in. to 8 in. long; scape 2 ft. to 2½ ft. high. *l.* entire, of a pleasing green, 10 in. to 12 in. long, broad and semi-amplexicaul at base, attenuated towards the acute apex. Forests of Southern Brazil, 1886. SYN. *Vriesia gracilis* (R. G. 1886, p. 163).

T. guttata (spotted). *f.* numerous, distichous, approximate; sepals citron-coloured, with reddish marks, elliptic; petals yellow, obovate-ligulate; bracts light rose-coloured, broad, conduplicate, nearly equalling the calyx, furinose; spike simple, very long, pendulous; scape arched. *l.* short, slightly acute, mucronate, olivaceous, richly spotted and blotched with dark purple. South Brazil, 1875. SYN. *Vriesia guttata* (B. H. 1880, 1-3; I. H. n. s. 200).

T. Hamaleana (Hamale's).* *f.* sessile, bifarious, fragrant; sepals green, ovate-lanceolate; claw of petals white, linear, channelled, the limb beautiful violet, snow-white at base, rhomboid-dilated, spreading-reflexed, obovate; bracts green and purplish, lepidote, conduplicate; spike compound, the branches distichous; spike erect, longer than the leaves, with remote, reddish bracts. *l.* approximate, divaricate, the lower ones arcuate-deflexed, the upper ones erect, linear, concave, uncinately-revolute at apex, unarmed, not lepidote. Andes of Peru, 1870. (B. H. 1870, 5.) SYNS. *Phytarrhiza Hamaleana*, *Wallisia Hamaleana*.

Tillandsia—continued.

- T. heliconioides** (Heliconia-like). *f. sessile, distant; sepals whitish, striated, lanceolate, acuminate, concave; corolla white, tripartite, the segments lanceolate-linear; bracts striated, ovate, acute, keeled, spreading, lin. or more long; spike 4in. to 6in. long. l. linear-lanceolate, subulate at apex, nearly flat, glabrous, coriaceous, striated, recurved, 1½ft. long. Stem simple, scarcely 1ft. long, leafy. Rio Magdalena Valley. SYN. Vriestia deltoidea and V. Falkenbergii (of gardens), V. heliconioides (G. C. n. s., xxi, p. 140; I. H. n. s. 490).*
- T. hieroglyphica** (hieroglyphic). *f. disposed in a lax panicle; bracts ovate, conduplicate, short; panicle branches spreading, short, naked at base, bearing seven or eight pedicellate flowers. l. forming a tuft 3ft. to 7ft. in diameter, long, loriform, broad, specially at base, glabrous, mucronate, obtuse, green, very handsomely marked above with dark green, and below with blackish-purple. South Brazil. An exceedingly handsome foliage plant. SYN. Massangea hieroglyphica (R. H. 1878, p. 176), Vriestia hieroglyphica (B. H. 1885, 10-12; I. H. 1884, 514). For ... was introduced, the flowers of this species were unknown. In 1885, however, it flowered in the Brussels botanical garden, and was then found not to be a Massangea at all; therefore, this species should not be referred to *Caraguata*, as mentioned under *Massangea*.*
- T. inanis** (uninteresting). A form of *T. bulbosa*.
- T. incurvata** (incurved). *f. yellow, tipped with green, subsessile, long-tubular; petals ligulate, the limb obtuse, recurved; bracts beautiful orange and red, conduplicate, keeled, oval-lanceolate; spike dense, stout, distichous. l. green, lorate.*
- T. inflata** (inflated). A synonym of *T. incurvata*.
- T. ionantha** (violet-flowered).* *f. sessile, crowded at the tips of the branches; petals pale violet, convolute by their linear, broad claws; bracts lanceolate, equalling the sepals. l. numerous, closely imbricated, 2in. to 2½in. long, recurved, subulate-lanceolate, very coriaceous, concave above, sub-pungent at tip, the margins ciliated; upper ones more erect, bright rose-coloured, at length wholly green. A. 3in. to 4in. Brazil (?), 1871. Plant tufted. (B. M. 5892; F. d. S. 1006.) SYN. T. erubescens (of gardens), Pitrophyllum ionantha.*
- T. ixioides** (Ixia-like). *f. three to five in a spike, sub-tristichous; sepals equalling the claw of the petals; petals orange; limb only half as long as the claw; anthers included. l. imbricated, linear, acuminate, slightly dilated at the base, with silvery scales on the dorsal nerve. A. 6in. Uruguay.*
- T. Jonghei** (Jonghe's). *f. tawny-yellow, rather remote, horizontal; sepals greenish, with fuscous margins, ovate, convex, bilobed at apex; corolla campanulate, the petals obtuse, emarginate; bracts fuscous-green, conduplicate, plicate, gibbous at base, shorter than the sepals; spike simple, acipitous, the rachis distichous-pulvinate; scape erect, simple, longer than the ... with ...*
- T. juncofolia** (Rush-leaved). A synonym of *T. setacea*.
- T. Karwinskiana** (Karwinsky's). *f. one to twelve arranged in a single lax, narrow, distichous spike; sepals glossy-green, glabrous; petals violet; scape 9in. to 12in. long. Winter. l. twenty to thirty in a dense rosette, 1ft. long, narrowed from a base 1in. broad to a long point, pale green, lepidote on the back, nearly or quite naked on the face. Mexico, 1878.*
- T. Lindenii** (Linden's)*. *f. axillary, sessile; sepals green, reddish at apex, lanceolate, acuminate, channelled; petals spatulate, the claw linear, the limb of a beautiful bluish-purple, spreading, ovate, sub-acuminate; stamens included; bracts very densely distichous-imbricate, cymbiform, keeled, entire, truncate at apex, smooth, the included base greenish, the outer part of a beautiful carmine; spike terminal, simple, ovate, compressed, rather shorter than the leaves, about twenty-flowered. l. rosette 12in. long, ½in. to ¾in. broad, spreading-recurved, l. acuminate, entire. Andes of Peru, 1867. A handsome species. (B. H. 1869, 18; F. M. 1872, 44; I. H. 1869, 610.) SYN. T. Morreniana, Phytarrhiza Lindenii.*
- T. L. intermedia** (intermediate). *f. bracts green, slightly shaded with rose-colour; scape longer than in the type. 1871. An intermediate form between the type and *T. L. Regelianae*. (F. M. 1871, 629.)*
- T. L. luxurians** (luxuriant). *f. scapes many, axillary, elongated. 1871. (B. H. 1871, 20-21.)*
- T. L. major** (greater).* *f. bright azure-blue, with a white centre, much larger than in the type. 1871. (F. M. n. s. 529.)*
- T. L. Regelliana** (Regel's). *f. bracts green; spike narrower than in the species; scape elongated. 1877. (G. C. n. s., xii, p. 461.) SYN. T. Lindeniana (R. G. 1869, 619).*
- T. Lindeniana** (Linden's). A synonym of *T. Lindenii Regelianae*.
- T. Malzinei** (Omer de Malzine's). *f. twelve to twenty in a dense, simple, multifarious spike; petals white, lingulate, twice as long as the calyx, with a pair of white, imbricated scales at the base; bracts yellow or red, ovate-navicular, above 1in. long. April. l. fifteen to twenty in a dense rosette, about 1ft. long, 3in. broad*
- at the dilated base, falcate, apex, bright green on the face, red-brown with at back. Mexico, 1874. Acaulescent. (B. Vriestia Malzinei (B. H. 1874, 14.)*
- T. monadelphae** (monadelphous). *f. about twenty, whitish, tinged with light purple, rather remote, sub-sessile; petals spatulate, the limb spreading; stamens monadelphous at base; bracts conduplicate, green, tinged with yellow, shining; spike simple, loose, the rachis distinctly pulvinate, green; scape erect, longer than the leaves. l. numerous, broad and green at the base, above arcuate, lanceolate, acute, purple on both sides. Guiana, 1882. SYN. Phytarrhiza monadelphae (B. H. 1882, 7).*
- T. Morreni** (Morren's)*. *f. secund, one sessile in the axil of each viscid, brown bract-leaf; calyx light brown, about twice the length of its bract-leaf; petals yellowish-green, very narrow; panicle pyramidal; bracts straw-coloured. l. two, 2½in. broad, erect, 1½ft. long, sub-coriaceous, with broken, zigzag, transverse markings; tip rounded, minutely mucronate. A. 15in. Brazil.*
- T. Morreniana** (Morren's). A synonym of *T. Lindenii*.
- T. muscosa** (mossy). A garden synonym of *Pitcairnia muscosa*.
- T. narthecioides** (Narthecium-like). *f. yellowish-white, inconspicuous, distant, nearly horizontally spreading; bracts glabrous, as long as the calyx, oblong, striated; spike 4in. long, erect, simple; scape 6in. high, erect. l. linear, flat, 8in. long, ½in. broad, subulate at apex, dilated at base. Guayaquil, 1878.*
- T. nitida** (shining). A synonym of *Catopsis nitida*.
- T. parabiaca** (Parahila). *f. in a densely-imbricated, distichous like; bracts large, purple-red, as long as the golden-yellow calyx; petals yellow, much longer than sepals. Summer. l. green, shining, lingulate, 6in. to 8in. long, about 1in. wide, about as long as the scape. A. 6in. to 9in. Brazil, 1885.*
- T. paucifolia** (few-leaved). A synonym of *T. bulbosa*.
- T. Philippo-Coburgi** (Prince Philip of Saxe-Coburg's). *f. distant, secund; calyx golden-yellow; petals greenish, protruding at the summit of the calyx a third longer, the included part folded into a very narrow tube; panicle pyramidal, the branches red; lower bracts large, dark red; bract-leaf bright red, scarious, clasping at the base, oblong-lanceolate, very acute. l. 2½in. broad, rightly membranous, light green, shining, the apex reddish-brown; sheath slightly dilated, variegated with pale purplish blotches. A. 15in. Brazil. SYN. Vriestia Philippo-Coburgi.*
- T. picta** (painted). A garden synonym of *T. splendens*.
- T. Platzmanni** (Platzmann's). *f. yellow, distichous, rather remote, shortly pedunculate, tubular; sepals fuscous at base, convolute in a tube; petals also convolute; bracts purplish, navicular; spike simple, secund, about ten-flowered; scape 3ft. to 4ft. high, slender, erect, bracteate. l. lingulate, broad at base, green, margined with red. South Brazil, 1875. SYN. Vriestia Platzmanni (B. H. 1875, 23).*
- bracts scarlet, imbricated above; spikes numerous, the lateral ones about ten, 1ft. long, alternate. June. l. linear-subulate, acuminate, entire, channelled, broad and ventricose at base, the lower ones 2ft. long. Stem leafy, erect, 3ft. high. West Indies, &c., 1825.*
- T. polytrichoides** (Polytrichum-like). A synonym of *T. polytrichoides*.
- T. pruinosa** (pruinose). *f. sepals seven to eight lines long, all distinct; petals blue, fourteen to sixteen lines long, convolute, spreading at the summit, spatulate above the claw; bracts rose-coloured, 1in. long, distichous, approximate, ovate-oblong, pointed; spike simple, 2in. to 3in. long. l. convolute-filiform from a subulate base, recurved, as long as the stem. A. 4in. to 6in. West Indies, Brazil, &c. Plant wholly covered with spreading, white scales. (B. H. 1876, 16-17.)*
- T. psittacina** (parrot-like)*. *f. large, remote, distichous; petals green at the point, rather longer than the bracts, which are bright red in the lower part, and deep yellow above; rachis red; scape 1ft. or more high. July. l. radical, 6in. to 8in. long, linear-ligulate, much inflated, recurved, acute, entire, yellow-green, thin, more or less waved. Forests near Rio Janeiro, 1823. (B. M. 2941.) SYN. Vriestia psittacina (B. H. 1862, 10-12; B. H. xxix, 10). Morren unites with this *T. carinata* as a variety.*
- T. psittacino-carinata** (hybrid). A good and handsome garden hybrid, having more numerous and approximate flowers than *T. psittacina*. 1883. SYN. Vriestia Morreniana (B. H. 1882, 10-12, f. 2.)
- T. psittacino-scalaris** (hybrid). *f. as in *T. psittacina*, ten to fifteen on a reflexed rachis; internodes short; scape arcuate, dependent. 1885. Habit stouter than *T. scalaris*. SYN. Vriestia retroflecta (B. H. 1884, 10.)*
- T. pulchella** (pretty). A synonym of *T. pulchra*.
- T. pulchra** (beautiful)*. *f. calyx greenish-white; petals quite white; bracts of a beautiful, delicate red, imbricated and sheathing, almost entirely concealing the flowers; scape, including the spike, about as long as the leaves. l. 4in. to 6in. long, quite subulate, hoary with a minute, scurfy pubescence, channelled*

Tillandsia—continued.

especially towards the base. South Brazil, &c., 1840. Plant tufted. *SYNS.* *T. pulchella* (B. H. ix. 322; B. M. 5229), *Pourretia surinamensis* (of gardens).

T. p. amœna (pleasing). *f.*, sepals pink; petals much longer, with a white claw and a lilac limb; spike few-flowered; scape erect, sheathed by pink bracts. *l.* narrow-subulate. Stem branched, flexuous. *SYN.* *Anoplophytum unanum* (B. H. 1883, 17).

T. pumila (dwarf). A form of *T. butosa*.

T. recurvata (recurved). *f.*, sepals about three-fourths as long as the blue corolla; petals naked within, spreading above the calyx; peduncles axillary or terminal, sub-solitary, exserted,

spreading. *h.* about 6in. Tropical America, 1793.

T. recurvifolia (recurved-leaved). A synonym of *T. dianthoidea rosca*.



FIG. 38. TILLANDSIA REGINA.

T. regina (queen).* *f.* white, exhaling a strong, Jasmine-like perfume; bracts rose-coloured; spikes two-ranked, curved, disposed in a branched panicle; scape developing very rapidly, eventually attaining a height of about 7ft. *l.* about 4ft. long, recurved at apex, broadly sheathing at base. South Brazil, 1867. A magnificent plant. See Fig. 38. *SYNS.* *Vriesea gigantea*, *V. Glazioviana*, *V. regina* (G. C. n. s., iii., p. 235). *T. gigantea* is merely a form of this species.

T. reticulata (netted-leaved). *f.* in a paniculate inflorescence, 1ft. or more long; calyx greenish, 1½in. long; petals milk-white, ½in. longer than the calyx; stamens longer than petals. Spring. *l.* lance-lanceolate, 1½in. to 2ft. long, in a dense rosette, 3in. above the dilated base, moderately firm in texture, nearly naked on both sides, copiously reticulated with fine transverse lines of dark green on a pale green ground. *h.* 1½ft. to 2ft. Rio Grande do Sul, 1870. *SYNS.* *Guzmania reticulata*, *Vriesea reticulata*.

T. revoluta (revolute). A synonym of *T. Duratii*.

Tillandsia—continued.

T. Rodigasiana (Rodigas). *f.* citron-yellow, distichous, remote, sub-sessile, spreading, tubular; sepals obtuse; petals thrice as long as the sepals, ligulate, the limb arcuate; bracts tinged with red, striated, ovate, short; panicle loose, elongated, elliptic, the branches spreading, few-flowered, nearly sessile, springing from a short, scarlet spathe; scape elongated, erect, slender, with narrow bracts. *l.* short, arcuate-spreading, broadly sheathing and fuscous at base, the blade loriform, slightly channelled, rounded-cuspidate, green, with a few dark blood-coloured markings. South Brazil. Closely allied to *T. gracilis*. *SYN.* *Vriesea Rodigasiana* (L. H. n. s. 467.)

T. Roezlii (Roezl's). *f.* rosy; spikes distichous, ancipitous, elliptic, forming a tall panicle. *l.* large, linear, acute, dark green, with large, black blotches on the upper part, the margins incurved. Andes of Northern Peru, 1877. A plant of bold habit. (B. H. 1877, 16.)

T. rosea (rosy). A synonym of *T. dianthoidea*.

T. rubida (reddish). A synonym of *T. geminiflora*.

T. sanguinolenta (blood-red). *l.* deflexed at the apex, with numerous irregular blotches of dark blood-red on both surfaces. *h.* 9in. to 12in. New Granada, 1876. As the flowers of this species are unknown, it has been impossible to place it in the key, or even to state with certainty whether it is really a *Tillandsia* or no. *SYN.* *Encholirion sanguinolenta* (L. H. 1875, 200).

T. Saundersii (Saunders)* *f.* sulphur-yellow; sepals equitant, oblong, concave; panicle loose, the primary raceme few-flowered, divaricate, bracteate; scape erect, shining, angled, yellowish-white. *l.* rosulate, short, deeply and broadly sheathing at base, linear, obtuse, decurved, coriaceous, above greyish-green, slightly dotted with white, below striated and spotted with blood-colour. *h.* 1½ft. Brazil, 1872. *SYN.* *Encholirion Saundersii* (L. H. n. s. 132).

T. scalaris (ladder-like). *f.* very long and pretty; calyx yellow; corolla green; bracts of a deep rose-colour; scape 1½ft. to 2ft. long, hanging from the plant like a rope ladder. *l.* ligulate, about 10in. long, green, ciliated. South Brazil, 1879. *SYN.* *Vriesea scalaris*.

T. setacea (bristly). *f.*, sepals half as long as the corolla; petals bluish-purple, spatulate, 1in. long, spreading at the summit; bracts lepidote, imbricate-distichous, ovate-oblong, pointed, as long as the sepals; spike 2in. to 3in. long, compressed, simple, or with a few short, appressed branches at the base. *l.* convolute-filiform, little or gradually dilated at base, sub-erect, equalling or exceeding the scape. *h.* 8in. to 18in. West Indies to Brazil, 1825. (Ref. B. 288.) *SYNS.* *T. juncea* (B. G. 811), *T. tenuifolia* (of Linnaeus), in part (B. H. 1876, 14).

T. setacea (bristly), of Hooker. A synonym of *T. anceps*.

T. speciosa (showy). A garden synonym of *T. splendens*.

T. splendens (splendid)* *f.*, calyx free, the sepals oblong-lanceolate; petals yellow, free, linear or linear-oblong, slightly dilated-spathulate at apex, thrice the length of the calyx; bracts fiery-purple, lanceolate, acute, keeled, oblique, closely imbricated; spike simple, distichous, compressed, ancipitous, linear-lanceolate, longer than the scape; scape erect, simple, longer than the leaves, the closely-appressed scales green, fuscous-spotted. *l.* eight to twelve, linear-oblong, concave at base, nearly 2ft. long, 3in. broad, flat and abruptly narrowed towards the recurved apex, of a pleasing green above, lighter beneath, with transverse, dark fuscous zones. French Guiana. See Fig. 39. (F. d. S. May, 1846, 4.) *SYNS.* *T. picta*, *T. speciosa*, and *T. zohrina* (of gardens), *Vriesea splendens*.

T. staticiflora (Statice-flowered). A synonym of *T. filifolia*.

T. streptophylla (twisted-leaved). *f.*, calyx ½in. long, hidden; corolla bright lilac, cylindrical, 1½in. long; bracts densely lepidote, much imbricated; spikes four to eight in a short panicle; peduncle short, hidden by its numerous red-tinted, lepidote, imbricated, bract-like leaves. *l.* in a dense, basal rosette, the erect, dilated base 3in. long and broad; blade 6in. to 8in. long, 1in. broad at base, gradually tapering to a long point, much twisted spirally from low down, densely lepidote. Jamaica, &c., 1878. (B. M. 6757.) *SYN.* *T. circinata*.

T. stricta (erect). *f.* narrow-cylindrical, about ½in. long; calyx pale reddish-brown; corolla deep violet-blue above the calyx, finally deep red; bracts white, red-tinged, slightly pallid; scape about 7in. high. November. *l.* springing from a short, fleshy rootstock about 6in. long, nearly ½in. broad at the base,

Tillandsia—continued.

coated with hoary pubescence. Brazil, &c., 1810. (B. M. 1529.)
 SYN. *Anoplophytum strictum* (B. H. 1278, 13).

T. s. canescens (caulescent). This only differs from the type in its stem being decidedly developed, and, consequently, in the greater stature of the plant.

T. stricta (erect), of Lindley. A synonym of *T. dactyloidea*.

T. tectorum (growing on roofs). *f.*, sepals free, lanceolate, conduplicate; petals white, blue in the middle, convolute in a tube which broadens towards the apex; bracts light green, tinged with rose, lanceolate, conduplicate, rather shorter than the sepals; spikes distichous, ancipitous, short, forming a short, contracted panicle; scape erect, tall, its bracts rosy at base. *l.* very numerous, imbricated, lanceolate-linear, spreading, arched, scarious-pilose; sheath very broad, gradually attenuated into the limb. Stem elongated, ascending, leafy. Andes of Peru, 1865. (B. H. 1877, 18.) SYN. *T. argentea* (of K. Koch), *Pourretia nivea* (of gardens).

T. tenuifolia (slender-leaved), of Jacquin. A synonym of *T. flexuosa*.

T. tenuifolia (slender-leaved), of Linnaeus. A synonym of *T. setacea*.



FIG. 39. TILLANDSIA SPLENDENS.

T. tessellata (tessellated). *f.*, sepals green, glutinous; petals yellow, forming a campanulate corolla; bracts green; panicle tall, erect, loose, the branches erect, arcuate, each bearing nine to twelve sub-sessile flowers; scape equalling the leaves, furnished with navicular bracts. *l.* coriaceous, rigid, channelled, tessellated in green and yellow, sub-glaucouscent, acuminate at apex, the sheath broad, dark fuscous. South Brazil, 1882. SYN. *Vriesia tessellata* (B. H. 1882, 14-16).

T. tricolor (three-coloured). A synonym of *T. anceps*.

T. umbellata (umbellate).* *f.*, sapphire-blue, white in the centre, five or six opening simultaneously; calyx green; bracts light green, as large as the sepals; inflorescence a very short, ancipitous spike. Winter. *l.* 9 in. to 12 in. long, $\frac{1}{2}$ in. broad, light green, shortly sheathing at the base, ascending, spreading, biflorous, acute at the tips, smooth and glossy. A. lft. Ecuador, 1882. (R. H. 1886, p. 60.) A near ally of *T. Lindenii*.

T. usneoides (Usnea-like). Long Moss; Old Man's Beard; Spanish Moss, of the West Indies. *f.*, green, solitary, terminal, about $\frac{1}{2}$ in. long; sepals tinged with red. July. *l.* alternate, bifarious, uniform throughout, spreading, $\frac{1}{2}$ in. to $\frac{3}{4}$ in. long, filiform, grooved above; sheaths $\frac{1}{2}$ in. to $\frac{2}{3}$ in. long, cylindrical. Tropical America, 1877. Plant forming loose, pendulous tufts, sometimes many feet long, clothed everywhere with a spreading, silvery scurf. (B. H. 1877, 17; B. M. 6309.)

T. utriculata (bladder-like). *f.*, sepals green, reddish-margined, half as long as the corolla; petals greenish-white, spreading at the summit; bracts green, reddish-margined, distichous, erect, oblong, blunt, longer than the internodes; spike compound, the branches long and distant. *l.* linear, acuminate, gradually taper-

Tillandsia—continued.

ing from an ovate base, spreading, recurved at the top, shorter than the stem. West Indies, &c., 1793.

T. vernicosa (polished). *f.*, white; spikes paniced; distichous; peduncle under $\frac{1}{2}$ in. long. *l.* few, ensiform, polished. Parana, 1887.

T. vestita (clothed). *f.*, yellow, forming a long, cylindrical tube, exerted about $\frac{1}{2}$ in. from the red calyx; spike simple, few-flowered. May. *l.* linear-subulate. *h.* $\frac{1}{2}$ in. Mexico, 1886.

T. viminalis (twiggy). *f.*, white, $\frac{1}{2}$ in. long, $\frac{1}{4}$ in. in diameter; petals oblong, obtuse, forming a campanulate corolla; bracts green; spike simple, distichous, dense, fusiform; scape twiggy, 2ft. high, covered with scarious bracts. *l.* in a large, open rosette, membranous, shining, ligulate, acute, recurved, entire, 1ft. long, $\frac{1}{2}$ in. to $\frac{2}{3}$ in. broad. Costa Rica, 1878. SYN. *T. viridiflora* (of gardens), *Vriesia viminalis* (B. H. 1878, 14-15).

T. virginalis (fragile).* *f.*, sessile; sepals green, included; corolla claviform, ample, the petals white, obovate; bracts green, conduplicate, ample, farinaceous; spike simple, distichous, elliptic, ancipitous. *l.*, primordial ones diliform; the rest lorate, with a broad sheath, pale green, farinaceous. Mexico, 1873.

T. viridiflora (green-flowered). *f.*, petals green, fugacious; spike simple, dense, 12 in. long; bracts 2 in. to 2 $\frac{1}{2}$ in. long; peduncle $\frac{1}{4}$ ft. to 2ft. long. Summer. *l.* twelve or more, about 1ft. long, lorate. Mexico, 1887.

T. viridiflora (green-flowered), of gardens. A synonym of *T. viminalis*.

T. Warmingii (Warming's). *f.*, yellow, rather distant, numerous, distichous, erecto-patent, tubular; petals ligulate, revolute at apex; bracts golden-yellow, tipped with green, coriaceous, ovate, closely covering the flowers; spike long, simple, the rachis rigid; scape 3ft. to 4ft. high. *l.* coriaceous, about 3ft. long and 2 in. broad, slightly spreading, green, marbled and tinged with dark rose-colour, especially in the lower part, the sheath broad. South Brazil, 1884. SYN. *Vriesia Warmingii* (B. H. 1884, 12-13).

T. Wawraea (Wawra's). *f.*, ten to twelve, arranged distichously at the summit of a scape, which is clothed with green, adpressed bracts, and is somewhat shorter than the leaves; calyx green; petals waxy-yellow, pointed, recurved; filaments and pistil shorter than the petals. Summer. *l.* 18 in. long, 2 $\frac{1}{2}$ in. to 3 in. wide, glaucous, bluish-green, with fine, transverse, wavy lines, a dark brown blotch just under the mucro, and dark chestnut-brown at the base; rosette with about a score leaves. A. 1ft.

T. xiphoides (Xiphion-like).* *f.*, snow-white, numerous; sepals linear-lanceolate, acuminate; petals with a slender, linear claw, $\frac{1}{2}$ in. long, and a broadly obovate, acuminate, reflexed, crisped blade; bracts 2 in. long, closely imbricated; spike 3 in. to 4 in. long, reflexed, distichous; scape long or short. May. *l.* crowded, rosulate, 4 in. to 6 in. long, $\frac{1}{2}$ in. broad at base, broadly subulate, with recurved margins that are involute at the tip. Argentine Republic and Uruguay, 1810. Plant covered with silvery-grey tomentum, deliciously scented, and remarkably pretty. (B. M. 5562; B. H. 105.)

T. xiphostachys (dagger-spiked).* *f.*, deep rich purple, only one opening at a time; bracts green, becoming tinged with bright yellow, and bright red towards the base, closely joined, sharply cymbiform; spike singularly flattened, solitary, $\frac{1}{2}$ in. long, $\frac{1}{2}$ in. broad. August. *l.* 9 in. to 12 in. long, from a broad, convex base, gradually tapering to a subulate point, entire, dark glaucous-green; lower ones purplish at base. Mexico and Venezuela, 1861. SYN. *T. complanata* (B. H. 1872, 23), *Vriesia xiphostachys* (B. M. 4287).

T. zebra (zebra-striped). A garden synonym of *T. splendens*.

TILLETIA (named in honour of Matthieu Tillet, a French botanist of the eighteenth century). A genus of Fungi, parasitic on grasses. The most conspicuous species (*T. Caries* = *T. Tritici*) is found in the ovaries or immature fruits of the various kinds of Wheat, which it fills with a mass of dark brown spores. Externally, the grains look quite healthy, or may be distinguished from the ripe fruits only by their dull green colour; but their whole interior is occupied by the spores of the Fungus, and, on being crushed, they are found to be greasy to the touch, and to emit a disagreeable smell. Under the microscope, the spores are seen to be globular, with a network of ridges over the surface. The diseased condition of the Wheat is known to farmers by the names "Bunt," "Stinking Rust," "Stinking Smut," or "Pepper-brand." On germinating, each spore emits a thread of mycelium, which bears on its tip a circle of slender conidia, united in pairs by cross-branches. The conidia fall, and produce mycelium, on which grow other conidia, from which mycelium is emitted; and on this the spores are formed. Several other species of *Tilletia* grow in the ovaries of grasses, e.g., *T. Lolii* in *Lolium remotum*, *T. Secalis* in Rye (*Secale cereale*), &c.; while others form dark brown streaks in

Tilletia—continued.

the leaves of several grasses; *T. striiformis* is the commonest of the latter species. It has been asserted, but not confirmed, that the use of bunted meal causes disease.

Treatment. The infected grain may be steeped in solutions, e.g., of 1 per cent. of carbolic acid in water, or of potassium permanganate, or of sodium sulphate; in the latter case, it should then be dusted with quicklime, and allowed to dry.

TIMMIA. A synonym of **Cyrtanthus** (which see).

TINANTIA (called after Tinant, a Belgian botanist). ORD. *Commelinaceæ*. A small genus (three species) of stove or hardy, erect herbs, natives of tropical America. Flowers pedicellate at the sides of the branches; cyme on a terminal peduncle. Leaves mediocre or ample. The under-mentioned plant is a half-hardy, perennial herb, closely allied to *Tradescantia*. It thrives in any well-drained, loamy soil. Seeds may be either sown in a warm, sunny spot in the open ground, in spring, or germinated in heat, and the seedlings hardened off and planted out; but it also thrives as a greenhouse plant.

T. fugax erecta (fugacious, erect). *fl.*, petals blue or purplish; pedicels conspicuously bracteolate at base; peduncle villous, one to three-parted at apex, the branches umbellate. July. *l.* ovate-lanceolate, pilose above, glabrous beneath, narrowed at base, slightly petiolate, longitudinally striated. Stem glabrous. *h.* 1½ ft. 1794. SYNS. *Tradescantia erecta* (B. M. 1340), *T. latifolia* (L. B. C. 1300), *T. undata* (B. R. 1403).

TINEA (of Sprengel). A synonym of **Prockia** (which see).

TINEINA (from *tinea*, a clothes-moth). A very extensive division of small **Moths** (which see), most of which may be readily distinguished from the division **Tortricina** (which see) by the narrow wings, almost always fringed with long scales on the inner and hind margins, the hairless eyes, the thickened bases of the antennæ, and the upturned terminal joints of the palpi. They differ very greatly among themselves in form, colour, and habits, and even in size, some of the larger ones measuring nearly 1 in. across the fore wings, while many of them do not exceed ¼ in. across; in fact, the smallest known species of Moths belong to this division. The number of species is very great; and it is not possible to enter into details with regard to them individually. Hence, special reference must be confined to only a few of the species of most importance to horticulturists.

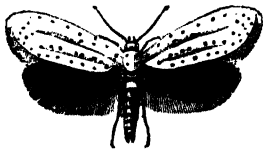


FIG. 40 SMALL ERMINE MOTH (*Hyponomeuta*)
Twice natural size.

Most of the larvæ have six true legs, and ten suckers or prolegs; but in one genus there are twelve suckers, in others only eight, and in some the larvæ are entirely footless, and live in burrows in the leaves or other organs of plants. Some of the larvæ feed on the surface of the plants, exposed to view, or protected by a case fitting closely around the body. Most of them, however, live concealed, either in webs or in masses of flowers and seed vessels spun together, or, as already mentioned, in burrows in stems, leaves, or fruits; and some are but too well known because of their ravages on clothes, and on articles of furniture.

Among the genera most destructive in gardens is *Depressaria*, several species of which are hurtful to Carrots and Parsnips, and are described among the insect foes

Tineina—continued.

of these plants. Some of the species in this genus reach a span of nearly 1 in. across the fore wings, and are thus among the largest of the *Tineina*. The genus *Tinea* includes a considerable number of species, several of which feed in clothes, in furniture, or on Cereals, &c., stored in granaries and warehouses; but none are conspicuously hurtful in gardens. An account of *Hyponomeuta padella*, and its ravages on Hawthorn, is given under **Hawthorn Caterpillars**. The genus *Hyponomeuta* includes a few species, all easily recognised by three or four longitudinal rows of black dots on the white or grey fore wings (see Fig. 40); but the larvæ of *H. padella* alone are ever seriously injurious in gardens. Their

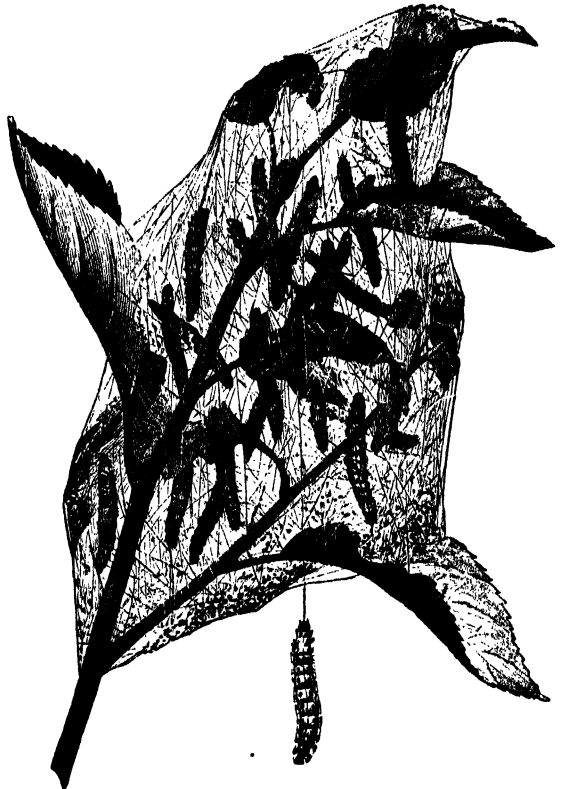


FIG. 41. LARVÆ AND WEB OF SMALL ERMINE MOTH
(*Hyponomeuta padella*).

habit of living in society, in a web (see Fig. 41) renders them very conspicuous, and it is easy to remove and destroy entire colonies. *Plutella cruciferarum* (which see) does a good deal of harm to Cabbages and Turnips. *Endrosis fenestrella* is one of the most abundant of clothes-moths in houses, appearing almost throughout the year. It may be known by the snowy-white head and thorax, and dirty-grey wings, clouded with darker markings. The leaf-miners are very numerous; indeed, there are few trees or shrubs that are not infested by several, or even by many, species; and there are also many leaf-miners that burrow in the leaves of herbs of various kinds: e.g., several live in *Eplobium angustifolium* and its congeners. The mines and blotches produced by these insects render the leaves unsightly, but are seldom so numerous as to materially weaken the plants.

Treatment. If the plants are suffering from the abundance of leaf-mining larvæ upon them, or if their beauty is

Tineina—continued.

materially impaired thereby, the mined leaves should be picked off with the larvæ still in them; or the larvæ may be crushed in the leaves between the finger and thumb. The habits of life of other injurious *Tineina* are so various that no general statement of treatment would be of much service, and reference should be made to the methods advised under the special headings quoted above.

TINNEA (named in honour of Mdlle. Tinné, Nile voyager). ORD. *Labiales*. A small genus (four or five species) of tall, pubescent or woolly, stove herbs or under-shrubs, natives of tropical Africa. Flowers fuscous- or violet-purple, fragrant; calyx ovoid, bilabiate; corolla tube short and broad, the limb subbilabiate, the upper lip emarginate or two-lobed, the lower one much longer and spreading; stamens four; whorls often loose, two-flowered, axillary or disposed in a terminal raceme; pedicels bi-bracteolate. Leaves entire; floral ones conformed, the upper ones reduced to bracts. Only one species has been introduced. It thrives in any light, rich soil. The plants should be grown in a light, airy place, and frequently pinched to induce a bushy growth. Propagation may be effected by cuttings, which root readily.

T. æthiopica (African). * *f.* copiously produced in the upper axils, two or three to a peduncle; corolla dark maroon-purple, the broad tube a little longer than the calyx. Winter. *l.* on short, petioles, ovate, sub-acute or acute, quite entire, narrowed at base. Stems and branches erect, terete, ribbed, twiggy. *h.* 4ft. to 6ft. 1867. A hoary sub-shrub. (B. M. 5537.)

T. æ. dentata (toothed). *f.*, calyx large, cylindrical, two-lipped, enclosing the whole of the corolla tube. *l.* opposite, elliptic, slightly toothed. 1834. (B. M. 6744.)

TINUS. Included under **Viburnum** (which see).

TIPULA. See **Tipulidæ**.

TIPULARIA (from *tipula*, a Daddy-long-legs; in allusion to the shape of the flower). SYNS. *Anthericlis*, *Plectrurus*. ORD. *Orchidææ*. A small genus (two closely-allied species) of terrestrial Orchids; one is North American, and the other Himalayan. Flowers rather small, loosely racemose, pedicellate; sepals and petals free, narrow; lip sessile, with small lateral lobes and a flat middle one. Leaves ovate. The species have no horticultural value.

TIPULIDÆ. A family of two-winged flies (*Diptera*) distinguished by the long, slender body, with long, unarmed legs, and long, rather narrow wings, with many veins. There is a distinct furrow on the back of the thorax, between its front and middle segments. The head is usually rather small and round, and bears rather long antennæ, which have from six to nineteen joints. One of the commonest species, the Common Crane Fly



FIG. 42. TIPULA OLERACEA.

(*Tipula oleracea*), is shown, of the natural size, at Fig. 42. The larvæ of *Tipulidæ* are popularly known as "grubs," and under that name are but too well known to farmers, as they are among the worst enemies of the cultivated crops, and of pastures. They are dirty-grey,

Tipulidæ—continued.

cylindrical maggots, with no distinct head or feet. The rings are separated by shallow grooves. The body is blunt behind, but bears six small, fleshy tubercles on the blunt end. The "grubs" are clumsy creatures, and move slowly, but are protected from injury by their tough skin, which has procured them the name of "Leather-jackets" in some localities. They are of various sizes, when full grown, as there are numerous species. The larvæ of *T. oleracea* reach a length of over lin., with a thickness of about $\frac{1}{4}$ in. They live in the soil, a little way below the surface, feeding on the roots of grasses and other plants. When numerous, they not unfrequently destroy the grasses on lawns, or devour great part of the garden and field crops. The produce of damp soil is peculiarly apt to suffer from their ravages. When full fed, they change into pupæ, which are of nearly the same size as the larvæ, but are provided with cases on the front part of the body for the wings and legs of the future Crane Fly. The rings of the abdomen of the pupæ each bear a transverse row of short, stiff spines; and, by means of these, the pupæ can wriggle partly out of the soil, just before the flies are ready to break out, to permit their more easy exit. There are many species of *Tipula*, but there is no need to describe them in detail, as all show much the same habits, and must be combated by the same methods.

Treatment. The female flies are prevented from laying eggs, and the larvæ may be destroyed, by the employment of dressings of such materials as gas lime or soaper's ashes. Common salt has also been found useful, in the proportion of about half a ton to the acre, just before the ground is ploughed. Deep ploughing is very beneficial. To enable the crops to resist attacks, the most effectual method is to stimulate growth by dressings of guano or other manures, so as to render the plants less liable to serious injury, even if partially eaten. The use of heavy rollers has been recommended for lawns, and this would probably kill those grubs that lie close to the surface; but they are not very liable to injury from pressure, unless it is very considerable.

Traps, as recommended under **Crane Fly** (which see), consisting of slices of turnip, potato, or other fleshy roots or tubers, may be employed with success for the protection of choice plants or crops. They should be sunk a few inches below the surface of the soil, and be examined every two or three days, the grubs found in them being removed and destroyed.

Certain birds, especially starlings and rooks, are very useful in reducing the number of grubs, of which they eat multitudes: they ought, therefore, to be encouraged. Among the most productive breeding-grounds of grubs (as well as of other pests of gardening and of agriculture) are uncultivated corners or edges of shrubberies and fields, where weeds are allowed to grow unchecked from year to year. It is advisable to get rid, as thoroughly as possible, of such sources of trouble.

TISSUE. The material of which the elementary organs of plants are constructed, whether consisting of membranes, bladders, cells, or fibres.

TITHONIA (a name of mythological derivation, from Tithonus, the favourite of Aurora). ORD. *Compositæ*. A small genus (four or five species) of half-hardy, robust, annual herbs, or sometimes shrubby at base, natives of Mexico, Central America, and Cuba. Flower-heads yellow, large, heterogamous, on long, thickened peduncles; ray florets ligulate, spreading, entire or scarcely bidentate; involucre hemispherical or broadly campanulate, the bracts biseriata; receptacle convex; achenes slightly pilose. Leaves alternate, petiolate, entire or three-lobed. The species here described thrive in any light soil. Propagated by seeds.

Tithonia—*continued*.

T. ovata (ovate). A synonym of *Zexmenia ovata*.

T. speciosa (showy). *fl.* heads, involucre bracts leafy; ray florets about twelve or thirteen, rich red; peduncles one-headed, thickened above. August. *l.* petiolate, cordate, undivided or crenately three-lobed. Stem erect, terete. *h.* 4ft. Mexico, 1835. *SYN.* *Helianthus speciosus* (B. M. 3295).

T. tagetiflora (Margold-flowered). *fl.* heads orange-yellow; ray florets oval-oblong; involucre velvety, erect; peduncles thickened at apex. August. *l.* usually trilobed. *h.* 6ft. Vera Cruz, 1818. (B. R. 591; R. H. 1858, f. 64.)

T. tubæformis (tube-like). *fl.* heads, ray florets oblong; involucre hairy, somewhat spreading; achenes usually biaristate; peduncles thickened at apex. July. *l.* all undivided. *h.* 5ft. Mexico, 1799. (B. R. 1519, under name of *Helianthus tubæformis*.)

TITHYMALUS. A synonym of *Euphorbia* (which *see*).

TITRAGYNE. A synonym of *Rohdea* (which *see*).

TITTMANNIA (of Reichenbach). Included under *Vandellia* (which *see*).

TOAD (*Bufo vulgaris*). There are few more useful animals in a garden than the common Toad, despite the prejudices with which it has so long been regarded, and which are, even yet, hardly extinct in some minds. It is, however, scarcely necessary, in the present day, to waste words to disprove the belief, so widely prevalent in the past, that the Toad is venomous. It is perfectly harmless to human beings. It is of much value in a garden, from the fact that it feeds largely on insects and slugs. During the day, Toads shelter themselves under stones, or in holes in the soil; or, in default of these, they will retreat to the shade of broad-leaved plants. The night is their time for movement and for taking food; though a dull, wet day will also tempt them out. Despite the slowness of their motions, they are able to capture the most active insects. This is done by means of the tongue, which can be shot forth from the mouth to a surprising distance.

TOADFLAX. *See* *Linaria*.

TOAD FLOWER, AFRICAN. A common name for several species of *Stapelia*.

TOAD STOOL. A common name for poisonous Fungi.

TOBACCO. *See* *Nicotiana Tabacum*.

TOCOCO (*Tococo* is the name of *T. guianensis* in Guiana). Including *Sphærogyne*. *ORD.* *Melastomaceæ*. A genus comprising about thirty species of glabrous or hispid-pilose, stove shrubs, natives of North Brazil, Venezuela, and Guiana. Flowers white or pink, rather large, paniculate, naked or included in ample bracts; calyx tube terete or costate, the limb dilated, five or six-lobed; petals five or six, obovate or oblong, obtuse or retuse; stamens ten or twelve, equal. Leaves petiolate, ample, membranous, rarely coriaceous, entire or denticulated, five-nerved, often having on the base or on the petiole a two-lobed, inflated bladder. The species known to cultivation are here described. They thrive in a compost of one part sandy loam and two parts rough peat. Cuttings of side shoots should be inserted in February.

T. ferruginea (rusty). *l.* three-ribbed, elliptic-oblong, shortly acuminate, shaded green on the upper surface, paler beneath, the younger ones stained with red. Stem terete, clothed with cinnamon-coloured scurf. South America, 1868. *SYN.* *Sphærogyne ferruginea*.

T. guianensis (Guiana). *fl.* shortly pedicellate or sessile; calyx limb entire; petals whitish-pink, obovate-cordate, inequilateral; panicle terminal. August and September. *l.* very variable in size and shape; broadly elliptic or ovate, shortly acuminate, rounded at base, very slightly denticulated; petioles scarcely $\frac{1}{2}$ in. long beneath the bladder. *h.* 3ft. to 4ft. Guiana, 1826.

T. imperialis (imperial). *l.* large, elliptic, of a rich dark green, having a silky or velvety surface, and with the principal veins

Tococa—*continued*.

reddish at the base. Peru, 1869. A very handsome plant. *SYN.* *Sphærogyne imperialis*.

T. latifolia (broad-leaved). *fl.* very shortly pedicellate; petals of a beautiful pink or red; panicle terminal, more or less contracted, the branches slender. *l.* long-petiolate, broadly ovate, apiculate, entire or inconspicuously dentate-ciliated below the apex, rounded at base. Stem simple. Equinoctial America, 1862. *SYN.* *Sphærogyne latifolia*.

TOCOYENA (said to be the name of this plant in Guiana). *SYN.* *Ucriana*. *ORD.* *Rubiaceæ*. A genus comprising about eight species of erect, glabrous or tomentose, stove shrubs, natives of Brazil and Guiana. Flowers white or yellow, showy, cymose, sub-sessile; calyx five-toothed, persistent; corolla funnel-shaped, the tube slender, the throat naked; limb of five spreading, obtuse, contorted lobes; stamens five, inserted in the throat of the corolla; peduncles short and thick. Berry oblong, many-seeded. Leaves opposite or nearly so, shortly petiolate, ovate or lanceolate; stipules small, acute. *T. longiflora*, the only species known to cultivation, thrives in fibry peat, with the addition of a little lumpy loam, sand, and charcoal. It may be multiplied by cuttings of half-ripened shoots, inserted in sand, under a glass, in heat, during May.

T. longiflora (long-flowered). *fl.* sub-sessile, aggregated; calyx tube turbinate; corolla 8in. to 9in. long, the tube yellow, the limb white. *l.* lanceolate-oblong, acuminate at both ends, glabrous, 1ft. long, 4in. to 5in. broad; stipules triangular. Stem tetragonal, very simple. *h.* 6ft. Guiana, 1826. (A. G. 50.)

TODAOA (commemorative name). *Campylocentrum* is now the correct name. *ORD.* *Orchidæ*. A genus comprising about fifteen species of stove, epiphytal Orchids, natives of tropical America. Flowers minute, spicate, often distichous; sepals and petals free, narrow; lip sessile at the base of the column, produced in a spur at base; column very short. Leaves distichous, often scattered, oblong, linear, or terete. Stem occasionally leafless, not pseudo-bulbous. Only one species calls for description here. For culture, *see* *Angræcum*.

T. micranthum (small-flowered). *fl.* white; sepals and petals spreading at apex; lip conformed, bilobed; spur obtuse, incurved; spike secund, many-flowered, horizontal, shorter than the leaves. February. *l.* 1½ in. long, oblong, three-nerved, oblique at apex. Stem short. 1836. (B. R. 1772, under name of *Angræcum micranthum*.)

TODDALIA (*Kaka Toddali* is the Malabar name of *T. aculeata*). Including *Scopolia* (of Smith), *Vepria*. *ORD.* *Rutaceæ*. A small genus (six to eight species) of unarmed or prickly, climbing or sarmentose, stove shrubs, dispersed over the tropics of the Old World and the Cape. Flowers in axillary or terminal cymes or panicles; calyx short, two to five-toothed, lobed, or parted; petals two to five, imbricated or valvate; torus inconspicuous or slightly elongated. Leaves alternate, trifoliate; leaflets sessile, lanceolate, coriaceous, entire or orenate, pellucid-dotted. Three species have been introduced, all natives of Mauritius. They are interesting shrubs, thriving in a compost of loam, peat, and sand. Propagated readily by cuttings, inserted in sand, under a glass, in heat.

T. sculeata (prickly). Lopez Root. *fl.* white; panicles shorter than the leaves, pilose, many-flowered. May. *l.* leaflets obovate-oblong, acute, $\frac{1}{2}$ in. to 1 in. broad, entire or obscurely crenate, the edges wrinkled; petioles 1 in. long, flattened upwards. 1790. A climber, often armed with hooked prickles. (B. M. Pl. 49.)

T. lanceolata (lance-shaped). *fl.* white, on short pedicels; panicles many-flowered, axillary and terminal, thyrsoid. May. *l.* leaflets oblong-lanceolate, 2 in. to 3 in. long, acute, entire, the edges wavy; petioles 1 in. to 2 in. long, not flattened. *h.* 4ft. and upwards. 1824. An erect shrub. *SYN.* *Vepria lanceolata*.

T. paniculata (panicled). *fl.* greenish-white, in copious, deltoid, terminal panicles, with spreading or ascending branches. May. *l.* leaflets obovate-oblong, obtuse or sub-acute, 1 in. to 1½ in. broad, bright green; petioles 1 in. to 1½ in. long, sub-terete. *h.* 20ft. to 30ft. 1824. An erect, unarmed shrub.

TODDY PALM. A common name for *Caryota urens* (which *see*).

TODEA (named in honour of Henry Julius Tode, of Mecklenburg, 1733-1797, an experienced mycologist). *Crape Fern*. Including *Leptopteris* (of Presl). *Ord. Filices*. A genus comprising about five species of greenhouse Ferns, almost confined to the South temperate zone, having the capsules of *Osmunda*, but the ordinary habit of *Polypodium*. Sori on the back of the leafy part of the frond. Todeas thrive in the cool house, and prove very ornamental if planted in moist, sheltered places in the open fernery. If rapid growth be desired, the plants should be grown in the tropical fernery, in a close case. The best soil is one composed of fibrous peat and silver sand. Ample shade must be afforded, and the fronds frequently moistened by sprinklings of water. See also **Ferns**.

T. africana (African). A synonym of *T. barbara*.

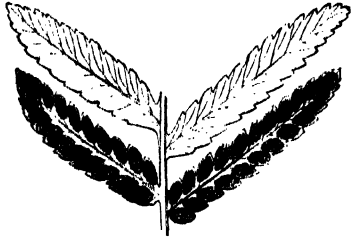


FIG. 43. PORTION OF FROND, WITH BARREN AND FERTILE PINNÆ, OF *TODEA BARBARA*.

T. barbara (Barbary)* *cau.* sub-arborescent. *sti.* 1ft. or more long, stout, erect, quadrangular, quite naked. *fronds* 3ft. to 4ft. long, often 1ft. broad; pinnae close, erecto-patent, 1in. to 1½in. long, ½in. to ¾in. broad, the edge more or less distinctly toothed, the upper ones connected at the base. *sori* dense, when mature filling up the whole under surface of the pinnules on which they are placed. Australia and New Zealand, 1869. See Fig. 43. (H. M. 5934.) *SYNS* *T. africana*, *T. rivularis*.

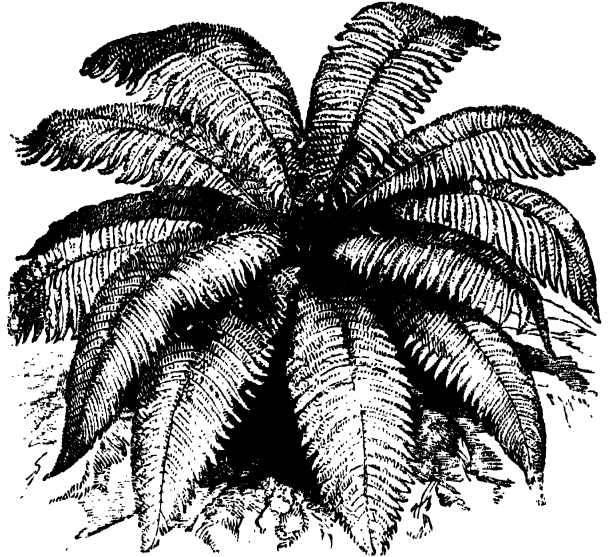


FIG. 45. *TODEA SUPERBA*.

oblong, ½in. to ¾in. long, ¼in. broad, cut down nearly to the rachis into erecto-patent, simple or forked, linear segments; rachises naked or slightly tomentose. New Zealand. See Fig. 44. (H. G. F. 54.) *SYN.* *T. pellucida*.



FIG. 44. *TODEA HYMENOPHYLLOIDES*, showing Habit and detached Pinna.

T. Fraseri (Fraser's). *cau.* erect, woody, 1½ft. to 2ft. high, 1½in. to 2in. thick. *sti.* 6in. to 9in. long, firm, erect, naked. *fronds* 1ft. to 2ft. long, 8in. to 12in. broad, bipinnate; pinnae close, lanceolate, 4in. to 6in. long, ¾in. to 1in. broad, with a narrowly-winged rachis, the lowest about equal to the others; pinnules linear-oblong, ½in. long, ¼in. to ½in. broad, sharply toothed, the rachises naked. Australia, 1861. *SYN.* *Leptopteris Fraseri*.

T. F. Wilkesiana (Wilkes). *fronds* larger than in the type; lower pinnae rather shorter than the others, and deflexed; rachises slightly pilose. Fiji and New Hebrides, 1870.

T. hymenophylloides (Hymenophyllum-like)* *sti.* tufted, 6in. to 12in. long, firm, erect, naked. *fronds* 1ft. to 2ft. long, 6in. to

T. h. compacta (compact). A variety far closer and denser in form than the type.

T. pellucida (pellucid). A synonym of *T. hymenophylloides*.

T. rivularis (brook-loving). A synonym of *T. barbara*.

T. superba (superb)* *cau.* erect, woody, 1ft. to 1½ft. high. *sti.* 2in. to 3in. long, firm, erect, naked. *fronds* 2ft. to 4ft. long, 6in. to 10in. broad, tripinnatifid; pinnae close, narrow-lanceolate, the central ones 4in. to 5in. long, ½in. broad, the lower ones gradually reduced; pinnules close, linear-oblong, ½in. to ¾in. long, cut down nearly to the rachis into erecto-patent, simple or forked, linear segments; rachises densely tomentose. New Zealand, 1861. A splendid plant for exhibition purposes. See Fig. 45.

TOFIELDIA (named in honour of Tofield, a Yorkshire botanist). False Asphodel. *SYNS. Hobelia, Heritiera*. *ORD. Liliaceæ*. A genus comprising about fourteen species of mostly hardy, perennial herbs; two are natives of the Andes, and the rest are broadly dispersed over mountainous and temperate regions. Flowers small, shortly pedicellate or sub-sessile, in terminal spikes; perianth persistent, the segments distinct or very shortly connate near the base; stamens six. Leaves radical or clustered at the base of the stem, short-linear, sub-stichous; cauline ones few or none. *T. palustris* is a native of Britain, but of no particular beauty. *T. pubens*, the only species calling for mention here, thrives in any light soil, in a moist situation. It may be increased by division of the roots.

T. pubens (downy). *fl.*, perianth whitish, two lines long, raceme loose, 2in. to 4in. long. July. *l.* radical, narrow-linear, somewhat rigid, glabrous, 6in. to 12in. long. Stem slender, 1ft. to 2ft. high. North America, 1840. (B. M. 3859.)

TOLMIEA (dedicated by Torrey and Gray to Mr. Tolmie, surgeon of the Hudson's Bay Company at Puget Sound). *ORD. Saxifragææ*. A monotypic genus. The species is a hardy herb, with a perennial rhizome. It was formerly included under **Tiarella** (which see for culture).

T. Menziesii (Menzies). *fl.* greenish, rather large, nodding, in a slender, elongated raceme; calyx purple-nerved; petals five, capillary. April. *l.* radical ones petiolate, alternate, incised-lobed; cauline ones alternate. Stem 1ft. to 2ft. high, three to five-leaved, hairy. North-west America, 1812. *SYNS. Heuchera Menziesii, Tiarella Menziesii* (H. F. B. A. i. 80).

TOLPIS (a name given by Adanson, probably without meaning, as was his custom). *ORD. Compositæ*. A genus comprising less than eighteen species of pretty, hardy, annual or perennial herbs, rarely with a slightly woody caudex, natives of the Mediterranean region and the Canary Islands. Flower-heads pale or bright yellow, homogamous; ray florets truncate five-toothed at apex; involucre campanulate; bracts narrow, the lower ones one or two-seriate, the upper ones in many series; receptacle naked or honeycomb-like. Leaves mostly radical, or alternate on the lower part of the stem, entire, toothed, or pinnatifid, the upper ones often narrow. The following species, which are those best known to cultivation, are well suited for the ornamentation of flower borders, where the seed may be sown in spring. All flower in June.

T. altissima (very tall). A synonym of *T. virgata*.

T. barbata (bearded). Yellow Garden Hawk Weed. *fl.* heads, involucre slightly farinose, the outer scales subulate-fimbriate. *l.* lanceolate, toothed. Stems erect, branched, leafy. South Europe, &c. *SYN. Crepis barbata* (B. M. 35).

T. macrorrhiza (large-rhizomed). *fl.* heads nearly as large as those of *T. barbata*, disposed in an ample panicle; involucre farinose-pubescent; pappus of fifteen to twenty bristles; pedicel squamulose. *l.* undivided, oblong, toothed, sessile, slightly fleshy-coriaceous. Stems shrubby, branched; root thick, fleshy. Madeira. Plant highly glabrous. *SYN. Crepis macrorrhiza* (B. M. 2988).

T. umbellata (umbel-flowered). *fl.* heads pale yellow, one-half smaller than those of *T. barbata*; peduncles tomentose at apex. *l.* oblong-linear, toothed; upper ones entire. Stems erect, branched, nearly naked. h. 2ft. South Europe, 1820.

T. virgata (twiggy). *fl.* heads small; pappus of six to ten bristles; involucre and pedicels farinose-pubescent. *l.* elongated, linear-lanceolate, toothed; upper ones linear, entire. Stem erect, branched, glabrous. h. 3ft. South Europe, &c., 1823. *SYN. T. altissima*.

T. v. grandiflora (large-flowered). *fl.* heads citron-colour; involucre mealy, the outer scales short and subulate. *l.* radical, lanceolate, toothed, sparsely hairy, densely villous towards the base. South Italy, Sicily, &c., 1830.

TOLU BALSAM-TREE. See *Myroxylon Toluiferum*.

TOLUIFERA. A synonym of *Myroxylon* (which see).

TOMATO (*Lycopersicon esculentum*). A tender annual, native of South America, cultivated for the use of its fruit for cooking as a vegetable, as an ingredient

Tomato—continued.

in salads, for making Tomato sauce, and for various other culinary purposes. The fruits are sometimes used in a green, but more generally in a ripe, state. In most gardens of extent, the Tomato is considered one of the most important vegetables grown, and the keeping of a continued supply, if possible, throughout the whole year, is a point to be specially aimed at. For marketing, Tomatoes are very extensively cultivated, as they invariably command a good price, except, perhaps, for a limited period when the general crop is being harvested at the end of summer. The annual supply grown in this country for market purposes is nothing like equal to the demand, and large quantities of fruits are imported. Of late years, a considerable number of establishments have sprung into existence in which Tomatoes are cultivated (planted out) under glass on a vast scale; and while the demand for their produce is good, and more likely to increase than diminish, it proves, as a rule, a remunerative undertaking, and one which promises to continue so. In this country, it is only in warm situations, and in favourable localities, that the Tomato crop can be depended upon in the open air, though much depends on the season—whether it be a hot and dry, or a cold and wet one—and the strength of the plants when placed outside. Plants raised under glass, and grown to a good size, large enough to begin flowering, or even setting fruit, before being put out into their permanent quarters, have a manifest advantage over others which are not so prepared, in perfecting a crop afterwards. Indoors, Tomatoes may be grown to bear freely in large pots or boxes, or they may be planted in a ridge of soil, and trained to a trellis, or nailed against the back wall of a melon or cucumber house, provided there is sufficient light.

Tomatoes may be increased in any quantity from seeds, which ripen in abundance in most of the fruits that reach maturity; or they may be raised from cuttings, which is sometimes an advantage, as these root readily in heat, and soon grow to a fruiting size. Seeds intended for raising plants for the open air should be sown at the end of February, or during March, in pots, or in shallow pans, filled with light soil, and placed in a temperature of 55deg. or 60deg., either in a heated structure, or on a hotbed. As the seedlings come up, they must be kept well exposed to light, to prevent them becoming drawn. When the second leaves appear, they should be potted off singly, and still kept in heat, until re-established, when they may be grown on in any light house or frame, with more air, until gradually they are hardened off for placing outside, towards the end of May, or early in June. If placed

the plants may be readily shifted into others, 6in. in diameter, some time during April, and this will be sufficiently large for them. Some growers place two plants in a pot, opposite each other, and close to the edge, and then divide the ball when planting out; but it is obvious that this must injure the roots, although, if they not very much crowded, and due attention is given to watering and, if necessary, shading, for a few days, new growth is soon commenced. As our ordinary summers are not long-lasting, it is most important that the plants be thus forwarded, and special attention given them in training, to induce a fruitful, instead of a too luxuriant, growth. This may best be done by keeping the side shoots pinched out, and limiting each plant to the centre one only, or, at most, to not more than two. Treated in this way, the clusters of flowers which will appear before the plants get up very much will be strong, and—what is of equal or more importance—they will be swelling off at the earliest possible moment. Early ripening, or management with a view to attaining it, is quite a necessity, as it is of little use only having heavy crops at a time when they cannot ripen for want

Tomato—continued.

of sun. The best place for Tomatoes outside is a warm south wall; there are generally spaces in such positions, unoccupied by fruit-trees, which cannot be more profitably furnished. Select the places, and add a few spits of turfy soil round each plant when inserting it. The after-treatment consists in keeping the leading shoots tacked up as they lengthen, and in pinching off all the side ones rather frequently—say, once a fortnight—if there are any formed. In dry weather, water should be plentifully given if the plants appear to be in want; but a mulching of loose, leafy manure or litter will, if applied, be of material advantage in preventing this. Fruits, when they commence colouring, should be fully exposed to the sun; this can be done by fastening to one side, shortening, or removing altogether, some of the leaves which prevent the direct exposure to sunlight. When there is danger of frost, any green fruits may be cut and placed on a shelf in a warm house or vinery—if it is kept rather dry, so much the better—where many of the most forward ones will ripen. The plants, and also any part of the crop that is left out, are soon destroyed by frost.

Tomato culture outside, in market gardens, has of necessity to be conducted on a different system, as there are no south walls as in private gardens. The plants are raised in frames, filled with fermenting manure, in early spring, and grown on as sturdily as possible, by allowing them plenty of air on all favourable occasions. Towards the end of May, they are thoroughly hardened off by removing the sashes daily; afterwards, they are planted in one of the most favourable warm positions at command, and still protected until all danger from frost is past. Large Red and Conqueror are two of the most profitable varieties for outside culture, either in private or other establishments: they fruit freely, and the produce is large and ripens well, provided the conditions under which the plants are placed are such as suit Tomatoes outside.

When grown in the open ground, the plants may be trained to strong stakes about 4ft. high, and the side shoots kept well thinned, to allow all the strength to pass into the fruits situated on the main. Where there is lack of wall space, this method of planting may be adopted in any garden; the plants must be strong and well hardened off before putting them out, and the position given them should be well sheltered and one of the warmest at command: a south border is most desirable.

Under glass, and with sufficient heat and space at command, Tomatoes may be had in greater or less quantity all the year round. During summer, when the supply is but uncertain from outside plants, it is always advisable to have some additional plants fruiting indoors, and from these the produce is also superior, because better ripened. The plants may be grown in large pots or deep boxes, or they may be planted out in a narrow bed formed with loose bricks to allow an inside space of about 2ft. Plenty of light is essential; consequently, a span-roofed house is best adapted, although a lean-to answers admirably. Plants raised from cuttings are generally preferred, as they are considered to begin bearing earlier, and are sometimes less vigorous than seedlings, which is an advantage in a limited space; but either plan of propagating may be adopted. Cuttings root very readily, if kept close, anywhere in heat, and either spring or the latter part of summer is the best time for renewing the stock. Young plants bear best, and, as they can be so easily raised, it is preferable to replace old ones rather than keep them after the produce begins deteriorating in size and quality. Ripe Tomatoes are most valued if procurable during the winter and in early spring; the plants intended for bearing at these seasons are, therefore, of much importance. Cuttings struck in August, in small, single pots, should be

Tomato—continued.

grown on and shifted into larger ones as becomes necessary, until a 10in. or 12in. size is reached, which will be sufficiently large for fruiting them in if pot culture is adopted. Even when it is intended to plant in narrow borders or in boxes for fruiting, the plants may first be grown in pots and transferred to their permanent quarters when some of the earlier fruits are set. The mode of training should be that of keeping either to a single stem, or to two main shoots, all side ones being kept removed from the first. These shoots should be supported, from an early stage, with a stake; and a wire trellis, fixed about 9in. or 12in. from the glass, is best to train to afterwards. To get two shoots formed of about equal strength, the plants should be pinched once when from 6in. to 9in. high; and to encourage the production of heavy crops, the extreme points may be taken out after each bunch of fruits shows: new leaders will form readily, and generally additional fruits will appear at their first joints; hence the productiveness at an early stage, and in a small space, secured by this mode of training. This frequent stopping is not a necessity where there is plenty of space for the plant to grow: it will invariably show far more flowers than can be perfected, if the variety is a productive one. When sufficient are set for a crop, the others which appear may be pinched off. To succeed autumn-raised plants, others should be propagated in February, and grown on in pots preparatory to being placed in permanent positions. A night temperature in winter of 55deg. to 60deg., with a rise of 5deg. by day, is not too high for Tomatoes. They need a somewhat similar temperature to winter Cucumbers, with which they are sometimes grown in the same house. If but an occasional dish of ripe fruits can be secured in winter, they are generally much valued; through the duller season the ripening process goes on but slowly. Throughout the summer, Tomatoes may be grown in almost any glass structure, or in slightly-heated pits and frames, after the latter are cleared of bedding plants, &c., for the season; and the crops thereby obtained are more certain to ripen than those on plants outside, although in private gardens, where a quantity is required, both modes of culture are recommended.

Tomatoes need an ample supply of water at all times, particularly when growing in pots or in any limited space. A rough, turfy compost, with a little decayed manure intermixed, will suit them; it is preferable to give manure water, or one of the concentrated artificial manures, when the fruits begin swelling, than to give a very rich compost previously, which would tend to induce too vigorous a growth—perhaps at the expense of productiveness.

Fungi. Tomatoes frequently suffer greatly from the attacks of the Potato-disease Fungus. See **Phytophthora** for an account of this parasite, and of the means to be employed against it.

Insects. Tomato-plants are seldom very seriously injured by insects; but in the course of the year 1886 a species of *Aleyrodes* (see **Snowy Fly**) proved very destructive, in several localities, to plants in green-houses, and more especially to Tomato and Cucumber-plants. The species now in question was named *A. vaporariorum*, and figured, by Prof. Westwood, in 1856. The larvæ feed on the backs of the leaves, piercing the skin and sucking the juices, like the more common *A. proletella* on Cabbages. The pupæ are also fixed to the leaves; and the perfect insects emerge after a few days spent in the pupal stage. The insects differ from *A. proletella* in having milk-white, unspotted wings and pale yellow bodies. The leaves occupied by them turn yellow, wither, and die. These insects are unable to withstand exposure to the open-air temperature of England; and are supposed to have been brought from Central America or Mexico, with plants of some sort.

Tomato—*continued*.

They have been found on the Continent of Europe, on a large variety of trees and shrubs.

Remedies. The remedies employed should be the same as those found to give good results against **Aphides** (which *see*), which these insects greatly resemble in their habits.

SORTS. Of the somewhat numerous sorts of Tomatoes in cultivation, the subjoined is a selection. For general purposes it is immaterial whether the fruits are smooth,



FIG. 46. RIBBED FRUITS OF TOMATO.

or ribbed, as represented in Fig. 46; but there are many occasions when those of even outline and medium size are specially asked for. It is, therefore, advisable to grow at least one of the smooth kinds.

Aome. Fruit purplish-erimson, handsome, smooth in outline, very distinct in colour. Plant prolific.

Chiswick Red. Fruit bright scarlet, egg-shaped, borne in large clusters. Exceedingly productive, and of good quality.

Conqueror. Fruit vermilion-red, large, handsome, of excellent quality. Early, and one of the best for outdoor culture.

Dodham Favourite. Fruit rich ruby-red, of large size, quite smooth. Productive, and good for exhibition.

Greengago. Fruit of a beautiful citron-yellow colour, when ripe, produced in clusters. The best yellow-fruited variety; very distinct and ornamental.

Hackwood Park Prolific. Fruit scarlet, large, smooth, even in form and size, borne in large clusters. Early, and exceedingly productive.

Hathaway's Excelsior. Fruit fine red, handsome, very smooth and even in outline, firm, and of excellent quality. One of the best.

Large Red. Fruit deep scarlet, very large, flattened and ribbed. Very productive, and well adapted for outside culture.

Orangefield Dwarf. Fruit red, large, frequently much ribbed, of excellent flavour. Plant unusually dwarf, early, and an abundant bearer; one of the best for indoor culture in a limited space and during winter.

Pear-shaped. Fruit red, pear-shaped, very distinct, produced freely in clusters. This variety is ornamental, but not very extensively cultivated.

Stamfordian. Fruit red, smooth, very large, somewhat in the way of TROPHY. Fine for exhibition.

Trophy. Fruit red, exceedingly large and nearly smooth. Productive, but rather late.

CHERRY AND RED CURRANT TOMATOES. These are chiefly grown for ornament, as their fruits are borne in great profusion in bunches or clusters. They represent, in general appearance, the Cherry and Red Currant, after which they are popularly called.

TOMATO, CANNIBAL'S. *See Solanum anthropogorum.*

TOMENTOSE. Covered with tomentum.

TOMENTUM. Dense, rather short, rigid hairs, which are sensibly perceptible to the touch.

TOMEX. Included under *Litsea*.

A name occasionally employed for the family of Beetles now called **Scolytidæ** (which *see*). The name is taken from *Tomicus*, one of the chief genera in the family.

TONGA-PLANT. *See Epipremnum mirabile.*

TONGUE-GRAFTING. Another name applied to Grafting by the whip or splice method—that most generally practised in this country, and with the greatest success when stock and scion are both small and of about an equal size. When preparing the two surfaces that are to fit

Tongue-Grafting—*continued*.

together, a small, thin tongue is cut in an upward direction in the scion, and also a notch the opposite way in the stock, corresponding in size as near as can be judged. In fitting the two together, the notch may be kept open with a knife, and the tongue should be carefully inserted. It acts as a great support to the scion, and materially aids in keeping the latter in position while the bandage is put on, and until the parts unite. By cutting a tongue in this way, and fitting it properly, there are also additional surfaces that may grow together and render the union still more complete. *See also Grafting.*

TONGUE GRASS. A common name for *Lepidium sativum* (which *see*).

TONIC. Bracing; corroborative.

TONNINGIA. A synonym of *Cyanotis* (which *see*).

TONQUIN BEAN. *See Dipterix odorata.*

TONSELLA. Included under *Salacia*.

TONTANEA. A synonym of *Coccocypselum* (which *see*).

TONTELEA. Included under *Salacia*.

TOOLS, IMPLEMENTS, &c. For gardening purposes, it is customary to provide Tools of all descriptions used in carrying out all kinds of work. On their description and quality depend materially the amount of work that may be accomplished, and also the manner in which it is done; workmen generally do more with good and useful Tools that are always kept clean, than if they had to use others, indifferent in quality and make, or rusted because of being subjected to wet weather or taken in dirty, and neglected while temporarily stored away. This latter is, unfortunately, a too frequent occurrence, sometimes arising from disinterestedness on the part of workmen: the defect might be cured by the adoption of a simple rule by those in charge, which should be applicable to all who use anything from the Tool-shed. Some of the Tools used in gardens are requisite in all establishments, whether conducted on a large or small scale, as, for instance, the spade; this is indispensable at all seasons. It may, therefore, be taken as an example in referring to the importance of having Tools of good quality, even if at a little more expense at first. Inferior articles are most unprofitable, no matter of what description. Tools also need proper usage and to be kept clean. The first of these remarks is commended to the attention and judgment of persons who have to buy or procure Tools; the second to those whose lot it is to subject them to daily or occasional use.

In the subjoined general notes on Tools, Implements, &c., reference is made to requisites which should be found in establishments where gardening work of the ordinary routine is carried out. The extent of a place, and the number of workmen employed, must necessarily be the guide for quantity; no general scheme is applicable. It might seem unnecessary to make reference to what is apparently so familiar in relation to Tools in daily use; but those best known are the most essential, and must therefore be noticed, while many others which are only occasionally required, are none the less requisite, and should therefore be ready at hand.

Averruncator. One of these is most useful in gardens where there are extensive grounds attached, with tall-growing shrubs, standard trees, &c., that need pruning at a considerable height above ground, and yet cannot conveniently be reached by means of a ladder or steps. The Averruncator consists of a hooked blade, which is fixed into the end of a handle, made ready for use in one length, or sometimes in two, with provision for joining them together when requisite. To the fixed hooked blade, another blade with a semicircular cutting

Tools, Implements, &c.—continued.

edge is attached, generally riveted; this has a lever, with a cord tied to the end, so that, when the cord is pulled from below, the two blades close, and sever branches—if the wood is not too hard—of nearly, or quite, 1in. in diameter. A spring, which is fastened to the fixed, and also to the lever, blades, separates their cutting edges so soon as the rope is loosened. For pruning or cutting into shape tall trees and shrubs at considerable elevations, this is the most effectual plan, as a workman may stand on the ground, and easily detach branches situated at a height of from 12ft. to 16ft., provided, of course, that the handle is sufficiently long. The cord passes from the lever over a small pulley fixed to the handle, and thus full purchase is secured.

Axe. A small, short-handled Axe is adapted for cleaving blocks of firewood, after they have been sawn into proper lengths; it may also be used for sharpening large stakes, and for many other purposes. It is also advisable to have, in addition, one of a larger size, if such work as tree-felling has ever to be executed.

Bill-hooks. One or more of these are in frequent requisition for sharpening stakes, chopping firewood, cutting down high hedges, large common shrubs, &c. Bill-hooks are made with or without a chopper at the back. They are familiar to everyone, and are in constant use.

Brooms. For outdoor work, sweeping lawns, walks, &c., birch Brooms are most generally used, and are best adapted. In some gardens, these are made in wet weather by the workmen, but Brooms ready for use may be procured in any quantity when this is inconvenient or impracticable. In either case, the wood or a stock of Brooms should be procured in winter before the sap rises; when deferred until this takes place, the twigs are much less tough, and do not last. Brooms, or reserve wood for making them, may best be kept in an open or airy shed, preferably on the cross-beams, where it is dry. For cleaning the floors of glass structures, the ordinary long-handled Brooms generally used in houses are best.

Chisels. In pruning operations, when the pieces to be detached are inconveniently situated for cutting, either with a knife or pruning-saw, Chisels are sometimes used. For this purpose, those employed in gardens are somewhat similar in shape to those used by carpenters. Chisels are occasionally employed for pruning at considerable elevations; they are attached to handles of various lengths. When grafting large tree stocks, by the cleft method, a chisel shaped somewhat like a sharp wedge is employed; this is called a Grafting Chisel. Besides these, a strong, wrenching Chisel is always valuable in a garden, for opening cases, &c., which usually arrive, more or less frequently, by rail.

Crowbars. One of these, at least, is recommended to be kept for making holes wherein to insert strong stakes, or any which cannot conveniently be driven into the solid ground. A round bar of iron, with one end tapered to a point, and the other made wedge-shaped, is most generally employed: the wedge end is sometimes valuable for levering or lifting plants in large tubs and other things which are unusually heavy.

FIG. 47. DAISY GRUBBER.

Daisy Grubbers and Daisy Rakes. For removing Daisies from lawns these tools are employed. The Grubber is an implement about 18in. long, with a handle at one end and a claw at the other (see Fig. 47), for digging up Daisies by

Tools, Implements, &c.—continued.

the roots. Daisy Rakes have broad teeth with sharp edges (see Fig. 48) that cut off Daisy flowers from lawns, but of



FIG. 48. DAISY RAKE.

course do not destroy the roots. The latter may be used for raking short lawn grass instead of sweeping it with a broom.

Dibbers. These may be made from pieces of ordinary wood, shaped like a right angle, or somewhat like an obtuse



FIG. 49. DIBBER.

angle, and pointed, or from old spade handles; the latter are generally favoured (see Fig. 49). To make them last a long time, the points are sometimes cased with steel, but there is no real necessity for this. Dibbers are of most use where the soil is rather light; in heavy lands, the holes made by them are often smooth inside, and the roots of plants do not so readily penetrate. The uses to which Dibbers are put, for inserting plants, &c., are generally well known. The Potato Dibber has a handle long enough for a workman to use standing upright, and is provided with a piece of wood or iron, which is used as a treadle. This, being fixed at the required distance from the end, insures all the Potato sets being put in at a uniform depth below the surface of the soil.

Edging-iron, or Verge-cutter. A tool used for cutting-out beds in turf and for trimming the edges of walks in flower-gardens, pleasure-grounds, &c., when these are composed of turf. It consists of a sharp-cutting steel blade formed in the shape of a crescent (see Fig. 50), with a socket attached, into which a round handle is fixed, with a cap on the top like that of a spade. There are other kinds of Verge-cutters, but this is the one generally used, and it answers most effectually. It may be guided to cut edges, outlines of beds, &c., in turf, of almost any desired shape.

Forks. Forks of one or more kinds are amongst the most useful implements in gardens: for many purposes,

Tools, Implements, &c.—continued.

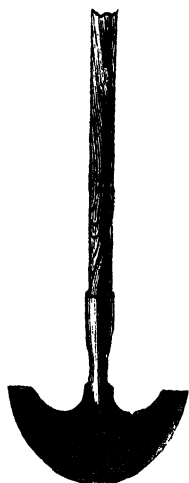


FIG. 50. EDGING-IRON.

there is nothing which could form an efficient substitute. Forks should always be light: they cannot be readily handled and used when constructed so as to appear heavy when lifted. For digging, either a four or five-tined Fork is best: the latter is generally preferable of the two, as the tines or prongs are close together. Most Digging-forks are made with narrow, steel tines, but a useful kind for such work as Potato-digging has broad



FIG. 51. FLAT-TINED DIGGING-FORK.

ones, as represented in Fig. 51. For digging hard ground, a Fork is not a good substitute for the spade, but when the soil is light and also loose at the bottom it may sometimes be substituted with advantage. In transplanting trees of any description, a Digging-fork with narrow tines should always be used for separating soil which surrounds the roots. Dung-forks are invaluable for turning and mixing litter and leaves, or any light manure. The best are those with either three or four small, steel tines, which pass readily through the manure, and seldom clog when in use. Other kinds of Forks are made for special purposes—as, for instance, very large ones, with four or five long prongs, for loading leaves; and others, with long handles and only two prongs (like those used for haymaking, but stronger), for lifting bundles of straw, wood, &c. There are also small Hand Forks, with three flat prongs, which are useful for plunging plants amongst tan or cocoa-nut fibre.

Grubbing-axe, Pick, and Pickaxe. Whenever there are trees of more than ordinary size to be rooted out by garden workmen, one or more Grubbing-axes should be included in the list of tools. Common Picks are requisite for breaking up the surface of walks, &c., and one end of the pickaxe may also be used for similar purposes. The difference between these had better be explained: the ordinary or common Pick has both of the ends pointed, and cannot, therefore, be used for cutting roots; a Pickaxe has one end pointed, and the other made like a chopper, its edge being in line with the handle; the Grubbing-axe has both ends wedge-shaped for cutting—one being in line, and the other turned cross-

Tools, Implements, &c.—continued.

ways, with the handle (see Fig. 52). The ends of all these require, when in constant use, rather frequent attention by a blacksmith; otherwise, they soon get blunt.

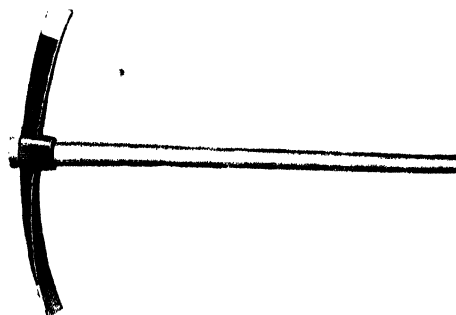


FIG. 52. GRUBBING-AXE.

They should be well steeled and tempered, to make them last as long as possible without being repaired, and to keep the point or edge sharp and in good order.

Hammer. The best form of Hammer for gardening purposes is that with rather a short head, having a claw



FIG. 53. GARDEN HAMMER.

at the back (see Fig. 53), for drawing out old nails when training wall trees. This is the principal use for which Hammers are required.

Hoes. These are requisite in all gardens for many purposes, the forms most employed being the Swan-necked

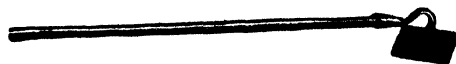


FIG. 54. SWAN-NECKED DRAW-HOE.

Draw-hoe (see Fig. 54), and the Dutch or Thrust-hoe (see Fig. 55). The first-named is better than the old form



FIG. 55. DUTCH OR THRUST-HOE.

of Draw-hoe, which soon gets clogged with soil round the eye, particularly if it is the least sticky or wet. Besides hoeing to destroy weeds, this kind of Hoe, which is made in various sizes, is the best for drawing drills for seeds, earthing-up crops, &c. Dutch Hoes, also made in various widths, are sometimes preferred for breaking up the surface of the ground, hoeing flower-beds, and cutting up small weeds in summer. There are two or three other kinds of Hoes which are not altogether requisite: a reference to these may be found under **Hoes and Hoeing**.

Mallet. A Mallet is useful for driving stakes into the ground, as, for example, those used for Raspberries and young fruit-trees. It is also required when a chisel is used for cutting off branches, &c., and for various other purposes. A moderately heavy one is best adapted, and it should be made from wood that will not readily split.

Rakes. Both iron and wooden Rakes are necessary in gardens, for levelling ground, and for cleaning up refuse of every description. Ordinary wooden ones, such as are

Tools, Implements, &c.—continued.

used for haymaking, are best adapted for raking and cleaning large breadths of garden grounds or lawns, and also for levelling gravel. If they are too heavy, the heads may easily be reduced in width and, consequently,



FIG. 56. IRON RAKE.

in weight. Iron Rakes (see Fig. 56) are best for cleaning flower-beds, &c.; it is always advisable to have what is called a *set*—that is, four or six different ones, varying in width. They should be made light, and not clumsy to handle.

Rammers. These are necessary when new walks are being made, or turf relaid; they are also required occasionally for ramming the soil round posts, &c. The handiest form is that with a circular, iron head, with socket attached into which a handle is fixed. Iron Rammers are made in various sizes: those weighing from 7lb. up to 10lb. are handy, and not too heavy to work.

Reel and Line. For all garden Lines of considerable length, iron Reels should be provided: the Lines are more readily wound up, and they are always subjected to a circulation of air, which dries and preserves them better



FIG. 57. LINE REEL AND PIN.

than when rolled upon straight, wooden stakes. All Reels should be provided with a small handle projecting above the upper crossbar for turning it to wind up the Line. A strong iron pin accompanies the Reel, for tying the line to at one of the extreme ends, the other end being fastened to the reel before winding (see Fig. 57).

Rollers. Where there are walks and lawns, one or more Rollers are needed to keep the surfaces even and firm. They are made in various sizes, and, consequently, of different weights, usually of cast, but sometimes of wrought, iron. Some have the cylinder in two halves, which revolve separately, and allow of turning more readily at the end of a walk, or in another direction to that which has previously been traversed, than if there was only one. When rolling newly-gravelled walks, it is best to have two Rollers—one, a light one, for drawing first, and another, heavy, for rendering the walk firm. All Rollers should be provided with a balance for the handle; otherwise, the weight of this comes on the workman, who should only have to pull. The balance, besides effecting the purpose for which it is intended, also adds to the weight of the Roller.

Scythes. For mowing under trees, round shrubs, and on sloping banks and in places where the mowing machine cannot be used, Scythes are requisite; they may also, of course, be used for lawns, but are far inferior to a machine. The ordinary form of Scythe and handle answers very well, although workmen who have been accustomed to cut long grass cannot at first succeed in properly cutting lawns. The two projecting handles should be regulated for, or by, each person who intends

Tools, Implements, &c.—continued.

using the Scythe, as it is generally necessary to vary their positions to suit individuals.

Shears. Of these there are several kinds, the most necessary being those used for grass-edging, hedge-trimming, and pruning. Grass-edging Shears of the ordinary make, with handles about 3ft. long, are best adapted for general use; the handles should be set on a wider angle than a right angle, taking the cutting blades for the base line. This places the workman, when using the shears, a little behind the blades, and thus enables him to perform his work more effectually. Hedge-trimming Shears have blades nearly equal in length to the handles, 10in. to 12in., and are about 2in. in width; they are used with both



FIG. 58. SMALL HAND SHEARS.

hands. Small Shears (see Fig. 58), for using with one hand, are invaluable for trimming any kind of edgings on a small scale, and for clipping plants which sometimes need it in carpet bedding and other designs. Pruning Shears vary in size according to the dimensions of branches they are intended to cut, from those used easily with one hand, to others, some 3ft. in length (generally called Parrot-bill Shears), that are adapted for severing branches of nearly 2in. in diameter when the wood is not hard.

Shovels. These are preferable to spades for shifting or loading loose soil, sand, gravel, &c. The handiest Shovels for gardens are those of medium size, with a square point, and the side edges slightly turned up. The handle should have more bend in it than that of a spade, as this renders shovelling easier. Shield-shaped Shovels are best for shifting stones, and those made entirely of iron are most serviceable for stoking.

Spade. The Spade and its value as a garden tool are matters familiar to everyone; it would be impracticable to prepare ground for successional crops without it, as there is nothing which could form an efficient substitute. The two points in a Spade that it is most important should be strong are the back of the part which lifts the soil and the handle just where the first rivet passes through from the capped end. At one of these places Spades will sometimes either bend or break, if they are of inferior make, before they have been used many days. These points should, therefore, be examined by purchasers: it causes great hindrance and loss to have new handles put in—work which is rarely very well done a second time over; and if the back breaks, there is no chance of remedying it. Spades are sometimes broken by improper usage, such as wrenching anything too heavy: this is, of course, a fault on the part of the workmen using them.

Syringes. A Syringe is especially required in glass structures for dewing or washing fruit-trees and plants in general at some part of their season of growth. It requires careful handling, and the barrel should not be knocked against any hard surface, which would cause indentations, and prevent the piston from working properly inside. The best Syringes are usually provided with two, or even three, movable roses of different kinds, any one of which may be used according to the force of water required. The kind most generally useful is that with a nozzle in which a ball is placed. When the piston-rod is drawn, the ball allows water to pass in, but it must be expelled through a small tube placed alongside, as the ball fits and closes the nozzle when pressed from behind with water and the piston. By practice, a workman

Tools, Implements, &c.—continued.

may spread the water with his finger, and direct its course at will to any position or part of the house. If this cannot be done readily, another perforated rose may be screwed on instead, which will separate the particles of water as they pass through it.

Trowel. Garden Trowels are indispensable for lifting and replanting such things as carry a ball of earth with their roots. For bedding-out in May and June, Trowels are in constant demand, and at all seasons use is generally found for them.

Turfing-iron and Turf-beetle. The first-named is an implement with a somewhat heart-shaped blade, and a bent

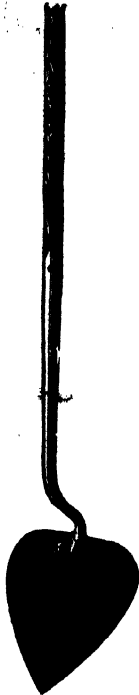


FIG. 59. TURFING-IRON.

handle (see Fig. 59). It is used for lifting turf that has previously been marked out and cut through with an edging-iron. The Turf-beetle consists of a flat piece of wood, about 3in. thick, with a handle attached at an acute

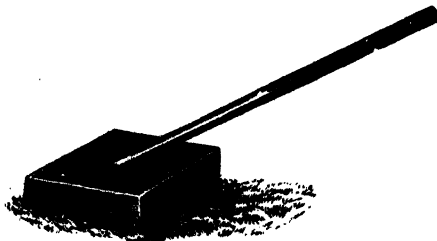


FIG. 60. TURF-BEETLE.

angle (see Fig. 60), to allow of the implement falling flat when lifted and brought down on to the turf. It is used principally for levelling newly-laid turf.

TOOL-SHED. A Tool-shed should be found in every garden. It should be provided with pegs, made of either wood or iron, and fixed near the ceiling, for hanging up Dutch hoes, rakes, scythes, and any other tools with long handles. Other pegs may be situated lower down for forks, shovels, spades, &c. A cupboard or chest should contain all small tools and implements, such as hammers, shears, trowels, &c. Every workman should help to keep the Tool-shed tidy, and the tools in good order, by cleaning everything he uses when any work is finished during the daytime, and returning it to its proper place, and also doing the same every evening when the hour for suspending work arrives.

TOONA. Included under *Cedrela*.

TOOTHACHE-TREE. See *Eanthoxylum americanum*.

TOOTHRUSH-TREE. A common name for *Salvadora persica* (which see).

TOOTHED. Having any kind of small divisions.

TOOTHLETTED. Furnished with little teeth.

TOOTHWORT. See *Dentaria* and *Plumbago scandens*.

TOPIARY WORK. Although the absurd fashion of cutting and torturing trees into all sorts of fantastic shapes has, happily, almost passed away, yet, as the art of the Topiarist was for a considerable period regarded as the perfection of gardening, some mention of it is desirable here. When the fashion first became popular in Britain, it is probably impossible to ascertain; but it reached its highest point in the sixteenth century, and held its ground until driven out of the field, in the last century, by the natural or picturesque style. From an archaeological point of view, it is not to be regretted that examples of Topiary Work on a large scale still exist in several British gardens. Fig. 61 (for which we are indebted to Messrs. Veitch and Sons) represents a view at Elvaston Castle, near Derby. "A large portion of this consists of ornamental hedges of the common Yew, either dividing parts of the grounds from each other, or inclosing spaces devoted to special subjects; and of single specimens, both of the common Yew and its golden variety, cut into conical pyramids of uniform size and height; and of such as these there are upwards of one thousand. There are comparatively few representations of birds and animals; the bolder work represents the walls and bastions of a Norman castle, archways, alcoves, arbours, &c. The great extent of the Topiary Work at Elvaston is calculated to excite surprise rather than admiration; at the same time, its extreme formality is greatly relieved by the noble Conifers of the Fir and Pine tribe which have been planted beside and around it with no sparing hand, and by the beautiful view of the river Derwent, in its winding course through the grounds" (Veitch, "Manual of the Conifers").

Levens Hall, in Westmoreland, is a still more famous Topiarian garden than Elvaston. For an account of this, and an illustration, see vol. xxvi. of the "Archæological Journal." Two illustrations of some of the most remarkable groups in this same garden appeared in the "Gardeners' Chronicle" for 1874, vol. ii., p. 264. Here may be seen figures of the British Lion; of Queen Elizabeth and her ladies; of the Judge's Wig, a number of Yews planted in a half-circle, so as to form an arbour, by bringing the branches over the top in a hood or wig-like fashion; and many others. The astonishing tenacity of life possessed by the Yew is thoroughly proved by the fact that, as the figures (at Levens) above mentioned were first formed early in the eighteenth century, the bulk of the young growths must have been cut off for upwards of one hundred and eighty years, in order to keep the requisite size and form of the objects represented.

Topiary Work—continued.

The vast amount of not unskilled labour requisite to maintain in order any elaborate Topiarian designs will, no doubt—apart from any question of taste—prevent a

Topiary Work—continued.

and other more or less simple figures, the ordinary principle which now rules the clipping of a Yew hedge was sufficient. The branches were checked where too

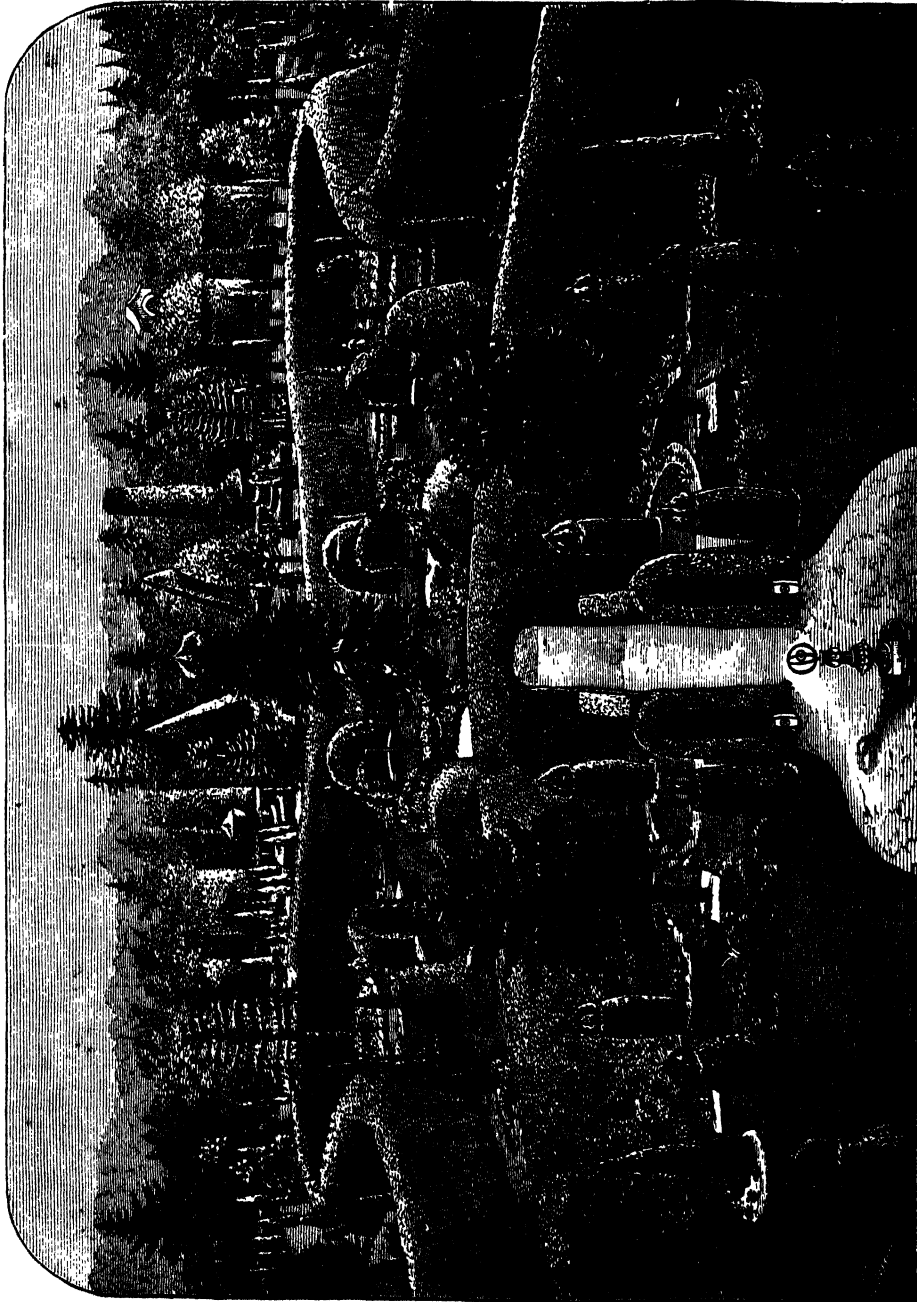


FIG. 61. TOPIARY WORK—THE YEW GARDEN AT ELYASTON CASTLE.
(From Veitch's "Manual of the Conifera.")

recurrence of such practices to any appreciable extent. Evergreens were almost exclusively used, and of these, the Box, Yew, and Holly were those which lent themselves most readily to the Topiarist's skill. For columns

strong, and allowed to develop when not so vigorous, until the requisite size and shape were obtained, after which repeated clippings were necessary, beginning as soon as the young growths appeared in spring. For

Topiary Work—continued.

elaborate figures, a number of plants might be used, and the leading branches of these might be united by "approach-grafting," until a regularly compact network of interlacing branches were securely growing together. By this means, less damage would be likely to occur through heavy falls of snow, or from violent gales. In one of the continental gardens, a few years ago, there were several young plants of the common Ash, grown so as to form, amongst other things, a more or less perfect crown, simply, as the label stated, to show what the skill of the grafter could accomplish. Some half-dozen tall young plants were placed in a circle: one of these was grafted, at some 6ft. from the ground, by approach to the other five, so as to present the appearance of a ring horizontally supported by half-a-dozen stems; from this ring were allowed to develop a series of branches, which were curved over and united into one stem by grafting. After this the branches again divided, and were made to assume other unnatural forms.

Constant attention is required in pruning and dis-budding all such strong-growing plants as the Ash, and distorted and unsightly branches and stems are sure to be the result in a comparatively short time.

TOP-SHAPED. Inversely conical, with a contraction towards the point.

TORCHES. See *Verbascum Thapsus*.

TORCH LILY. A common name for *Kniphofia* (which see).

TORCH THISTLE. An early name given to various species of *Cereus* (which see).

TORDYLIUM (the old Greek name used by Dioscorides). Hartwort. ORD. *Umbelliferae*. A genus comprising about a dozen species of hardy, annual herbs, natives of Europe, North Africa, and temperate and Central Asia. Flowers white or purplish, in compound, many-rayed umbels. Leaves undivided or pinnate. The species possess no beauty.

TORENIA (name commemorative of Olef Toren, a Swedish clergyman, who discovered *T. asiatica* and other plants in China; he died in 1753). SYNS. *Nortenia*, *Pentstaria*. ORD. *Scrophularinae*. A genus embracing about sixteen species of stove, glabrous, pubescent, or hairy herbs, natives of tropical and Eastern extra-tropical Asia and tropical Africa; one is also found in South America, where it was probably introduced. Calyx tubular, plicate or three to five-winged, obliquely three to five-toothed or bilabiate at apex; corolla tube cylindrical or enlarged above, the upper lip broad, emarginate or bifid, the lower one spreading, of three broad, sub-equal lobes; stamens four, perfect; pedicels ebracteate; racemes short, few-flowered, fasciole-like, or rarely elongated. Leaves opposite, entire, crenated or serrated. The species known to cultivation are described below. They are of easy culture, and are admirably adapted for hanging baskets as well as for pot culture. The annuals may be raised from seed, sown in March or April, and placed in a warm temperature. When large enough to handle, the seedlings should be pricked off into the pots or baskets in which they are intended to flower. *Torenia*s may also be readily propagated by cuttings: any young shoots will root in a close frame, or under a hand glass in a warm house. A compost of loam and leaf mould, with a little sand or charcoal intermixed, is most suitable. *T. Fournieri*, which grows erect, is best adapted for pot culture; its branches, which do not trail, need the support of a few small stakes. Green Fly are often troublesome to these plants when young. As a preventive, fumigate occasionally.

T. asiatica (Asiatic). * *f.* on axillary and sub-umbellate pedicels; calyx lin. long, scarcely winged; corolla blue, 1½ in. to 1½ in. long, with very dark violet lateral lobes. June. *l.* shortly petiolate,

Torenia—continued.

ovate-cordate or ovate-lanceolate, serrated, 1½ in. to 2 in. long. Branches 6 in. to 10 in. long, slender, diffuse. India, &c., 1845. (B. M. 4249; F. d. S. x. 5, xlii. 1342; I. H. 193.) Annual.

T. a. hirsuta (hairy). *f.*, lower filaments having a very small tooth. Plant more pubescent than the type. (B. M. 5167, under name of *T. hirsuta*.)

T. auriculifolia (Auricula-leaved). *f.* numerous, growing separately on slender scapes; corolla lobes pale lilac, blotched with purple and veined with white on the disk. Summer. *l.* radical, sessile, ovate. India, 1871. This plant has much the habit of a *Pinguicula*. (F. M. 534.) Its proper name is *Craterostigma pumilum*.

T. Baillonii (Baillon's). A synonym of *T. flava*.

T. concolor (one-coloured). *f.* large, on axillary peduncles longer than the leaves; corolla colorous, violet-blue. Summer. *l.* stalked, ovate-cordate, acute, serrate. *h.* 6 in. to 12 in. China, 1844. A glabrous or sparingly pubescent herb, with diffuse, elongated branches. (B. M. 6797; I. R. 62.)

T. cordifolia (cordate-leaved). *f.* axillary and sub-umbellate; corolla pale blue, ½ in. long; pedicels often longer than the leaves. July. *l.* petiolate, ovate, serrated, 1 in. to 1½ in. long, cuneate or very rarely cordate at base; petioles rarely as long as the blade. *h.* 4 in. to 8 in. India, &c., 1811. A sub-erect, sparsely hairy annual. (B. M. 3715.)

T. edentula (toothless). A synonym of *T. peduncularis*.

T. flava (yellow). * *f.* axillary and in distant pairs; corolla yellow, ½ in. to ¾ in. long, with a purple eye; pedicels usually shorter than the leaves. Summer. *l.* sessile or petiolate, ovate or ovate-obovate, obtuse, entire or crenated. *h.* 6 in. to 10 in. India, &c., 1871. Erect or decumbent, sparsely hairy or glabrous. (B. M. 6700.) SYN. *T. Baillonii* (B. H. xxix. i., fig. 2; I. H. xxv. 324; R. H. 1879, 15.) Annual.

T. Fordii (Ford's). *f.* on short, sub-terminal, axillary peduncles; calyx with almost triangular teeth; corolla small, with an exerted tube, the limb straw-coloured with the lateral lobes blotched with violet. Summer. *l.* shortly-stalked, broadly ovate-rotundate or cordate. *h.* 6 in. to 12 in. An erect, pubescent herb. China. (B. M. 1797.)

T. Fournieri (Fournier's). * *f.*, calyx ½ in. long, broadly five-winged; corolla tube pale violet, yellow at back, 1 in. long; limb 1½ in. in diameter, the upper lip pale lilac, obscurely two-lobed, the lower one of three much smaller, bright violet, rounded lobes, the central one with a golden blotch at base; racemes terminal, erect. Summer. *l.* 1½ in. to 2 in. long, ovate or ovate-cordate, acute, serrated, bright green. Branches crowded, erect from the root, 4 in. to 8 in. high, much-branched. Cochinchina, 1876. Highly glabrous. Annual. (B. H. 1879, 1; B. M. 6747; Gm., Dec. 1877; I. H. n. s. 249; It. G. 927; It. II. 1876, 465.)

T. hirsuta (hairy). A variety of *T. asiatica*.

T. peduncularis (pedunculate-flowered). *f.* usually pale blue, with yellow spots, midway between those of *T. asiatica* and *T. cordifolia*, but the filaments are not toothed, as in those species. June. *l.* petiolate, ovate, crenate-serrated. *h.* 6 in. India, Philippines, &c., 1845. Decumbent or sub-erect, glabrous or softly hairy. SYN. *T. edentula* (B. M. 4229).

TORFACEOUS. Growing in bogs or mosses.

TORINGO CRAB. See *Pyrus Toringo*.

TORMENTILLA. Included under *Potentilla* (which see).

TORMENTIL-ROOT. A common name for *Potentilla Tormentilla* (which see).

TORNELIA. A synonym of *Monstera* (which see).

TOROSE. A cylindrical body, irregularly swollen.

TORRESIA. A synonym of *Hierochloë* (which see).

TORREYA (named in compliment to Torrey, 1796-1873, an American botanist, and one of the authors of the "Flora of North America"). Stinking Yew. SYNS. *Caryotaxus*, *Felataxus*. ORD. *Coniferae*. A genus embracing only four species of hardy, evergreen trees, emitting a strong, disagreeable odour from all parts when bruised, natives of North America, North China, and Japan. Flowers dioecious, the males solitary and sub-sessile in the axils, the female catkins axillary, sessile, one-flowered. Fruit ovoid, drupe-like, ½ in. to 1½ in. long. Leaves sub-spirally affixed, distichously spreading, very shortly petiolate, linear, flat, similar to those of *Taxus*, but longer. The species do not attain in Great Britain anything near the beautiful aspect they assume in their

Torreya—*continued.*

native countries. *Torreya*s thrive in almost any soil. They are readily propagated from seeds, which should be sown in spring; the ripe fruits, after being gathered, should be mixed with sand, and treated similarly to those of the Hawthorn, until sowing time. Cuttings also afford a ready means of increasing the stock of any

Torreya—*continued.*

T. grandis (great).* *fr.* green, the size of a small walnut. *l.* very rigid, linear-lanceolate, rather short, somewhat falcate, $\frac{1}{2}$ in. to 1 in. long, light glossy-green above, much paler with two narrow, greyish lines beneath, on very short, spiny twisted footstalks, more or less opposite. Branches whorled, horizontally spreading; *brs.* distichous. *h.* 60ft. to 80ft. China. See Fig. 63. (G. C. n. s., xxii., p. 661; R. H. 1879, 173.) SYN. *Cephalotaxus umbraculifera*.



FIG. 62. BRANCH, WITH ONE MATURE AND TWO YOUNG FRUITS, OF *TORREYA CALIFORNICA*.

these should be inserted in sandy soil, in August, and kept shaded under handlights, or in cold frames, during bright sun, until rooted. Layering may also be advantageously resorted to.

T. californica (Californian). Californian Nutmeg. *fr.* with a leathery-green covering. *l.* long, narrow, and opposite on the

T. myristica (nutmeg-shape-fruited). A synonym of *T. californica*.

T. nucifera (nut-bearing). *fr.* $\frac{1}{2}$ in. long, $\frac{1}{2}$ in. broad, oval or ovate-oblong, glossy. *l.* linear, rounded at base, quite straight, flat; leathery, spiny-pointed, mostly curved downwards, $\frac{1}{2}$ in. to 1 $\frac{1}{2}$ in. long, on very short footstalks, deep glossy-green, glaucous-white beneath. Branches numerous whorled, alternate, or scattered

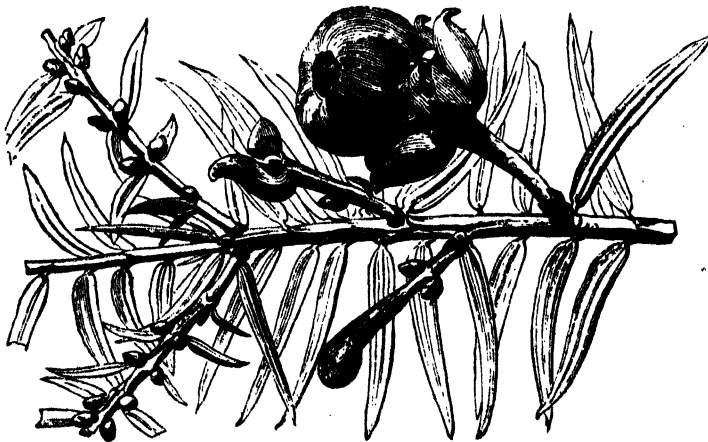


FIG. 63. BRANCH, WITH IMMATURE ABNORMAL FRUITS, OF *TORREYA GRANDIS*.

branchlets, but somewhat alternate and scattered round the principal shoots, linear-lanceolate, spiny-pointed, shortly petiolate, decurrent at base, $\frac{1}{2}$ in. to $\frac{3}{4}$ in. long, pale yellowish-green. *h.* 30ft. to 40ft. California, 1851. See Fig. 62. (B. M. 4780; F. d. S. 926; G. C. n. s., xxii., p. 651, under name of *T.*

along the stem, horizontally spreading. *h.* 20ft. to 30ft. Japan. See Fig. 64. (R. H. 1873, 315; S. Z. F. J. 123.)
T. taxifolia (Yew-leaved).* Stinking Cedar. *fr.* oval, a little pointed, nearly as large as a walnut. *l.* rounded at base, and somewhat recurved at the extremity, linear, frequently falcate,

Torreya—continued.



FIG. 64. BRANCH, WITH MALE FLOWERS, AND DETACHED CLUSTER OF MALE FLOWERS, OF TORREYA NUCIFERA.

stiff, leathery, on very short footstalks, twisted and decurrent at base, spiny-pointed at apex, lin. to 1½ in. long, glossy and convex above, beneath pale glaucous-grey, and marked on each side the

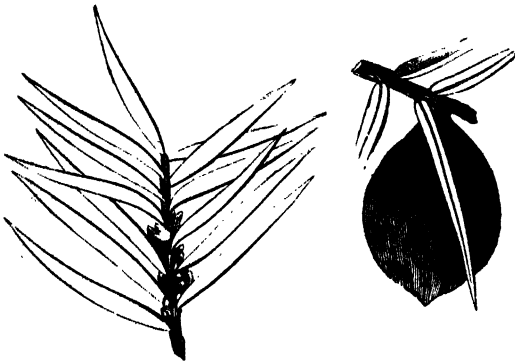


FIG. 65. BRANCHLET AND FRUIT OF TORREYA TAXIFOLIA.

midrib with two narrow, reddish, sunken bands. Branches mostly whorled, spreading; branchlets horizontal. A. 40ft. to 50ft. Florida, 1840. See Fig. 55. (G. C. n. s., iv. 291.)

TORRUBIA (named by Leveille, in honour of a Spanish writer on "Vegetable Wasps," as wasps attacked by the plants of this genus [see below] were formerly called). A genus of Fungi, of which by far the larger number are parasitic in insects, spiders, and their allies; while a small number live on other Fungi. *Torrubia* is the name by which the genus is generally known; but it must give place to the name *Cordyceps*, previously conferred by the eminent Swedish mycologist, Elias Fries.

The genus belongs to the group of compound **Pyrenomyces** (which see); but is peculiar in the substances on which the various species live, and also in the erect, clubbed, fleshy mass of mycelium (called a *stroma*), the appearance of which is shown in Fig. 66. On, or embedded in, it are the flask-shaped perithecia, inclosing the asci. In each of the latter are eight thread-like spores, which usually soon break into joints. These joints are capable of giving origin to the cycle again, if they fall on a suitable stratum, e.g., the body of an insect. But they produce not the Pyrenomycetous fungus, but a smaller vertical stroma, branched or simple, composed of a bundle of mycelium threads, which bear numerous round or elliptical, pale, minute conidia, or spores. This these Fungi was formerly regarded as belonging

Torrubia—continued.

to a distinct group (*Hyphomyces*), without asci, and the various forms were grouped together under a new generic name—*Isaria*. This genus resembles *Cordyceps* in having an erect, club-shaped stroma; but, instead of inclosing perithecia with asci, the filaments of the mycelium end in free tips, each of which bears small, oval or globular, pale conidia, capable of reproducing either *Isaria* or *Cordyceps*. For convenience, the genus *Isaria* is still kept up, as the perfect or mature forms of a large number of the Fungi placed in it have not yet been recognised, and to attempt to dispense with the group would, at present, only cause confusion and



FIG. 66. *CORDYCEPS SINENSIS*, GROWING ON THE LARVA OF A MOTH—*a*, Stroma of the Fungus, divided at the tip into three branches; *b*, the Larva, from which the Fungus has grown out.

uncertainty. Moreover, there is reason to believe that several of the forms referred to *Isaria* do not belong to *Cordyceps*, but should be referred to other genera; inasmuch as they live on a wider range of materials, and some injure living plants also (e.g., *Isaria fuciformis* destroys grasses in Australia and in the South of England), while *Cordyceps* is not known as a parasite on living plants. Most of the species in the latter genus abound in tropical countries; but several have been found in Britain, in all their stages of development, on dead insects. Among the best-known of these are *C. entomorrhiza* and *C. militaris*: these form slender stalks lin. to 2in. in height, the clubbed heads on which are ovoid or globose. On tracing the stalks downwards, they are found to rise from the bodies of larvae or pupæ, buried in the soil or among dead leaves. These Fungi may be regarded as beneficial to gardeners, inasmuch as they destroy insects, many of which feed on garden produce. They are not often met with, however, and can

Torrubia—continued.

scarcely be regarded as of much importance from this point of view. On the other hand, no species of *Cordyleps* is known to be injurious in gardens. Probably, the species most widely known, by its popular name at least, is the so-called "Vegetable Caterpillar," often sent from New Zealand. This reaches a height of from 6 in. to 8 in., the club being from 3 in. to 4 in. long, and $\frac{1}{2}$ in. thick. It grows out of the body of some large larva (usually that of an insect allied to the Otter Moth or Ghost Swift), and is often erroneously supposed by the finders to be a caterpillar in course of development into a Fungus. This Fungus is *C. Hugelii*, Corda; though more generally referred to in English works by the name *C. Robertii*, given to it, by the Rev. M. J. Berkeley, at a later date than Corda's. Mr. Berkeley has described still larger species from Australia, under the name *Sphaeria Taylori*.

TORREBIA (of Vellozo). A synonym of *Pisonia* (which see).

TORTOISE-PLANT. See *Testudinaria elephantipes*.

TORTRICINA (from *torqueo*, to twist). A group of Moths, popularly known as Leaf-rollers, because of the habit exhibited by the larvæ of many species of rolling up the leaves of their food-plants into tubes, in which they shelter themselves from birds and other foes. Inside the tubes the larvæ live and feed in safety; but when the food-plant is shaken, each larva drops from its tube, and hangs suspended by a silken thread. When the danger is past, the larva climbs up the thread, and regains the shelter of the tube. Many larvæ become pupæ in the tubes. Some species live in roots or twigs (see *Retinia*), or in unripe fruits (see *Apple or Codlin Grub*). The *Tortricina* are all of small size, scarcely any of the moths reaching 1 in. in spread of wings. The body is slender, but the wings are comparatively broad, and when at rest they slope like the roof of a house above the body. In many, the costa, or front margin, of the wings is peculiarly curved; so that the insect at rest is not unlike a bell in outline when seen from above. The front wings are, in most of the species, rather uniformly coloured; usually being some shade of brown, with darker markings, or bands and spots. Some show metallic spots; and others have the wings variegated with black and white, while others have them some uniform shade of green. The palpi, or feelers attached to the mouth-pieces, are short and inconspicuous. The larvæ have never less than sixteen prolegs, or sucking feet, on the hinder rings of the body.

A good many species of this group are injurious to cultivated plants, often by eating the leaves; e.g., *Tortrix viridana* sometimes strips Oak-trees bare. Roses are also much damaged by several species that live in the rolled leaflets, or inside the leaf-buds and flower-buds. Most fruit-trees are more or less liable to similar injuries; and the *Conifers* often have the twigs pierced up the centre by the larvæ. Herbaceous plants, though occasionally attacked, are far less often seriously damaged than woody plants or shrubs.

Remedies. These vary according to the nature of the injury done. Larvæ in tubes are best got rid of by beating the branches well over sheets, or over vessels tarred inside to prevent the escape of the larvæ. The insects shaken off should be destroyed. Such as live in twigs are more difficult to dislodge; but sickly twigs should be cut off and burned. Fruits tenanted by larvæ usually fall prematurely, and such windfalls should, without delay, be collected from the ground, and destroyed, or given to pigs, as the larvæ very soon bore out of the fruits, and pass into the soil, there to remain all winter as pupæ. Further information is given under *Moths*, *Oak* (*Insect Pests*), and *Tortrix*.

TORTRIX (from *torqueo*, to twist; in allusion to the leaves of plants being twisted or rolled by the larvæ, to form tubes in which they live). The leading genus of the group of small Moths known as the *Tortricina*. The genera in this group are distinguished from one another by very slight characters, so that it is difficult for any one but a specialist to be sure of the genera and species. *Tortrix* is closely related to several other genera, and its extent is somewhat uncertain; some specialists forming several genera from an assemblage of species that others consider ought to be retained in one genus. In the genus, even when most restricted, there are several species hurtful to garden produce and to cultivated trees. Of these the most destructive is *T. viridana*. This insect has the fore wings pale green, with their front margin sulphur-yellow; they extend from $\frac{1}{2}$ in. to 1 in. in span. The larvæ live in tubes formed by rolling up leaves of almost all kinds of trees, and of some shrubs; but they are peculiarly destructive to Oaks, which they occasionally strip absolutely bare. *T. iterana* has pale-ochreous wings, and is about the same size as *T. viridana*. Its larvæ feed mostly in rolled leaves of herbs, and may be looked on as almost harmless, as they usually feed on weeds. *T. heparana* and *T. ribeana* are both brown, with darker markings. The larvæ of both feed on the leaves of various trees, and are at times hurtful to fruit-trees. *T. (Enectra) Pilleriana*, though very rare in Britain, is, in some seasons, very destructive to Vines in France, and elsewhere on the Continent, stripping off the leaves. The larvæ have been observed passing the winter sheltered under loose bark, emerging in spring to feed on the buds and young leaves. The fore wings of this Moth have a spread of only about $\frac{1}{2}$ in.; they are pale ochreous, with a brown patch near the base, and a brown cross-bar in the middle. The other British species of the genus are not sufficiently hurtful to call for special mention.

Remedies. These are given under *Tortricina*.

TORTULA (of Roxburgh). A synonym of *Priva* (which see).

TORTUOUS. Having an irregular, bending, and turning direction.

TORULOSE. Slightly torose.

TORUS. The same as *Thalamus* (which see).

TOTARA PINE. See *Podocarpus Totara*.

TOUCH-ME-NOT. See *Impatiens noli-metangere*.

TOUENEFORTIA (named in memory of Joseph Pitton de Tournefort, 1656-1708, the distinguished author of an arrangement of plants under the title of "Institutiones Rei Herbariæ"). Including *Messerschmidia*. ORD. *Boraginæ*. A large genus (nearly 100 species) of stove, greenhouse, or hardy trees or shrubs, sometimes sarmentose or twining, very rarely sub-shrubs, broadly dispersed over the warmer regions of the globe. Flowers rather small, cymose; calyx five-parted; corolla with a cylindrical tube and five imbricated or induplicate lobes; stamens five, affixed to the tube, included. Leaves alternate, entire. The species have little or no horticultural merit. Only two call for mention here: both thrive in any fairly good soil. Propagation may be effected by cuttings, inserted in sand, under a glass, with heat in the case of *T. heliotropioides*, which is the most distinct plant of the genus.

T. fruticosa (shrubby). *f.* sweet-scented; corolla yellow, salver-shaped, the tube much longer than the calyx; cymes terminal, loosely trichotomous-corymbose. June. *l.* petiolate, lanceolate or elongated ovate-lanceolate, acuminate, rather obtuse at base, 3 in. long. A 4 ft. Canaries, 1800. Greenhouse shrub. (B. R. 464.)

T. heliotropioides (Heliotrope-like). Summer Heliotrope. *f.* the colour and shape of those of the common Heliotrope (*T. peruvianum*), but devoid of scent. May. *l.* elliptic, obtuse, pubescent on both sides, the margins undulate. Branches terete, and, as well as the petioles, hairy. A 2 ft. Buenos Ayres, 1829. Stove sub-shrub. (B. M. 3006.)

TOURETIA (named in honour of Marc Antoine Louis Claret de la Tourette, 1729-1793, a friend of Rousseau, and author of several botanical works). *SYNS. Dombeya, Medica.* *ORD. Bignoniaceæ.* A monotypic genus. The species is a hardy, climbing herb (or sub-shrub?), usually treated in gardens as an annual. Seeds should be sown, early in spring, on a hotbed. When the young plants are strong enough to handle, they may be planted in light soil, against a wall or pillar.

T. lappacea (Bur-like). *fl.* in long, spicate racemes, on terminal peduncles; calyx two-parted, deciduous; corolla purple-violet, with a very unequally bilabiate limb; stamens four, didynamous. July. *l.* opposite, di- or trichotomously divided; segments petiolulate, membranous, serrated; petioles produced into a branched tendril or leaflet. Branches slender, tetragonal. *h.* 6ft. Mountains of tropical America, 1788. (*B. M.* 3749.)

TOVARIA. A synonym of *Smilacina* (which see).

TOVOMITA (from *Tovomita*, the Caribbean name of *T. guianense*). *SYNS. Beauharnoisia, Marialva, and Micranthera.* *ORD. Guttifera.* A genus comprising about a score species of tropical American, stove trees or shrubs, with resinous juice. Flowers often rather small, cymose-umbellate or in dense panicles; sepals two or four; petals four to ten, imbricated, often twin-seriate; stamens indefinite. Fruit often obovoid-oblong or pyriform. Leaves penninerved. The three species introduced are handsome trees, thriving in a mixture of loam, peat, and sand. Ripened cuttings will root freely in sand, under a hand glass, in heat.

T. Choisyana (Choisy's). *fl.* yellow; sepals four, the two inner ones petaloid; petals eight to eleven; pedicels shorter than the flowers; male cymes terminal, few-flowered. May. *l.* oblong, acute at base, shortly and rather obtusely acuminate at apex, entire. *h.* 20ft. Cayenne, 1823. *SYN. Micranthera clusiaefolia.*

T. fructipendula (pendulous-fruited). *fl.* yellowish, on jointed pedicels; sepals two; petals four; peduncles filiform, axillary and terminal, two or three-flowered, elongated. January and February. *fr.* turbinate, pendulous, crowned by the permanent styles. *l.* oblong, acutely and sharply acuminate, 3in. long. *h.* 18ft. Peru. *SYN. Beauharnoisia fructipendula.*

T. guyanensis (Guiana). *fl.* dioecious; sepals two; petals four, green; anthers white; pedicels jointed; peduncles corymbose, dichotomous, thick, terminal. June. *l.* ovate-oblong, bluntly acuminate, somewhat stem-clasping, coriaceous, 4in. to 5in. long, white beneath. *h.* 10ft. Guiana and Brazil, 1827. (*A. G.* 364.) *SYN. Marialva guyanensis.*

TOWN CRESS. A common name for *Lepidium sativum* (which see).

TOXICODENDRON (from *toxicon*, poison, and *dendron*, a tree; alluding to the poisonous nature of the fruits). *SYN. Hydnachne.* *ORD. Euphorbiaceæ.* A small genus (two species) of small, rigid, much-branched, greenhouse trees, endemic in South Africa. Flowers dioecious, apetalous, axillary, the males densely cymulose and shortly pedunculate, or loosely racemose, the females solitary, shortly pedicellate. Capsule sub-globose, thick, hard. Leaves opposite or often whorled, entire, rigidly coriaceous. *T. capense*, the only species introduced, succeeds in well-drained, sandy loam. When at rest, water should be sparingly given. Propagation may be effected by cuttings, inserted in sandy soil, under a bell glass.

T. capense (Cape of Good Hope). *fl.* male panicle about one-third the length of the leaves, slightly puberulous, cluster-flowered; bracts thick, ovate-lanceolate. June. *l.* sub-lanceolate, linear, narrowly oblong, or elliptic, cuneate-narrowed at base, rounded and obtuse at apex, paler beneath, glabrous. Flowering branches terete. *h.* 5ft. to 6ft. 1783. *SYN. Hydnachne globosa.*

TOXICOPHLEA (from *toxicon*, poison, and *phloros*, bark; in allusion to the poisonous rind). *SYN. Acokanthera.* *ORD. Apocynaceæ.* A small genus (three species) of very poisonous, tall, greenhouse shrubs or small trees; two are natives of South Africa, and the third is Abyssinian. Flowers white, or pink on the outside, odorous; calyx five-parted, eglandular; corolla salver-shaped, with a cylindrical tube and five twisted lobes; cymes sub-racemose, dense, sub-sessile in the axils. Berry globose, one- or two-seeded. Leaves opposite thickly coriaceous, obliquely penninerved.

Toxicophlema—continued.

The two introduced species thrive in a light, rich soil, with an occasional watering of weak liquid manure. Cuttings root readily under a hand glass, in moderate heat.

T. cestroides (Cestrum-like). A synonym of *T. Thunbergii*.

T. spectabilis (showy).* Wintersweet. *fl.* white, in terminal and axillary corymbs, which form a very large, dense spray, frequently over 2ft. in length; perfumes sweet and powerful. Spring. *l.* elliptic. *h.* 4ft. to 6ft. South Africa, 1872. (*G. C.* 1872, 363; (*in.* July, 1877; *R. H.* 1879, 270.)

T. Thunbergii (Thunberg's). *fl.* yellowish, tipped with brown, expanding in the afternoon; corymbs sessile, axillary, usually eight-flowered. February to April. *l.* lanceolate-oblong, coriaceous. *h.* 6ft. to 7ft. (Cape of Good Hope, 1787. The correct name of this plant is now *Acokanthera venenata*. (*I. H.* 1885, 543.) *SYN. T. cestroides* (*R. G.* 940; *R. H.* 1880, 370).

TOXOSTIGMA. A synonym of *Arnebia* (which see).

TRACHEA (derivation uncertain). A small genus of Night-moths (*Noctua*), of which only one species, *T. piniperda*, or the Pine Beauty Moth, is found in Britain. The



FIG. 67. TRACHEA PINIPERDA.

size, form, and markings of the moth are shown in Fig. 67. The front wings are brick-red, or reddish-brown, mixed with grey and pale orange; there are darker oblique cross-lines, and whitish spots towards the middle of each wing, the centre of the larger spot being filled up with orange-grey. The moths fly in the early spring. The larvæ are slender; when full-grown, they are yellowish-green, with a white line down the middle of the back, and a double line (white above, and orange beneath) along each side above the legs. The young larvæ are of a uniform green colour. They feed on the leaves of Fir-trees during summer, and, when full-fed, spin slight cocoons in crevices of the bark, or under the soil, and in them become brown pupæ.

Where these Moths are conspicuously hurtful to Conifers, their numbers may be reduced by shaking them off the branches, and preventing them from ascending the trunk by putting a ring of tar around it. The pupæ also should be sought for in the crevices of the bark, and by turning up the soil around the trunks to a depth of three or four inches. This insect is, however, seldom so abundant as to do much harm in any part of Britain.

TRACHEA, TRACHENCHYMA. Spiral vessels; air-tubes, containing a spiral thread of considerable toughness and elasticity.

TRACHELIUM (from *trachelos*, the neck; alluding to the supposed efficacy of the plants in diseases of the trachea). Throatwort. *ORD. Campanulaceæ.* A small genus (four or five species) of hardy, perennial herbs or sub-shrubs, natives of the Mediterranean region. Flowers sub-umbellate or in a corymbosely-branched panicle; calyx tube adnate, the limb five-parted; corolla narrow-tubular, shortly five-lobed at apex; stamens free. Leaves ex-stipulate. Only one species calls for mention here. It thrives in a compost of sandy loam and vegetable mould. Increased by seeds, sown on a slight hotbed, in spring; or by cuttings of young shoots, inserted in sandy soil, in April, or at the end of summer.

T. corniculatum (blue). *fl.* small, very numerous, corymbose; corolla violet-blue, salver-shaped, with a long and very narrow tube. August. *l.* ovate, acute, deeply serrated, on short petioles. Stem erect. *h.* 2ft. Italy and Spain, 1640. (*B. B.* 72.)

T. e. album (white). This only differs from the type in having white flowers.

TRACHELOSPERMUM (from *trachelos*, the neck, and *sperma*, a seed; alluding to the apical elongation of the seeds). - **SYNS.** *Parechites*, *Rhynchospermum* (of Lindley). **ORD.** *Apocynaceæ*. A small genus (four species) of stove or greenhouse shrubs, inhabiting the East Indies, the Malayan Archipelago, and Eastern Asia, extending as far as Japan. Flowers white, in loose, terminal or pseudo-axillary cymes; calyx small, five-parted, with five to ten glandular scales at base within; corolla salver-shaped, with a cylindrical tube, a constricted throat, and five oblong, twisted lobes; filaments very short; disk annular, truncate or five-lobed. Leaves opposite, scattered, penniveined. *T. jasminoides* is a pretty, greenhouse climber, of easy culture in a compost of light loam and peat. It may be readily increased by cuttings.

T. jasminoides (Jasmine-like). * *f.* white, very fragrant, several in a cyme; corolla tube contracted below the middle, hairy within at the mouth, the lobes wavy, with reflexed margins; peduncles solitary, axillary or terminal, much longer than the leaves. July. *l.* on very short petioles, ovate-lanceolate, acute, the younger ones pale yellow-green. Shanghai, 1846. **SYN.** *Rhynchospermum jasminoides* (B. M. 4737; J. H. S. L., p. 74; L. & P. F. G. ii. 147).

T. j. angustifolium (narrow-leaved). A form with smaller, narrower leaves than the type; it proves hardy when grown against a wall in the open air in the south of England. **SYN.** *Rhynchospermum angustifolium*.

TRACHYCARPUS (from *trachys*, rough, and *karpos*, fruit; probably in allusion to the rough, hairy fruit). **ORD.** *Palmae*. A small genus (four species) of greenhouse or half-hardy, unarmed Palms; two inhabit the mountains of North India and Burmah, the third is Chinese, and the fourth Japanese. Flowers yellowish, small; spathes many, rather large, compressed, obliquely cut, thickly coriaceous, tomentose; spadices many, short or elongated, robust, densely or loosely flowered. Fruit yellowish, small, globose, ellipsoid, or sub-reniform, one-seeded. Leaves terminal, orbicular or semi-orbicular, deeply plicate-multifid; segments narrow, induplicate bifid; rachis none; ligule very short; petioles biconvex; sheath entire. Caudices solitary and tall, or dwarf and tufted. The species are of very easy culture in a compost of rich, strong loam, to which is added a small portion of vegetable mould and sand. Perfect drainage, and copious supplies of water throughout the summer, are most essential to success. Propagation may be effected by suckers, which generally appear in considerable quantities; or by seeds.

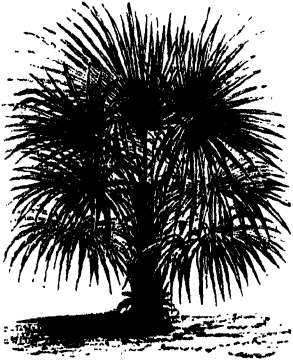


FIG. 68. TRACHYCARPUS EXCELSUS, in a Young State.

T. excelsus (All.) * *f.* spadix 1½ long, duplicately branched; fuscous, tubular, bifid at apex. *l.* in young specimens oblong, in adults transversely oblong, concave, digitately multipartite, 1½ in diameter; segments fifteen to sixty, linear, somewhat obtuse, bidentate or shortly bifid, the teeth or segments obtuse; petioles above loosely concave, below convex, 1½ long, the margins smooth or armed with small teeth. A 24th. China and Japan, 1844. See Fig. 68. (F. d. S. 2368.) **SYN.** *Chamaerops excelsa*.

T. Fortunei (Fortune's). * *f.* yellow; inflorescence densely paniculate, more than 8in. long. *l.* semi-orbicular, lobed, 1½ ft.

Trachycarpus—continued.

long and broad, cut half-way or more down; segments ½ in. to 1in. broad, pendulous towards their tips; petioles 1½ of more long, unarmed, or the margins very obscurely toothed. Caudex 8ft. to 12ft. high, the lower portion marked with the scars of fallen leaves. China, 1849. Hata, brooms, brushes, cordage, sandals, and whole dresses, are made of the fibrous sheaths of old leaves. (J. C. n. s., xxiv., p. 305.) This is now regarded as identical with *T. excelsus*. **SYN.** *Chamaerops Fortunei* (B. M. 5221).

f., spadix 2ft. long, the lower half of the spadix exerted, quite naked. *l.* flabelliform, reniform, 2ft. long, 3½ ft. wide; segments about sixty-five, the lateral ones shortest, 12in. to 14in. long, but more deeply divided than the others, linear, their segments 2½ in. to 3in. long, narrow, acute; petioles 1½ ft. long, with irregular, denticulate margins. Trunk 5in. in diameter. A 9ft. Khasya Mountains. **SYN.** *Chamaerops Fortunei*.

T. Martiana (Martius). *f.*, spadices many, in adults much-branched, spreading, many-flowered. *f.* ovate, sub-solitary, lepidotied. *l.* palmately multifid; segments bifid at apex; sheath cylindrical, obliquely truncate. Caudex 26ft. high, cylindrical above, 4in. to 6in. in diameter, fusco-cinereous, marked with the scars of fallen leaves. Himalayas. **SYN.** *Chamaerops Martiana*.

TRACHYMENE (from *trachys*, rough, and *hymen*, a membrane; alluding to the channels of the fruit). **SYNS.** *Didiscus*, *Huegelia*. **ORD.** *Umbelliferae*. A genus comprising about fourteen species of stove or greenhouse, annual or perennial herbs; one inhabits New Caledonia, another Borneo, and the rest are endemic in Australia. Flowers white or blue, in simple umbels; calyx teeth minute or obsolete; petals entire, obtuse, imbricated; involucre bracts linear, often connate. Leaves ternately dissected or rarely undivided, toothed; stipules wanting. *T. cœrulea*, the only species worth describing in this work, is a rather coarse, erect, more or less hirsute, greenhouse annual or biennial. It should be raised from seeds, sown in a gentle hotbed.

* *cœrulea* (blue). *f.* usually blue; petals unequal; involucre bracts numerous, linear; peduncles long, each bearing an umbel of very numerous flowers, 1in. to 2in. in diameter. July. *l.* once or twice tripartite; lobes linear-connate, bifid or incised, acute; upper floral leaves small, simple or trifid. A 1ft. to 2ft. West Australia, 1827. (B. R. 1225.) **SYN.** *Didiscus cœruleus* (B. M. 2375).

TRACHYMENE (of De Candolle). A synonym of *Siebers* (which see).

TRACHYNOTIA. A synonym of *Spartina* (which see).

TRACHYSTEMON (from *trachys*, rough, and *stemon*, a stamen; alluding to the villous filaments of one of the species). **SYNS.** *Nordmannia*, *Psilotemon*. **ORD.** *Boraginæe*. A genus including only a couple of species of hardy, erect, branched, hispid, perennial herbs, found in the Orient. Flowers pink or white, pedicellate; calyx five-cleft; corolla tube cylindrical, five-angled within, the five lobes linear, spreading, or at length revolute; stamens five; cymes rather loose, bundle-flowered. Nutlets four, erect. Radical leaves often ample, long-petiolate; cauline ones few, alternate. *T. orientalis*, the only species calling for description here, thrives in ordinary soil; it may be multiplied by seeds, or by divisions.

T. orientalis (Eastern). *f.* purplish-blue, copious, on long pedicels; corolla lobes revolute, pliose outside at the apex. March to May. *l.* hispid, broad; lower ones cordate; upper cauline ones ovate-lanceolate, narrowed at base. Stem hispid. A 1ft. to 2ft. 1752. (G. C. n. s., xiv., p. 17.) **SYN.** *Borago orientalis* (S. F. G. 175).

TRACHYTELLA. A synonym of *Delima* (which see).

TRADESCANTIA (named in honour of John Tradescant, gardener to Charles I.; he died in 1638). Spiderwort. **SYN.** *Ephemerum*. Including *Descantaria*, *Pyrrhina*. **ORD.** *Commelinaceæ*. A genus comprising about thirty-two species of stove, greenhouse, or hardy, perennial herbs, natives of North and tropical America. Flowers more or less pedicellate, numerous or few in a cyme, very rarely solitary; sepals distinct, concave, green or coloured; petals distinct, obovate or orbicular, sub-equal; stamens six,

Tradescantia—continued.

all usually perfect; cymes simple, variably disposed. Leaves variable. Stem simple or branched, diffuse, ascending, or erect. The best species are here described. They are amongst the easiest of plants to cultivate. Cuttings of the stove and greenhouse species root readily at almost any season, if inserted in light soil, in moderate heat. The hardy *Tradescantias*, of which *T. virginica* is one of the best, may readily be propagated by division; the plants succeed in ordinary garden soil.

T. cariofolia (Sedge-leaved). A synonym of *T. virginica*.

T. crassifolia (thick-leaved). *f.* resembling those of *T. virginica*; sepals whitish, woolly; petals purplish-rose or blue; umbels three to six on a branch, sessile, axillary, the upper with two bracts, the lower with one. August. *l.* ellipsoid or narrow-lanceolate, woolly-villous beneath. Stem scarcely divided. Root a large tuber. *h.* 2ft. Mexico, 1796. Half-hardy. (B. M. 1598.)

T. c. scoualis (stemless). Stem shorter or scarcely any. (B. R. 1840, 34, under name of *T. iridescens*.)

T. c. glabrata (glabrous). *f.*, sepals white-woolly. *l.* glabrous on both sides, the margins white-woolly. SYN. *T. speciosa*.

T. crassula (rather thick). *f.*, sepals hairy-pilose; petals white; umbels many-flowered, loose, mostly terminal, rarely also one or two in the axils; pedicels glabrous. July. *l.* oblong, rather obtuse, 4in. long, glabrous, ciliated-pilose on the margins. Stem glabrous, sub-corymbosely branched. *h.* 1½ft. Brazil, 1825. Stove. (B. M. 2935; L. B. C. 1560.)

T. discolor (discoloured). A synonym of *Rhoeo discolor*.

T. elata (tall). A synonym of *T. virginica*.

T. erecta (erect). A synonym of *Tinantia fugax erecta*.

T. fuscata (fuscous). *f.*, sepals rather thick, densely rusty-hairy outside; petals bluish-purple, round; peduncles axillary, crowded, one to three-flowered. September. *l.* 6in. to 8in. long, oblong, acute, scarcely acuminate, narrowed or attenuated at base, more or less petiolate. Stem short or scarcely any, clothed with dark sanguineous hairs. Brazil, 1820. Stove. (B. M. 2330; B. R. 482; L. B. C. 374.) SYN. *Purcheina Loddigesii* (of gardens).

T. glabra (smooth). A synonym of *T. virginica*.

T. iridescens (iridescent). A synonym of *T. crassifolia scoualis*.

T. latifolia (broad-leaved). A synonym of *Tinantia fugax erecta*.

T. multiflora (many-flowered). *f.*, sepals ovate, hairy, equalling the white petals; umbels terminal and axillary; peduncles hairy, shorter than the leaves. June. *l.* ovate, sub-cordate-rounded at base, pointed, 1in. to 2in. long. Stem ascending. Jamaica, 1824. Stove. SYN. *T. procumbens*.

T. navicularis (boat-shaped). *f.* similar to those of *T. virginica*; petals of a beautiful pink, twice the length of the navicular sepals; umbel terminal, solitary, many-flowered. Summer. *l.* 3in. long, sessile, fleshy, navicular, ovate, acute, ciliated on the margins, very thickly dotted beneath. Stem stoloniferous at base, scarcely branched; floriferous branches geniculate-ascending. Peru. Stove. (R. (i. 901.)

T. pilosa (pilose). A synonym of *T. virginica pilosa*.

T. procumbens (procumbent). A synonym of *T. multiflora*.

T. pulchella (pretty). *f.*, sepals and pedicels nearly glabrous; petals rose-coloured or bluish. July. *l.* elliptic-lanceolate or lanceolate, sessile, 2in. long, acute, often rounded and somewhat stem-clasping at base, glabrous. Stem procumbent; branches sub-erect, glabrous. Mexico, 1825. Greenhouse.

T. rosea (rose-coloured). *f.* 4in. in diameter; petals bright rose-coloured, three times as long as the ovate-lanceolate sepals; cymes solitary or in pairs, few-flowered; peduncles terminal, 5in. to 6in. long. June to August. *l.* linear-lanceolate, fringed on the margins. Stem simple, slender, smooth, 6in. to 8in. high. North Carolina, 1802. Hardy. (L. B. C. 370; S. B. F. G. 183.)

T. speciosa (showy). A synonym of *T. crassifolia glabrata*.

T. sub-aspera (rather rough). A synonym of *T. virginica*.

T. tumida (tumid). A synonym of *T. virginica tumida*.

T. undata (waving). A synonym of *Tinantia fugax erecta*.

T. velutina (velvety). *f.*, sepals and pedicels softly pubescent; petals purplish-rose; umbels terminal and axillary, many-flowered. May. *l.* 5in. long, sessile, oblong-lanceolate, acute, densely and softly pilose above, very shortly silky-villous beneath. Stem branched, softly whitish-villous. *h.* 1½ft. Guatemala, 1850. Stove.

T. virginica (Virginian)* Flower of a Day; Common Spider-wort. *f.* 1in. in diameter, closely packed in two rows in the bud, each with an ovate, scarious bract at the base; petals violet, purplish, or whitish, like the style and densely-bearded filaments, twice as long as the lanceolate-ovate sepals; cymes axillary and terminal, sessile, many-flowered. March to May. *l.* linear, broadest at base, mostly purple-veined. Stems 6in. to 2ft. high. Florida and northward, 1629. Hardy. (B. M. 106.)

Tradescantia—continued.

SYNS. *T. caricifolia* (B. M. 3546), *T. elata* (L. B. C. 1513), *T. glabra*, *T. sub-aspera* (B. M. 1597). Of this species there are several varieties.

T. v. alba (white). A variety having white flowers. (B. M. 3501.)

T. v. pilosa (pilose). *f.*, upper umbels many, sessile in the axils of the leaves; lower ones pedunculate, with two lanceolate-linear bracts. (B. R. 1055.) SYN. *T. pilosa* (B. M. 3231).

T. v. tumida (tumid). *f.*, umbels sessile in the axils. Stem thickened. SYN. *T. tumida* (B. R. 1840, 42).



FIG. 69. TRADESCANTIA WARSCEWICZIANA.

T. Warscewicziana (Warscewicz's). *f.* many, densely crowded in a branched panicle; sepals and pedicels lilac; petals purple. May. *l.* narrow-oblong, about 8in. long, acuminate, sessile. Stem robust, erect, 4in. to 16in. high. (Guatemala. Stove. See Fig. 69. (B. M. 5183.)

T. Zebrina (Zebrina). A synonym of *Zebrina pendula*.

TRAGACANTH GUM PLANT. See *Astragalus Tragacantha*.

TRAGIA (named in honour of Jerome Book, 1498-1554—generally called *Tragus*, the Greek for Book [Buck]—a German botanist). ORD. *Euphorbiaceæ*. A large genus (about fifty species) of stove herbs or sub-shrubs, inhabiting warm regions. Flowers monocious, apetalous, racemose. Leaves alternate, petiolate, toothed or lobed. The species, a few of which have been introduced, possess no beauty, and are not particularly interesting.

TRAGIUM. Included under *Pimpinella*.

TRAGOPOGON (from *tragos*, a goat, and *pogon*, a beard; alluding to the long, silky beard of the seeds). Goat's Beard. Including *Geropogon*. ORD. *Compositæ*.

A genus of hardy, biennial or perennial herbs, natives of Europe, North Africa, and temperate and sub-tropical Asia. About forty species have been described, but the number may be considerably reduced. Flower-heads yellow or blue (or purple?), terminal, homogamous; ray florets ligulate, truncate, five-toothed; involucre cylindrical or narrowly campanulate, the bracts one-seriate, often much elongated; receptacle flat or at length convex, foveolate; achenes glabrous or slightly hispid; pappus bristles indefinite, one-seriate. Leaves alternate, linear, entire, amplexicaul, often grass-like. A selection of the introduced species is given below. Seeds only require to be sown in ordinary garden soil.

T. crocifolius (Crocus-leaved). *f. heads* violet, on terete peduncles; involucre five or six-leaved; achenes muricate-scabrous. June. *l.* narrow-linear, straight. *h.* 1ft. Italy, 1739. A glabrous biennial.

T. glaber (smooth)* *f. heads* purplish, solitary at the slightly-thickened tips of the stems or branches; involucre eight-leaved, as long as the rays. July. *l.* elongated, half-amplexicaul. Stem simple or rarely branched, terete. *h.* 1½ft. South Europe, 1704. A glabrous biennial. SYN. *Geropogon glaber* (B. M. 479).

T. major (greater). *f. heads* yellow; involucre of twelve to fifteen scales, the outer ones exceeding the ray florets; peduncles obconical-fistulose at apex. May. *l.* straight, lanceolate-linear, acuminate. *h.* 5ft. Austria, 1788. A glabrous perennial. (J. F. A. 29.)

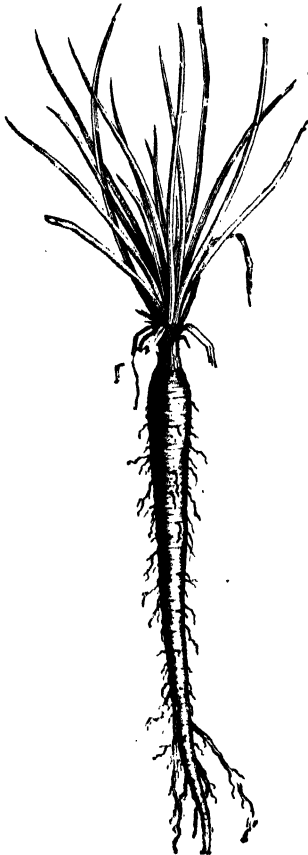


FIG. 70. TRAGOPOGON PORRIFOLIUS.

T. porrifolius (Leek-leaved) Salsafy; Vegetable Oyster, &c. *f. heads* rose-coloured or flame-purple; involucre of eight scales; peduncles obconical-fistulose at apex. May and June. *l.* straight, lanceolate-linear, acuminate, the sheaths slightly dilated. *h.* 3ft.

Tragopogon—continued.

North Europe (naturalised in England). A glabrous biennial. See Fig. 70. (Sy. En. B. 801.) For culture, &c., see Salsafy.

T. pratensis (meadow-loving). Common Goat's Beard; Noon-flower; Shepherd's Clock; Star of Jerusalem, &c. *f. heads* yellow, ½in. to 2in. in diameter; involucre obconical, of about eight bracts, often streaked with brown; scapes scarcely thickened upwards. June and July. *l.* flexuous, gradually contracted upwards; radical ones channelled above. Stems stout, erect, 1ft. to 2ft. high. Europe (Britain). Plant glabrous, or the involucre slightly tomentose. Biennial. (Sy. En. B. 798-800.)

T. roseus (rose-coloured). A synonym of *T. ruber*.

T. ruber (red). *f.* rose-coloured or diluted with purple, on terete peduncles; involucre of about eight bracts. May. *l.* lanceolate-linear, slightly undulated, glaucous. Stems erect, leafy, glaucous. *h.* 1½ft. Siberia, 1826. Young plant cobweb-woolly. Perennial. SYN. *T. roseus*.

TRAILERS. See Creepers.

TRAINING. This term, as used in gardening, refers to the management of trees and plants, more especially when in a young state, by regulating their branches to give all a fair amount of space and exposure to light. Many trees and plants, if allowed to grow in a natural way, would assume proportions far beyond the limited accommodation which is available for them when under cultivation, and, besides, would be crowded and unfruitful. Pruning is first of all necessary, but with it Training is closely associated; the branches that are reserved either temporarily or permanently, when pruning, have afterwards to be dealt with in a similar manner in Training. Besides disposing of branches to give all plenty of space and light, there is also the necessity for regulating them, so as to prevent the sap flowing to any one branch, or part of the plant, at the expense of another, and to the detriment of both. An unequal flow of sap causes over-luxuriance in one part, and weakness in another. By Training, much of this irregularity may be prevented; in fact, it is one of the principal objects to be kept in mind. It is pretty generally known, by persons engaged in gardening pursuits, that sap will flow most readily into straight branches, which pass from the root in an upright, or nearly upright, direction, and not so freely into others proceeding obliquely or horizontally from the same starting-point. If, therefore, a tree, which it is desired should be about equally strong in all its branches, shows—as naturally it will do if not attended to—a disposition to

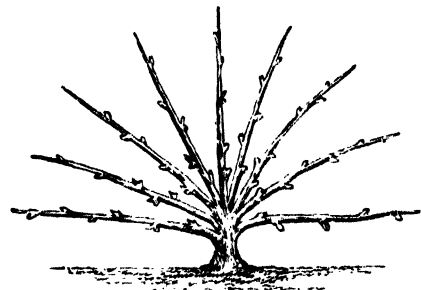


FIG. 71. FAN TRAINING.

grow irregularly, it must be corrected at an early stage. This constitutes one of the principal objects which may be effected by Training. The fact of sap flowing most forcibly into branches trained in an upright direction, supplies the means, as by elevating or depressing the points during the growing season, according to vigour shown, the circulation may be encouraged, or checked, in a most marked manner, and the development will be more generally alike throughout.

In the management of cultivated trees, several methods of Training are adopted, some kinds, and also some

Training—continued.

positions, being better adapted for one than for another. Fruit-trees are those more especially referred to; it is an easy matter to train annual climbers, both indoors and out, if only the necessary requirements of the plant are kept in view. The same may also be said of creepers or trailers generally, when their shoots are sufficiently thinned out. The methods of Training a plant to a rafter, on a wire trellis, or round a certain number of sticks, are matters which scarcely need an explanation.

The principal methods of Training adopted for wall-fruit trees are the Fan, Horizontal, Oblique, and Cordon, all being subject, more or less, to modifications; and for the open ground, Pyramids, Bushes, and Standards are the shapes most favoured. Fan Training is generally adopted for stone fruits—Apricots, Cherries, Peaches, and Plums. The trees may be worked on dwarf or tall stocks, but on the latter the system is often modified by bringing some of the branches down on either side of the stem when there is space.

Fan Training must be commenced on maiden trees, that is, trees which have been worked the previous year and have made one strong shoot. This is cut down nearly to the point of union, in order to induce the production of shoots therefrom to eventually form the principal branches. (One of the chief conditions to be aimed at in Fan Training is to get the head equally balanced, by having the same number of shoots on one side of the centre as on the other, as shown, for example, in Fig. 71. If sufficient can be secured the first year for starting an evenly-balanced head, an advantage is gained which the tree will always show afterwards. Should a young tree start irregularly, and misplaced shoots be allowed to develop for a season, it is not an easy matter then to secure others where they are wanted from the base. Sometimes, trees are cut hard back a second time, but this is a most objectionable practice; the less severe cutting is resorted to, the better, as it invariably leads to branches dying away sooner or later. By regulating the young shoots, depressing the stronger and elevating the weaker ones, much may be done to equalise the flow of sap, and render them all of about equal dimensions at the end of the season. In this and in other systems of Training, much has to be known by the operator from practical experience in the work, and constant attention is necessary from the first, to keep the shoots properly

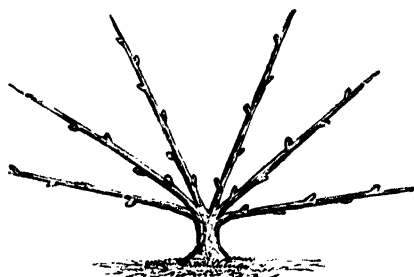


FIG. 72. FAN TRAINING.

disposed and the sap regulated. Fig. 72 represents a tree trained without a centre shoot; the sap in such a tree would be equally distributed on both of the sides, and it is a comparatively easy matter to get the centre filled up when once the sides are equalised and the main branches established.

Horizontal Training is largely employed for Pear-trees, and sometimes for Apples that are to be grown against

Training—continued.

walls or as Espaliers in the open ground. Espalier trees are sometimes trained on horizontal wires, as shown in Fig. 73. When there is a great length, and in a straight line, wires are preferable to stakes, if only for their durability. A young tree with a single upright stem is cut

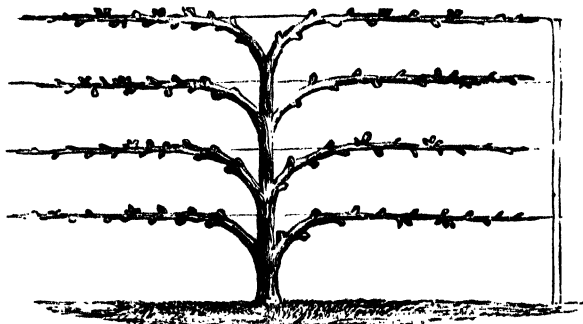


FIG. 73. HORIZONTAL TRAINING FOR ESPALIER TREES ON WIRES.

down to about 12in. from the ground, provided there are three buds situated near that point, one on either side, and one in an eligible position for growing to form the leader. The two side shoots should be trained on an angle for the first year, and induced to grow, if possible, with equal vigour; they can afterwards be

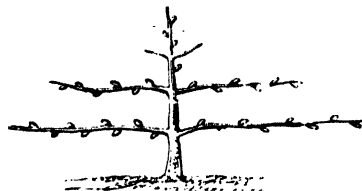


FIG. 74. HORIZONTAL TRAINING.

gradually brought down to a horizontal line, to form bottom branches. At pruning time the next year, the leader is again cut down immediately above three other buds similarly situated as in the first year, but some 10in. or 12in. higher up, according to the distance required between the horizontal branches. Thus the work proceeds each year (as shown in Fig. 74); every pair of branches is

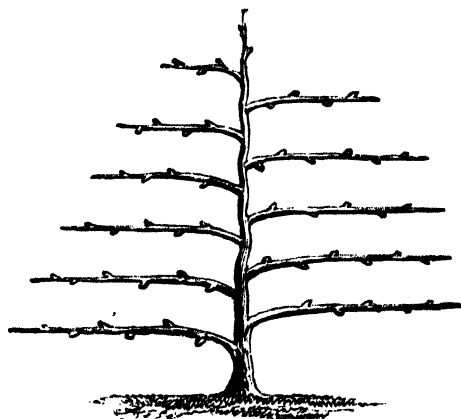


FIG. 75. HORIZONTAL TRAINING.

Training—*continued.*

therefore, in an established tree, a year older than the pair situate immediately above. Unfortunately, it is not safe to attempt more than one step up each year, although, with vigorous trees and a good climate, two may occasionally be secured by stopping the centre shoot in summer

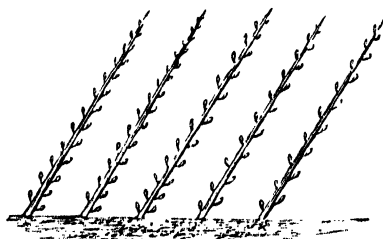


FIG. 76. SINGLE OBLIQUE CORDON.

at the proper distance up, and training the laterals. This is not recommended, as it cannot be expected that a lateral from a young shoot will ever mature and form a branch equal in strength to another which starts from a ripened bud. Some prefer Training the branches on either side, so that they come alternately (see Fig. 75);

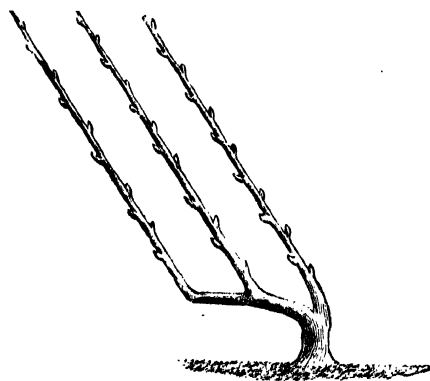


FIG. 77. TREBLE OBLIQUE CORDON.

but it is not always certain that every branch can be secured just at the point where it is wanted to insure alternate regularity.

In Oblique Training, a centre stem is reserved as in the Horizontal method; but the side branches are allowed to point upwards, instead of being kept to a level. This



FIG. 78. DOUBLE HORIZONTAL CORDON.

allows a freer circulation of sap, for the reason which has been already explained: the system, therefore, favours weak-growing sorts, and may be adopted with success for Peaches and Nectarines, where the Horizontal would not answer.

Cordon Training admits of a large number of trees being cultivated in a comparatively small space. Apples, Pears, and Cherries, the fruits of which are borne on small spur branches, are specially adapted for Training as Cordons. They need but little room, as the branches may

—*continued.*

be kept pinched back during summer. Single Cordons consist only of a single stem, which may be formed from a strong maiden tree. These may often be planted about 2ft. apart, and trained obliquely, as shown in Fig. 76. Other oblique forms of Cordons are trained with two, or even three stems (as in Fig. 77). Horizontal Cordons are best adapted for training along the sides of walks, or to form an edging or boundary to fruit-tree quarters, &c. The method of Training a Double Horizontal Cordon

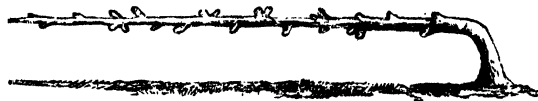


FIG. 79. SINGLE HORIZONTAL CORDON.

is shown in Fig. 78, and the Single, which is necessary for the ends, or where there are intersecting walks, in Fig. 79.

Pyramid Training is available for Pears, Apples, and Plums, also Cherries for pot-culture, and for outside in places where they can be depended upon to succeed away from a wall. There are several modifications of Pyramid Training, that most generally seen being an upright stem furnished with branches from bottom to top, which vary

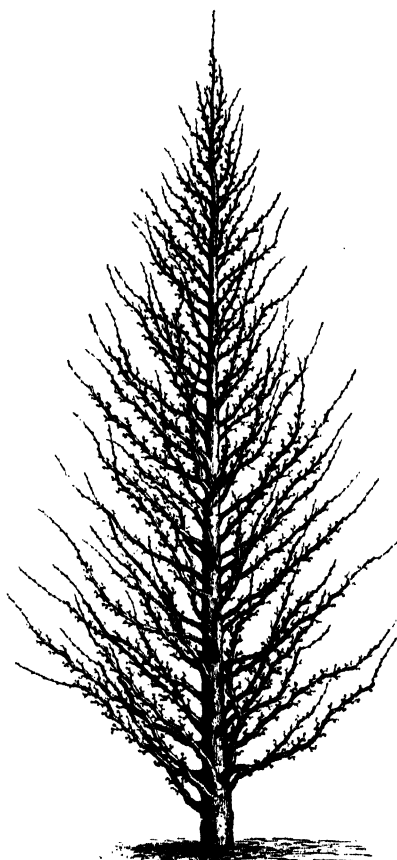


FIG. 80. PYRAMID TREE.

in length, so as to form a pyramidal outline (see Fig. 80). The branches require regular and stopping, as the trees grow, to keep a free circulation amongst them; and to

Training—continued.

obtain good specimens it is necessary to adopt a considerable system of Training in the early stages, by tying branches to fill up blanks, depressing the points of

Training—continued.

unduly strong, and make long shoots in place of fruiting spurs, a method of tying or bending down the points of the branches may be practised with advantage, on some of the strongest only, if this is considered sufficient. The

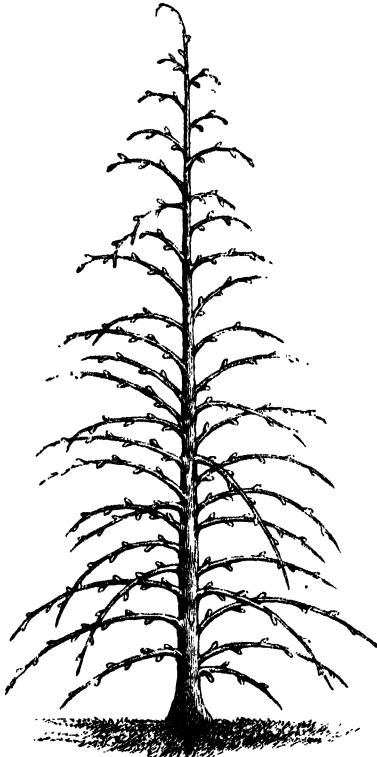


FIG. 81. PYRAMID TRAINING, WITH BRANCHES BENT DOWNWARDS.

vigorous shoots, and encouraging weaker ones to grow more freely. When Pyramids are inclined to grow

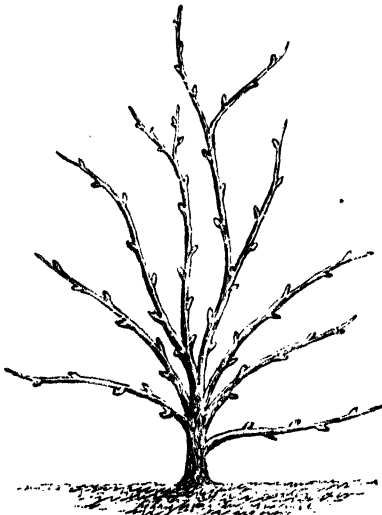


FIG. 82. BUSH TRAINING.

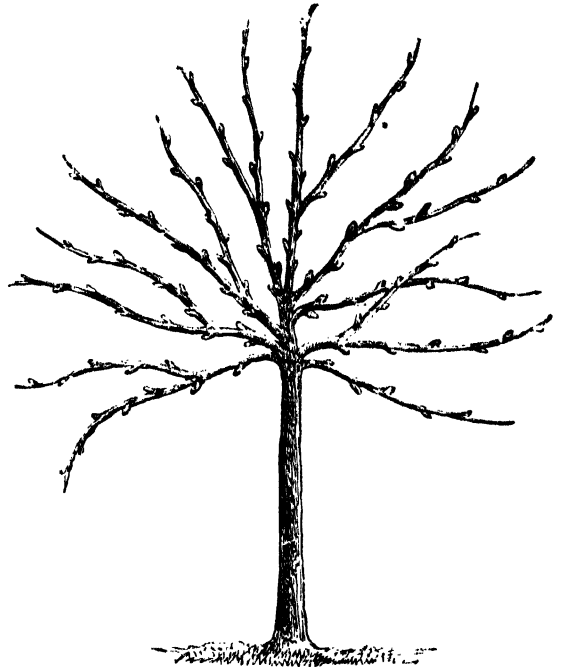


FIG. 83. STANDARD TREE.

tree would then appear as in Fig. 81, a habit which is sometimes naturally assumed by large pyramid Pear-trees of some varieties. Bush trees are practically Pyramids with the leader taken out; they need but little in the

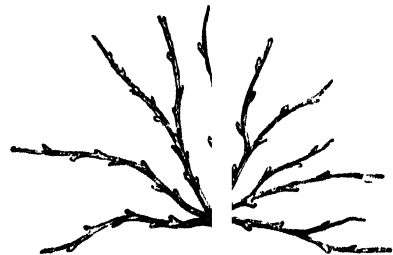


FIG. 84. HALF-STANDARD TREE.

way of Training beyond thinning to prevent overcrowding. Bush-trained trees (see Fig. 82) of Apples and Pears, the former worked on the Paradise-stock, and the latter on the Quince, are especially adapted for small gardens:

Training—continued.

they are usually very productive, and require but little space.

Standard Training is best suited for orchards, market gardens, &c., where grass is grown beneath, and cattle or sheep feed thereon, or where other crops and bush fruit-trees are cultivated amongst them. There is no great necessity for Training Standard trees artificially; their heads develop evenly enough, as a rule, if they are kept sufficiently thinned, after being shortened back for the first year or two to get the foundation. Standard

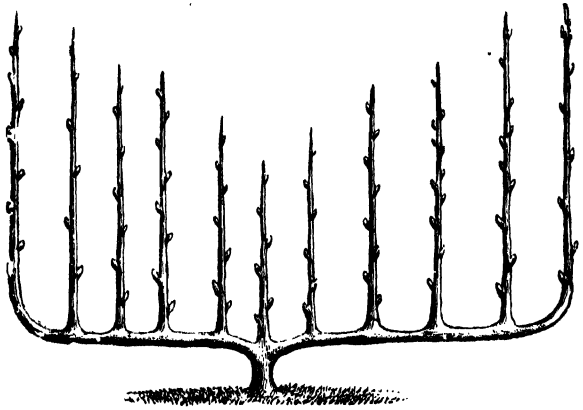


FIG. 85. VERTICAL OR UPRIGHT TRAINING.

Training (see Fig. 83) is suitable for Apples, some kinds of Pears, Plums, and Cherries, in favoured localities. A Half-Standard (Fig. 84) is simply a Standard with a shorter stem.

Vertical or Upright Training requires a considerable amount of management in keeping the upright shoots

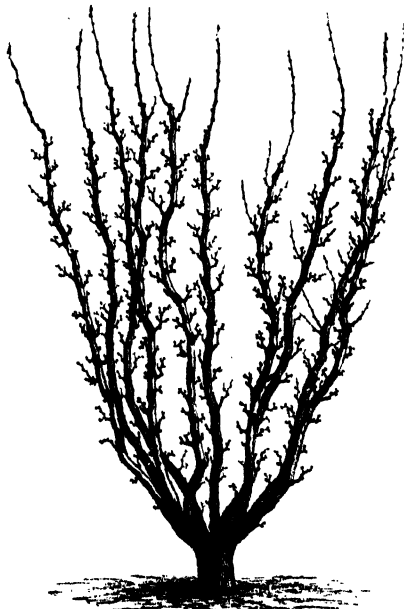


FIG. 86. APPLE-TREE TRAINED VASE-SHAPE, WITH DWARF STEM AND UPRIGHT BRANCHES.

Training—continued.

regulated and the tree evenly balanced. Two shoots must first be trained horizontally, and their points turned to form the uprights at the extreme ends (see Fig. 85). These must be kept in advance of all the others in the Training process; the centre will then be the last part of the tree to be furnished. This system is not so widely practised as others which have been already noticed.

Apple-trees trained in the shape of a vase, with dwarf stem (see Fig. 86), are very ornamental for lawns, &c., apart from the value of the fruit which is generally produced by them when established and kept pruned annually.

References to the methods of Training adapted to the various kinds of fruits named may be found under **Cherry, Currant, Fig, Gooseberry, Nectarine, Pear, Plum, Vine, &c.**

TRAMETES (from *trama*, the layer in *Hymenomyces* that supports the hymenium, or spore-bearing surface on each side of it, in the gills or in the partitions between the pores). A genus of Fungi nearly allied to **Polyporus** (which see), from which, indeed, it differs in little save that in *Trametes* the substance of the trama is similar to that of the pileus, while in *Polyporus* it is different. The general form of the Fungi in the genus, and the situation and appearance of the pores in which the hymenium is situated, are well exemplified in *T. Pini*

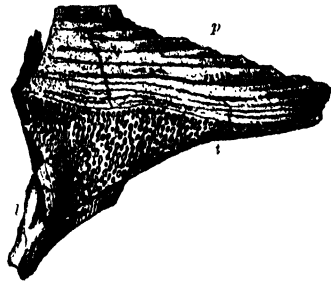


FIG. 87. TRAMETES PINI, showing (p) Pileus and (t) Openings of Spore-bearing Tubes. b, Bark of Fir-tree.

(see Fig. 87). Nine species have been discovered in Britain, growing on various trees and shrubs, but all rare. *T. Pini* is, however, by no means rare on the Continent, where it sometimes does great injury to living Conifers, chiefly to Pines and Larches, but also frequently to Spruces, and less often to Silver Firs. In these trees it produces a condition known as the "Red Rot." The reproductive organs of the Fungus grow out of the sides of the trees, as rusty-brown masses of the form figured, and are from 3in. to 6in. across; and they continue to slowly increase in size for a long time. The wood is destroyed by the action of the mycelium of the Fungus. The other species of *Trametes* are not very hurtful. Hartig's *T. radiciperda* is a synonym of *Polyporus annosus*, which is a most dangerous foe to Conifers, and also, though less often, to dicotyledonous trees, destroying the roots and trunks.

Remedies. The treatment required is similar to that recommended for **Polyporus**.

TRANSPLANTING. The act of removing any plant or tree from one situation, and transferring it to another, lifting it bodily, and placing the roots in new soil. The operation is one which is of the greatest practical utility, and is in daily practice on a most extensive scale. Because of the possibility of Transplanting, seedlings may be raised in immense quantities in a comparatively small space, and carefully tended in the younger stages of growth; plants and trees that are gradually developing may be lifted, and allowed additional

Transplanting—continued.

space according to their requirements; and others, with some few exceptions, that reach a considerable size, may, with proper appliances, be transferred to particular situations for producing an immediate effect. Transplanting forms one of the chief divisions of labour in nurseries, where, by its aid, thousands of plants are being continually prepared, in a limited area, for dispersing, eventually, over hundreds of acres of land. Fruit-trees may also be prepared in any quantity in nurseries, and grown, if desired, into a size large enough for bearing, when, at the proper season, they may be safely lifted and despatched for planting elsewhere, in private and other establishments.

In private gardens, Transplanting of seedlings of various descriptions and sizes forms part of the routine work, more or less, all the year round, but more especially in spring and early summer. Amongst the most important points to consider are the proper seasons for performing the work successfully, the previous preparation of the ground, and also the plants, if necessary, the operation of lifting, conveying to the new situation, and replanting, and after-management until the roots have re-established themselves. It scarcely need be said that considerable knowledge of the subject, and the exercise of much judgment and care, are necessary for Transplanting on an extensive scale, and with success. Some of these provisions are always essentials in the management of every garden. It is next to impossible to lift a plant that has been growing in the ground, and place it again in soil elsewhere, without cutting or breaking some of the roots, which, at least in a young state, are invariably tender in nearly every kind of tree and plant. In some cases this is comparatively unimportant—it may even be advantageous—but in others it may be quite the reverse. Sometimes, the spongioles, which extract nourishment from the soil, are numerous, and if a few become injured, there are plenty left for sustaining the plant; in other instances, there are but few, and then a greater risk is incurred. The proper season for Transplanting depends upon the kind of plant. Seedlings of vegetable crops, and tender or half-hardy plants raised under glass, generally need inserting into new soil soon after they become large enough to handle, in order to allow each individual more space and to prevent injury from overcrowding. The operation may have to be repeated, in some instances, two or three times before the permanent positions are reached; but, as a rule, it is with such plants one of the easiest performed, the chief precautions requisite being a good watering and shade for a few days, should it be necessary. Transplanting is, however, always best performed in dull, mild, and preferably damp weather: there is then less evaporation going on, and the ground is usually in better condition for working. Dry weather is not favourable for the work; it is important to watch opportunities, and never to lift plants until the new situation has been prepared for receiving them. The act of pricking out seedlings and frequently removing plants when in a young state, so far as may be consistent with their well-being, causes an increase of roots and also keeps them closer to the base. This is an advantage, inasmuch as every operation renders success in any subsequent Transplanting more certain, because of its effect in preventing an unlimited extension of the main spongioles. Beyond the recommendation that all seedling plants raised under glass and in seed-beds, for growing out of doors, should be moved, so far as possible, only when the weather is favourable for a quick renewal of growth, little further need be said here respecting them. Root action takes place most quickly when the soil is light; it is therefore a good plan generally to provide a light compost for seedlings, even if they require to be transferred into a heavier one when more fully developed.

Transplanting—continued.

The Transplanting of fruit-trees, ornamental and forest-trees, and shrubs of every description, into what may be considered more or less permanent quarters, forms annually a very important undertaking in many establishments, particularly when alterations are taking place, and new gardens or grounds are being laid out. As the usual sources of supply are the nurseries, the trees have often to be forwarded a long distance before reaching their destination. This not unfrequently has an injurious effect if the soil falls away when unpacking, or the roots become dry from a certain amount of exposure, which is often unavoidable. There is a vast difference between Transplanting trees or shrubs from one place to another in the same garden, and procuring them from a nursery. In the former case, the roots need only be exposed for a very short time if the work is properly managed, and, providing the weather is favourable, it may be conducted at seasons when long exposure would entail certain loss. Frequent Transplanting in the nursery keeps, as already noted, the roots close home, and this renders lifting and packing a more successful process than it otherwise would be. Trees and plants of any description should never be longer on a journey than is really necessary; they should be unpacked immediately on reaching their destination, and, if they cannot be immediately planted in their new quarters, the roots should be covered with soil. Root action may, and doubtless does, in many subjects, recommence gradually, very soon or directly after the work of Transplanting is completed: hence the importance of placing trees or plants at once in permanent positions, to prevent further disturbance.

The methods of Transplanting vary considerably in detail, according to different plants, and the manner in which their roots are naturally disposed. Some are deep, others shallow, rooting; and at times it is desirable, as in the case of some fruit-trees, to check the natural tendency when Transplanting, and to place roots in a horizontal direction, instead of allowing them to proceed downwards. There are some directions which are generally applicable, and these may be briefly referred to; the special details attending the management of individual plants or kind of trees can only be given in dealing with their cultivation separately. Usually, the hole should be first prepared, unless there are two sets of workmen—one digging holes, and the other lifting the plants. The requisite breadth and depth depends on the quantity and length of roots, but plenty of space should be allowed to spread them at full length, and to work readily all round. If the top soil is of better quality than that beneath, it may be placed on one side of the hole and mixed with some new, if the plant requires it. The bottom of the hole should be well broken up, and raised a little in the centre under the base of the plant. Having thus far prepared the hole, the plant may be placed in position, and the roots spread out evenly. It is best to ascertain first if the depth is all right, by laying a rod or drawing a small line across the top, taking a fair level on both sides. On no account should tree-trunks be buried, though they may be kept slightly lower than the ground level, in order that water may readily pass to the roots. A rod or line laid close to the trunk will show immediately if it is necessary to raise or lower the base, and any alteration can soon be made before filling in. Carefully spread out all the roots with the hand, and, should there be any hollow places beneath, fill in some soil to insure a firm resting-place. All soil that is placed in contact with the roots, both beneath and above, should be rather fine, and in a friable condition; this is very important, as hard lumps, or anything of too heavy a nature, would not fill up the cavities satisfactorily. Once the roots are arranged and covered, the holes may be filled up and trodden sufficiently, as the work proceeds,

Transplanting—continued.

to render the whole firm. All trees that are of sufficient height to be blown about and injured by rough winds, should be securely staked so soon as transplanted, or supported in some way, for preventing injury to the roots which would be caused were the trees allowed to sway about. In the case of standard or tall trees, transplanted for immediate effect, or for fruit-bearing, two or three guy ropes prevent this most effectually, and they may frequently be dispensed with so soon as the roots re-establish themselves. When lifting a tree for Transplanting, it is best to tie up with some soft cord any branches that may be near the base, and to commence digging out a spit of soil outside the line to which it is calculated the roots will reach. Then use a fork from the base of the tree outwards to separate the roots, but preserve as large a ball of earth as may be convenient to move, unless the tree is of a sort which transplants readily with bare roots. All roots which become mutilated had better be cut clean off before replanting; also any small ones, which sometimes die back—as, for instance, when trees have to be sent on a long journey. The necessity for watering depends very much on the season and the nature of the soil; if the subsoil is gravelly, a heavy watering would seldom do any harm, and water is the best of all substances for consolidating the top soil and roots. Watering is not so requisite in autumn as in spring Transplanting; but attention must be given to the subject throughout the summer immediately following. A mulching of loose litter or light manure, placed above the roots for a season, tends greatly to prevent evaporation, and to keep them moist even in dry weather.

The foregoing remarks are generally applicable to the Transplanting of any fruit and forest-trees, also all shrubs of moderate size that are amenable to the operation. The best seasons for performing the work, like other details, vary with individual subjects; some will transplant successfully at almost any season when carefully managed, while others are best moved at one particular period of the year. As a rule, all deciduous trees and shrubs transplant best in the autumn as soon as most of their leaves have fallen. These, and also Conifers and shrubs of all kinds, may generally be moved with safety any time during October, and up till the middle of November. There is then sufficient warmth in the soil to encourage the production of new roots before winter, and this is of great advantage. Transplanting may be proceeded with all through the winter whenever the weather is favourable; but the seasons when there is a certain amount of activity—as October and the early part of November, already mentioned—and a period immediately preceding the resumption of active growth in spring (February and March), are preferable. From the middle of November till the middle of January is the worst period for Transplanting, as vegetation is then so inactive, and the temperature of the ground very low. This period should not, therefore, be chosen by anyone who has but a moderate amount of the work to perform in any one season. Evergreen plants may be successfully moved later in the spring than deciduous ones, and Hollies transplant better in May, just as new growth begins, than at any other season. Rhododendrons may best be moved in March, or early in April. Such plants as half-hardy annuals, raised under glass for flowering in the open borders, are best transplanted into permanent positions before their flower-stems show; and hardy perennials which require division should be attended to in spring, before the annual growth is begun. Naturally, anything which is growing in a pot may be planted out in the open at periods when it would often be hazardous to attempt lifting the same individual from the ground. Transplanting in its entirety is therefore a subject the details of which have an extremely wide application;

Transplanting—continued.

the after-success will generally well repay for close attention to detail when performing the work.—Briefly, the principal points are these: Lift the roots with the least possible injury, make the new holes sufficiently wide that all may be spread at full length; and, after regulating them with the hand, cover with soil that is in a good, workable condition. Avoid having any roots doubled underneath—when the tree is placed into its new position this must be guarded against—and secure the stem from rocking about with the wind afterwards. Give a copious watering soon after planting, or at a future period, according to the season and state of the soil, to consolidate all the earth which has been moved, and to supply moisture, of which the roots will be in special need, to enable them to re-establish themselves.

Transplanting of trees and shrubs of an unusual size is practicable by the use of mechanical means and plenty of strength. For filling up a blank in any important place, such as an avenue, or for planting with a view to producing an immediate effect, the work is sometimes undertaken, though, of course, under more or less exceptional circumstances. The trees must first be at hand, or be procurable within reasonable distance for removing, and they must be of a nature likely to transplant successfully with due care and previous preparation if necessary; they must also be situated where removal is practicable. With a view to safely Transplanting trees of a larger size than usual, a system of preparation one year in advance is advisable, particularly if the specimens are valuable. This consists in cutting a trench round the stem, at a distance which depends on the size of the ball which it is intended to move, and severing with a knife the large roots that reach thus far, making a clean cut. Previous to digging the trench, some new soil, of a light rather than heavy nature, should be prepared and brought alongside ready for use. Without allowing the roots to be long exposed, the trench should be filled up again with the fresh compost. In this, new feeders will usually push, during the following season, from the points which have been mutilated; and when the time for removing the tree arrives, the next trench requisite should be cut outside the one already referred to, and the young roots carefully preserved. Of course, cutting off the roots will effect a check on the vegetation and growth above ground. When there is a danger of the check being too great, the preparation is sometimes extended over two years, and only a half cut at one time. When this is practised, the circumference of the intended circular trench should be divided into about four equal parts, and two of these, opposite each other, dug out; the other two, which will also be opposite, may be left for treating similarly the next season. The principles which have been detailed in treating of the Transplanting of trees and plants of moderate size are similarly applicable, but on a larger scale, to those of unusual dimensions. If a ball of earth to be removed measures 2ft., 4ft., or 6ft. through, then the hole must be prepared so as to allow plenty of additional space for the roots to be spread out their full length. In starting to lift, it is best to begin wide, and allow sufficient room to work: the roots may be all the more readily separated from the soil and preserved from mutilation.

For Transplanting trees with a great weight of soil attached to their roots, different machines or tree-lifters are in use; the management of these invariably requires the closest attention on the part of every workman who assists, as well as the person in charge. Hence, this work, when mechanical power is necessary, should be executed only by those who understand the business from practical experience. Two of the best tree-lifting or Transplanting machines are those known respectively as Mr. McNab's and Mr. Barron's. The diameter of the ball is limited with Mr. McNab's to that of the inner part of the machine,

Transplanting—continued.

which travels on two high wheels and is provided with handles for guiding it. There are double rollers before and behind; those furthest from the handles lift out, and allow of the machine being placed in position for lifting with the tree in the centre. The ball is reduced to the proper size, and bound round with a piece of strong canvas and cords; then two strong boards, which belong to the machine, are placed just underneath at the bottom, and ropes are passed under their ends at right angles, and brought up to the rollers of the machine. When everything is ready, the plant is wound up sufficiently high for travelling by means of four cross-shaped, iron

Transplanting—continued.

Mr. Barron's Transplanting machine (see Fig. 88) is capable of moving very large trees and masses of earth; it is, as may be imagined, very strongly constructed, and travels with the tree in an upright position. The weight is borne by two very strong rollers, whose ends rest on beams about 20ft. in length, that pass from the front to the back part of the machine, one on each side. There are four wheels, which stand rather high, to allow of the ball of earth being suspended beneath the beams, but above the ground line, for travelling. Two strong planks are placed through beneath the ball, as near as can be under the centre, to which are attached the lifting ropes or chains, and cross planks are also placed above these, to make sure of bringing the mass up together. When all is in readiness, the rollers are very gently turned by means of straight, steel, lever bars, and a snatch catches in cogs on each roller, and prevents it from running back. Whether ropes or chains are used for lifting, they must be of great strength, as a serious accident might be the result at any minute were anything to break. If the ground over which the wheels are to pass, when loaded with a tree, is not very firm, it is necessary to use planks 3in. thick for forming a roadway. When the tree reaches its destination, it has to be brought over the hole, which should by that time be in readiness, and lowered into position by having the process of lifting reversed. This requires, if anything, even greater care than lifting, as there is more danger of a great weight overcoming the workmen when they are lowering than when they are raising it.

The whole details of working any Transplanting machine are beyond what can be properly described on paper so as to be understood; the operation can only be learnt from persons who understand the matter and have a machine before them, and by practical experience. The latter is in this case, as in most others, the best teacher; and it becomes necessary that anyone who undertakes the removal of large trees should have had such experience, not only for performing the work

successfully, but also because the operation is one which, if improperly executed, endangers the lives of workmen employed, apart from accidents to which they may be subjected in the event of any unavoidable mishap.

TEAPA (abridged from *calceitropa*, the Latin name of an instrument called Caltrops, furnished with four spines, formerly used in war to impede the progress of cavalry). Water Caltrops. ORD. *Onagraceæ*. A small genus (about three species) of curious, stove or hardy, floating herbs, inhabiting Central and Southern Europe,

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FIG. 88. BARRON'S TRANSPLANTING MACHINE.

levers or handles, which fit, at the point of intersection, on the ends of two of the rollers. One of the disadvantages in the use of this machine is the liability of the soil to fall out from the bottom of the ball, but this largely depends on the kind of soil and its tenacity, and also on the amount of roots which the plant possesses. The boards are also sometimes liable to shift from their proper places beneath, and allow the plant to fall through; but this is not a very frequent occurrence. These are but some of the risks that must be encountered if Transplanting machines are used; they only happen occasionally if the balls are firm, and everything is properly adjusted.

Trapa—*continued*.

and tropical and sub-tropical Asia and Africa. Flowers axillary, solitary, peduncled; calyx tube short, the limb four-parted, two or all the segments persistent and becoming spinescent on the fruit; petals four, white, small; stamens four. Fruit bony, one-celled, large, obovoid, with four angles, indehiscent, with a short, cylindrical beak at the top. Leaves dimorphic; submerged ones opposite, root-like, pinnatifid, with filiform segments; floating ones rosulate, rhomboidal, the petioles having a spongy dilatation near the apex. The large seeds of *T. bispinosa* are sweet and edible; in Cashmere, and other parts of the East, they are common food, and are known under the name of Singhara Nuts. The species require a rich, loamy soil, and to be grown in a cistern, or a large pot or tub of water. Propagation may be effected by seeds.

T. bispinosa (two-spined). Singhara Nut-plant. *fr.* 4in. long and broad, glabrous or hairy; two opposite angles each with an often retroscly scabrous spine, the other two angles sometimes obsolete. *l.*, floating ones 2in. by 2½in. to 3in., very villous beneath, the posterior margin entire, the anterior lightly crenate; petioles 4in. to 6in. long, woolly. India and Ceylon, 1822. Doubtfully distinct from *T. natans*.



FIG. 89. UPPER PORTION OF PLANT OF TRAPA NATANS, showing Rosette of Floating Leaves.

T. natans (swimming)* Jesuit's Nut; Ling; Water Caltrop; Water Chestnut. *fr.* 4in. broad, the four angles all spinescent, but the two lateral ones shorter. *l.*, floating ones 1in. long, toothed or incised-toothed on the anterior margin, sparingly villous on the nerves beneath; petioles 2in. to 4in. long.



FIG. 90. FRUIT OF TRAPA NATANS.

glabrescent. Persia to Europe and the Upper Nile, 1781. Hardy. See Figs. 89 and 90. (B. R. 259; G. C. n. s., x., p. 212.)

T. verbanensis (Lago Maggiore)* *fr.* trigonous, compressed, with two short horns. *l.* deltoid, the two upper sides dentate, with bimucronate teeth. Lago Maggiore, 1856. Hardy. Whole plant glabrous.

TRAPEZIFORM, TRAPEZOID. Scarcely differing from rhomboid; having four sides, the opposite ones not parallel.

TRAPS. It is advisable to be provided with some of these in gardens, for the destruction of various kinds of vermin. The chief kinds of Traps required are those used for catching rats, mice, and moles. Rats may be caught by the ordinary kind of Trap used by keepers for rabbits, &c., if placed in their runs; but these destructive animals are more quickly disposed of by poisoning, if it can be safely practised, and sometimes by the aid of a gun. Mice are often destructive in seed-rooms and seed-beds, when the seed is of a kind which they like. An ordinary brick, and what is known as a Figure of 4 Trap, baited with a small piece of cheese, will generally catch them with certainty; also the small box Mousetraps commonly used in houses. For moles, the iron Traps with a spring and double claws, which clip the animal, from whichever side it proceeds, round the body, have generally superseded, and are preferable in gardens to, the old kinds made of wood and small wire. Traps, as they are generally called, may be formed in various ways for particular purposes—as, for instance, to catch earwigs, which destroy the flower-buds of Chrysanthemums, Dahlias, &c. The best plan for trapping these is to put some dry material, such as hay or old beanstalks, into small flower-pots, and invert them on top of the stakes used for supporting the plants; or they may be placed amongst the branches. The earwigs conceal themselves in the pots, and, if these are examined occasionally, the insects may be shaken out and destroyed. A few small lettuce or tender cabbage leaves, also form, at times, an effectual Trap for slugs when these attack seedlings. Instead of retreating to their usual hiding-places, they will often shelter themselves under leaves purposely laid, and may easily be looked for and destroyed each morning. Cockroaches and beetles may be caught in large quantities by setting Traps in their haunts in the shape of open saucers or wide-necked bottles, partially filled with treacle, or any sweetened liquid. The Traps should be set so that the insects may enter them, but not get out again. Bottles partially filled with sweetened beer, or treacle, and suspended in vineries, often prove excellent Traps for catching large flies and wasps, which attack and eat the grapes.

TRATTENIKIA. A synonym of **Marshallia** (which see).

TRAUTVETTERIA (named in honour of Prof. Ernest Rud. Trautvetter, a Russian botanist of this century). ORD. *Ranunculaceæ*. A monotypic genus. The species is a hardy perennial, thriving in ordinary soil. It may be propagated by divisions.

T. palmata (palmately-lobed). False Bugbane. *fl.* white, small, corymbose-paniculate; sepals three to five, usually four, concave, petal-like, very caducous; petals none. July and August. *l.* palmately lobed; radical ones large, the lobes toothed and cut; cauline ones few, alternate. Stems 2ft. to 3ft. high. North America and Japan. (B. M. 1630, under name of *Cimicifuga palmata*.) SYN. *Actæa palmata*.

TRAVELLERS' JOY. A common name for **Clematis Vitalba** (which see).

TRAVELLERS' TREE. A popular name for **Ravensala madagascariensis** (which see).

TREASURE FLOWER. A common name for **Gazania** (which see).

TREBULIA (named in honour of M. Augusto Trécul, of Paris, author of a monograph on *Nuphar lutea*, in 1843). ORD. *Urticaceæ*. A small genus (two or three species) of stove, glabrous trees or shrubs, natives of tropical Africa. Flowers dioecious; heads sessile or shortly pedunculata, at the axils or the defoliated nodes; bracts under the head few, small, somewhat biserrate, but by no means forming a true involucre. Leaves alternate, shortly petiolate, entire, coriaceous, penniveined; stipules lanceolate, rather small, caducous. *T. africana*, the only species introduced, is an evergreen tree. It requires a compost of rich loam and leaf mould, and a moist atmosphere. Propagation may be effected by cuttings of the ripened shoots, inserted in sandy loam, under a bell glass, with bottom heat.

T. africana (African). African Bread-fruit Tree; Okwa-tree. *f.* green, in globose, shortly pedunculate heads. September. *fr.* in a head 1ft. or more in diameter. *l.* alternate, very shortly petiolate, thickly coriaceous, 6in. to 14in. long, sometimes 7in. to 8in. broad, oblong-ovate or lanceolate, abruptly and obtusely acuminate, acute or obtuse cordate at base; stipules lin. long, caducous. *h.* 60ft. to 80ft. 1872. (B. M. 5886.)

TREE. Any woody plant of perennial duration which rises from the ground with a distinct trunk.

TREE FERN. A common name for Ferns with an arborescent caudex: e.g., species of *Alsophila*, *Cyathea*, and *Dicksonia*.

TREE-GUARDS. Those, in some form, are requisite for placing round all newly-planted trees in public streets, avenues, &c., where it is often necessary to provide some protection for the stem for several years. Besides protecting trees, the Guards act as an efficient support against injury from the wind after transplanting. The most substantial and best-formed, though rather expensive, Tree guards, are those of circular shape, made of iron, the lower part, which is fixed into the ground, being wider in diameter than that which surrounds the tree stem higher up. A common form of Tree-guard consists of three upright wooden posts, placed in a triangular shape, and fixed with pieces of wood at an equal distance from each other at the top. The kind of Guard which causes least injury to the roots is, of course, preferable; the tree should always be tied at the top with cord, so that it cannot possibly come in contact with any part of the Guard and be injured. For protecting the bark of trees planted in streets from being cut by mischievous individuals, ordinary wire netting, of fine mesh, may be tied round the stems when the trees are first planted.

TREE MALLOW. See *Lavatera arborea*.

TREE MIGNONETTE. A title given to plants of Mignonette when grown singly to flower in large pots on tall stems as single specimens. Mignonette plants grown in tree form are interesting and ornamental subjects for conservatory decoration; but for general usefulness, five or six plants grown in each pot as dwarf specimens are most desirable. See *Mignonette*.

TREE OF CHASTITY. See *Vitex Agnuscastus*.

TREE OF HEAVEN. See *Ailantus*.

TREE OF LIFE. A common name for *Thuja* (which see).

TREE OF SADNESS. See *Nyctanthes Arbor-tristis*.

TREE PANAX. See *Dendropanax*.

TREE SLUG. See *Slugs*.

TREFOIL. See *Trifolium*.

TREFOIL, BIRD'S-FOOT. See *Lotus corniculatus*.

TREFOIL, GOLDEN. An old name for *Anemone Hepatica* (which see).

TREFOIL, MILK. An old name for the genus *Cytisus* (which see).

TREFOIL, MOON. A common name for *Medicago arborea* (which see).

TREFOIL, SCENTED. A common name for *Melilotus* (which see).

TREFOIL, SHRUBBY. A popular name for *Jasminum fruticans* and *Ptelea trifoliata* (which see).

TREISIA. Included under *Euphorbia*.

TRELLIS. A framework fixed in glass houses near the roof, on which to train plants and trees, such as Vines, Peaches and Nectarines, Cucumbers, and Melons, none of which could receive proper attention unless so treated. A Trellis may also be formed to fix into a large pot for the accommodation of an individual plant, as, for example, a *Stephanotis* or *Bougainvillea* grown for exhibition. Galvanised wire of different sizes is generally used, according to the different purposes for which it is intended. In Vineries and Peach-houses, the Trellis should be fixed, not less than 1ft. from the glass, as it is always required; in Cucumber and Melon-houses, it may be in pieces, so as to be removed when the house is used for growing other plants which do not require a Trellis. The wires for training Vines upon should be fixed horizontally, 9in. apart; and for Peaches and Nectarines 6in. is preferable. When a Trellis is made in movable sections, the wires are usually crossed, to form a diamond-shaped pattern, and this allows of plants being tied and trained in any direction. Pyramid and balloon-shaped Trellises are those usually selected for specimen pot-plants.

TREMANDRA (from *tremo*, to tremble, and *anthes*, a male; the anthers vibrate with the least movement of the air). ORD. *Tremandreeæ*. A genus comprising only a couple of small, greenhouse, more or less stellate-tomentose, Australian shrubs. Flowers five-parted; stamens apparently in a single series; disk crenate, almost five-lobed. Leaves opposite, toothed. For culture of the only species introduced, see *Tetratheca* (to which it is closely allied).

T. stelligera (star-bearing). *f.* on pedicels shorter than the leaves; sepals tomentose or villous, two to three lines long; petals but little longer; anthers dark purple. Summer. *l.* opposite, shortly petiolate, ovate, obtuse, lin. to 1½in. long, coarsely and irregularly toothed or rarely entire. *h.* 2ft. or more. Plant densely stellate-hairy.

T. verticillata (whorled). A synonym of *Platytheca galviodes*.

TREMANDREEÆ. A small natural order of usually Heath-like, glabrous or glandular-hairy, extra-tropical Australian shrubs. Flowers usually red or purple, regular, solitary, on axillary pedicels; sepals four or five, very rarely three, free, valvate in bud; petals as many, hypogynous, spreading, induplicate-valvate in bud; stamens twice as many, hypogynous, free; filaments short; anthers two or four-celled, opening in a single, terminal pore; torus small, or rarely expanded into a disk between the petals and stamens. Capsule usually flattened, two-celled, opening loculicidally at the edges. Leaves small, alternate, opposite, or whorled, rarely larger and stellate-tomentose. The order contains three genera—*Platytheca*, *Tetratheca*, and *Tremandra*—and about twenty-one species.

TREMANTHUS. A synonym of *Styrax* (which see).

TREMEX. A genus of Sawflies, so closely related to *Sirex* (which see), and so similar in general appearance and habits, as to render a detailed account of the species unnecessary. This genus has not been met with in Great Britain; but one species (*T. Columba*), popularly known as the Pigeon Tremex, is destructive

Tremex—continued.

to the wood of Pear-trees, and also to Elms and Maples, in Canada and the United States, and may not improbably be introduced into Britain in trees from those countries. The female has the body about 1½ in. long, with the ovipositor extending nearly ¼ in. backwards. The wings have a spread of about 2½ in.; they are smoky-brown. The head and thorax are reddish-brown, with black markings; and the abdomen is black, with seven yellow cross-bars, each, except the first two, broken in the middle. The male is little more than half as large as the female, and the markings are less con-

Trenching—continued.

one end, and wheeled to the opposite end, where it is intended to finish. The depth which should be taken out varies according to the nature of the subsoil; if this is unfit to bring to the surface, it should be dug and still left beneath. Another width should then be marked out, and the top spit of soil turned over to take the place of that wheeled away, the bottom being, in its turn, treated like the first; and so on. When the soil is good enough to allow of the bottom spit being brought to take the place of the top, the first trench must be taken out to the full depth, and the bottom



FIG. 91. TREVESIA EMINENS

spicuous, the body being reddish, varied with black, and the wings more transparent.

Should this insect be accidentally imported, the measures to be employed against it are the same as those recommended under *Sirex*.

TRENCHING. A term applied to the process of digging ground for the special purpose of increasing its depth for the better cultivation of various crops. It is chiefly practised in autumn, and the surface thrown up roughly for exposure to the weather. In commencing to trench a piece of ground, the soil, for about the width of 3ft., should be dug out a spit or more deep along

broken up. Trenching invariably deepens and improves garden land, but it is not always advisable to bring up the bottom soil at first; this is sometimes of a nature which causes actual harm to crops, and had better be left at the bottom below the limit which the roots reach. Trenching must, therefore, be practised with judgment. The bottom soil may always be loosened and dug, with advantage to that on the surface; and if some loose leaf mould or light manure is mixed into that beneath during the process, it will, in course of time, improve the whole bulk, and render it of a better description than before to a much greater depth.

TRENTÉPOLIA. Included under *Cyperus*.

TREVESIA (called after the family Treves de Bonfigli at Padua, who were supporters of botanical research). **ORD. Araliaceæ.** A genus embracing eight or nine species of prickly or unarmed, stove shrubs or small trees, inhabiting tropical Asia, Malaya, and the Pacific Islands. Flowers polygamous, in panicle umbels; petals eight to twelve, often cohering as a cap in the fertile flowers; stamens as many as the petals; pedicels not jointed; bracts small or wanting. Leaves ample, palmatifid, or digitately or pinnately compound. *T. eminens* and *T. palmata* require a mixture of sand, loam, and leaf mould. Cuttings will readily root in sand, under a glass, in heat.

T. eminens (eminent). *l.* long-stalked, roundish in outline, palmatifidly divided about two-thirds of their depth into nine lanceolate segments, which have each a prominent rib and both edges serrated, the teeth distinct, small, but sharp-pointed. Philippines, 1852. Probably a mere form of *T. palmata*. See Fig. 81 (for which we are indebted to Mr. Wm. Bull).

T. palmata (palmate-leaved). *fl.* greenish-white; panicles 1½ ft. long, straggling, clothed, when young, with red-brown tomentum. March. *l.* very large, sometimes 2 ft. long, palmate or digitate, nearly glabrous; segments lobed or sub-pinnatifid. Shoots covered with reddish hair and many prickles. *h.* 10 ft. to 15 ft. India, 1818. Tree. **SYNS.** *T. andataea*, *Gastonia palmata* (B. R. 894)

T. sundaica (Sunda Isles). A synonym of *T. palmata*.

A synonym of **Achimenes** (which

see).

TREVOA (named in honour of Trevo, a Spanish botanist). **ORD. Rhamnææ.** A small genus (two or three species) of much-branched, greenhouse trees, natives of South America. Flowers fasciated below axillary spines; calyx four or five-lobed; petals four or five, hooded; stamens four or five, the filaments pilose; pedicels short, one-flowered. Leaves opposite, ovate or obovate, three-nerved, serrulated. *T. triennis* has been introduced, but is now probably lost to cultivation.

TREWIA (named in honour of C. J. Trew, 1695-1769, of Nuremberg, a botanical author). **SYN. Rottlera** (of Willdenow). **ORD. Euphorbiææ.** A genus consisting of only two species of stove trees, often branched from the base, with soft wood, natives of the East Indies. Flowers dithecous, apetalous; disk none; male racemes lateral, opening before the leaves, long and loose, the flowers rather large, solitary, pedicellate, with a bract; female flowers solitary on an axillary peduncle or indefinitely racemose. Leaves opposite, petiolate, broad, entire, three to five-nerved. *T. nudiflora*, the only species introduced, succeeds in a compost of sandy loam and peat; it may be readily increased by cuttings, inserted in sand, under a glass, in heat.

T. nudiflora (naked-flowered). *fl.* racemes axillary; males often exceeding the leaves, bearing flowers along nearly the whole of their length; females few-flowered. May. *l.* broadly ovate, acute or acuminate, cordate, obtuse or contracted-sub-cuneate at base, five-nerved, entire. Branchlets glabrous, or the young ones pubescent. *h.* 5 ft. and upwards. East Indies, 1786. (B. P. S. 231.)

TRI. This term, used in compounds, signifies three: e.g., Tricuspidate, three-cusped.

TRIACHYRUM. A synonym of **Sporobolus** (which see).

TRIADELPHOUS. When the stamens of a flower are disposed in three bundles.

TRIADICA. A synonym of **Sapium** (which see).

TRIADEOUS. Having three stamens.

TRIANEA (named in honour of M. José Triana, a botanist and traveller in Columbia). **SYNS. Hydromystria, Jalambiceæ.** **ORD. Hydrocharideæ.** A genus comprising three or four species of stove or greenhouse, stoloniferous, aquatic herbs, natives of North America, Mexico, and tropical South America, now regarded, by Bentham and

Trianae—continued.

Hooker, as synonymous with *Limnobium*. Spathes unisexual, two-leaved in both sexes; male flowers two or three in a spathe, long-pedunculate; females solitary in a spathe, sessile or shortly petiolate. Leaves fasciated at the nodes, petiolate, the blades swimming on the top of the water, ovate or rounded-cordate, sometimes (not always) of a thick, spongy substance below. Stems stoloniferous. *T. bogotensis*, the only species yet introduced, thrives in stove or greenhouse heat. Propagation is readily effected by runners.

T. bogotensis (Bogota). *fl.* small, six-parted; bracts hyaline, embracing the peduncles. *l.* clustered, oblong or orbicular, flat-convex, below spongy-reticulated; petioles dilated at base. Columbia, 1879. The correct name of this plant is *Limnobium bogotense*. (t. C. n. s., xv., pp. 466-468; R. t. 980.)

TRIANTHEMA (from *treis*, three, and *anthos*, a flower; alluding to a frequent disposition of the blossoms). **ORD. Ficoideæ.** A genus embracing about a dozen species of stove or greenhouse, diffuse, prostrate herbs, rarely sub-shrubs, inhabiting the warm regions of Asia, Africa, and Australia, and the West Indies. Flowers axillary, solitary, cymose or fasciated, sessile or pedunculate, rarely sub-spicate on the terminal branches; calyx lobes five; petals absent; stamens five or indefinite. Leaves opposite, unequal, petiolate, obovate, ovate, or linear, entire. Three species have been introduced, but they are interesting only to the botanist.

TRIAS (from *treis*, three; alluding to the arrangement of the floral envelopes). **ORD. Orchideæ.** This small genus embraces only three species of dwarf, tufted or creeping, stove Orchids; two are natives of Moulmein, and the other inhabits the East Indian peninsula. Sepals sub-equal, spreading, the lateral ones adnate at base with the foot of the column; petals small, oblong or linear; lip slightly spreading at apex, narrow, rather thick; scapes lateral, slender, leafless, one-flowered. Pseudo-bulbs rather small, sub-globose, one-leaved at apex. *T. oblonga*, probably the only species in cultivation, thrives best in an intermediate house, in small pans of peat and sphagnum, or on blocks with a little peat and sphagnum fastened amongst the roots.

T. oblonga (oblong-leaved). *fl.* fuscous-green, with a purplish lip; scapes erect, much shorter than the leaves. April. *l.* small, oblong, acute, coriaceous. *h.* 5 in. Moulmein, 1837.



FIG. 92. FLOWERING BRANCH OF TRIBULUS.

TRIBLENNA. Included under *Asplenium*.

TRIBRACHIUM. A synonym of *Bulbophyllum* (which see).

TRIBULUS (*Tribolos* was the old Greek name used by Theophrastus, from *treis*, three, and *bolos*, a point; each carpel is often armed with three or four large spines). *Cactrops*. ORD. *Zygophyllææ*. A genus comprising about fifteen species of loosely-branched, stove, greenhouse, or hardy herbs, dispersed over the warmer regions of the globe. Flowers white or yellow, solitary, pseudo-axillary, pedunculata. Leaves stipulate, opposite, or by abortion alternate. Most of these plants, several of which have been introduced, are weedy-looking subjects, and interesting only to a botanist. *T. terrestris*, a South European plant, is shown at Fig. 92.

TRICERAIA. A synonym of *Turpinia* (which see).

TRICHETA. Included under *Trisetum* (which see).

TRICHANTHA (from *thrix*, *trichos*, a hair, and *anthos*, a blossom; alluding to the slender pedicels). ORD. *Gesneraceæ*. A genus of two species of stove, creeping or climbing shrubs, natives of Columbia. Flowers solitary or fasciated in the axils, pedicellate, ebracteate; calyx free, coloured, obovate-plumose, five-parted; corolla dingy violet, the limb and tube striped or angled with five longitudinal, yellow marks; limb loosely oblique, of five short, equal lobes. Leaves opposite, very different, one being ovate or oblong and acuminate, and the other dwarf. *T. minor*, the only species known in gardens, thrives in well-drained pots of peat, leaf mould, and sand, and is readily increased by means of cuttings, inserted in pots of sandy soil, and plunged in bottom heat.

T. minor (lesser). *f.*, corolla 2in. long, tubular, sub-ventricose, crinite-hairy, constricted above the base; limb obliquely four-lobed, the upper lobe bifid, with a club-shaped appendage; peduncles one-flowered. *l.*, the large one shortly petiolate, ovate, acuminate, entire, hairy beneath, slightly succulent. Stem climbing, radicans, adpressedly pilose or glabrous. 1864. (B. M. 5428; G. C. 1864, p. 172.)

TRICHARIS. A synonym of *Dipcadi* (which see).

TRICHILIA (from *tricha*, by threes; and the ovary and capsule are usually trilobular). ORD. *Meliaceæ*. A genus comprising about thirty species of stove trees and shrubs, natives of tropical Africa and America. Flowers rather large for the order, disposed in axillary, many-flowered panicles; calyx four or five-toothed or cleft; petals four or five, imbricated; staminal tube eight to ten-cleft or parted, rarely entire. Leaves trifoliate or imparipinnate; leaflets opposite or alternate, often many-jugate, very rarely bijugate. A selection of the introduced species is here given. They are not much grown, and rarely flower in this country. A compost of loam and peat is most suitable. Propagation may be effected by cuttings of the ripened wood, with the leaves intact, inserted in sand, under a glass, in heat.

T. glabra (smooth). A synonym of *T. havanensis*.

T. havanensis (Havana). *f.*, white, long-pedicellate, densely crowded in very short, umbelliform panicles. June. *l.* shortly petiolate, three-jugate; leaflets sessile, opposite, obovate, cuneate at base, rounded or obtuse, sometimes slightly acuminate, at apex, firm, opaque, somewhat shining. *h.* 20ft. Havana, 1794. Shrub or tree. SYN. *T. glabra*.

T. hirta (hairy). Bastard Ironwood. *f.* whitish; panicles puberulous, two to four times exceeded by the leaves. June. *l.*, leaflets five-jugal, variable, elliptic or oblong-lanceolate, tapering to the base, glabrous, the lower ones smaller. *h.* 12ft. West Indies, 1800. Tree.

T. odorata (fragrant). *f.* yellowish, sweet-scented; pedicels much longer than the flowers; cymes glabrous, many-flowered. June. *l.*, leaflets five-jugal, elliptic or oblong. *h.* 2in. to 6in. long; petioles naked. *h.* 12ft. to 25ft. West Indies, 1801. A low tree or shrub. (A. B. E. 637; H. E. F. 128.)

T. spondioides (Spondias-like). White Butterwood. *f.* of a greenish-yellow colour; panicles puberulous, one-fourth the

Trichilia—continued.

length of the leaves, the divisions three to eleven-flowered. June. *l.*, leaflets seven to ten-jugal, ovate-oblong, oblique at base, acute at apex, glabrous, the lower ones smaller. *h.* 15ft. to 20ft. Tropical America, 1870. Tree. (Ref. B. 293.)

TRICHINIUM (from *trichinos*, covered with hairs; alluding to the shaggy appearance of the blossoms). ORD. *Amarantaceæ*. A genus comprising about fifty species of greenhouse herbs, under-shrubs, or rarely small shrubs, limited to Australia. Flowers in dense, globular, ovoid, or cylindrical spikes, very rarely elongated and interrupted; perianth usually pink or straw-colour, with a short, hard tube and five hairy segments; stamens five, but usually one, two, or three, without anthers. Leaves alternate, narrow or rarely obovate. Only three species have been introduced. They are all perennials, and thrive under cool greenhouse treatment, in any rich soil. Loam, rotten manure, and sand, make a suitable compost. The plants do best on an airy shelf, in full sunlight, and should be watered freely during the growing season. After flowering, water should be almost entirely withheld. Propagation is readily effected by means of the thick roots, which should be cut into pieces about lin. long, and inserted in sand, in bottom heat.

T. alopecuroideum (Fox-tail Grass-like). A synonym of *T. exaltatum*.

T. exaltatum (exalted). *f.*, perianth about $\frac{1}{2}$ in. in diameter, the segments yellow, with dull red tips; spikes erect, on long peduncles, at length oblong-cylindrical, about $\frac{1}{2}$ in. in diameter. June. *l.*, radical and lower ones oblong-lanceolate, $\frac{1}{2}$ in. to 5in. long, contracted into long petioles; upper ones small, sessile. *h.* 2ft. to 3ft. 1838. A stout plant. (B. R. 1839, 28, under name of *T. alopecuroideum*.)

T. Manglessii (Mangles). *f.*, perianth $\frac{1}{2}$ in. to lin. long, the segments with pink or whitish tips; spikes globular or ovoid, about 2in. in diameter, the coloured tips of the perianth protruding from the long, white hairs. June. *l.*, radical ones long-petiolate, varying from ovate to linear, obtuse or acute, lin. to $\frac{1}{2}$ in. long; cauline ones few, narrow, very acute. Stems decumbent, ascending, or rarely erect, 6in. to 12in. long. 1838. (B. M. 5448; F. d. S. 5; G. C. 1864, p. 556; I. H. 464; L. H. 1866, p. 291.)

T. Stirlingii (Stirling's). *f.*, perianth scarcely $\frac{1}{2}$ in. long, the segments plumose, with pink tips; spikes globular, solitary at the ends of the stems or loosely paniculate, $\frac{1}{2}$ in. to lin. in diameter. June. *l.* lanceolate, oblong, or almost linear; lower ones obtuse, shortly petiolate; upper ones small, more acute, sessile. Stems long, procumbent or ascending, and (as well as the leaves) clothed with white hairs. 1838.

TRICHOCARPA. Included under *Deparia* (which see).

TRICHOCAULON (from *thrix*, *trichos*, a hair, and *caulon*, a stem; alluding to the bristles that tip each tubercle). ORD. *Asclepiadææ*. A small genus (two species) of dwarf-growing succulents, natives of South Africa. Flowers small, proceeding from the angles near the upper part of the stem, sub-solitary; calyx five-partite, the segments acuminate; corolla deeply five-lobed; outer corona deeply bilobed. Leaves none. Stems dwarf, stout, fleshy, many-angled; angles tuberculate; tubercles tipped with a bristle. For culture, see *Stapelia*.

T. piliferum (bristle-bearing). *f.* $\frac{1}{2}$ in. to $\frac{1}{2}$ in. in diameter, sessile in the furrows of the stem; corolla between funnel and bell-shape, pale yellow-red without, dark purple within. Branches tufted, straight, cylindrical, simple, erect, proceeding from a short, stout rootstock. 1822. (B. M. 6769.) SYN. *Piaranthus piliferus*, *Stapelia pilifera*.

TRICHOCENTRUM (from *thrix*, *trichos*, a hair, and *kentron*, a spur; alluding to the long, thin spur of the labellum). ORD. *Orchidææ*. A genus including about fourteen species of stove, epiphytal Orchids, natives of tropical America. Flowers mediocre or rather large; sepals and petals sub-equal, free, spreading; lip at base connate with the column, forming a pitcher, produced into a descending spur, above the pitcher erect, bicarinate or naked; lateral lobes scarcely dilated, nearly erect; column short, thick; pollen masses two, ovoid; scapes short, many-sheathed, one or rarely two-flowered. Leaves coriaceous. Stems very short, one-leaved, at length thickened into a small, fleshy pseudo-bulb. The

Trichocentrum—*continued*.

species thrive best in an intermediate temperature, in a moist, shady position, attached to blocks of soft wood or pieces of tree-fern stem. Water must be given all the year round, but care must be taken to prevent the roots being in contact with stagnant moisture. Propagation may be effected by division.

T. albo-purpureum (white-and-purple). * *f.* large, freely produced; sepals and petals bright cinnamon-brown outside, tawny-yellow inside; lip white, with two large, purple spots near the base, the disk veined with rosy-purple, passing to yellow, and having a crest of four rosy-purple keels. *l.* sessile, oblong, acute, shining green, 4in. to 6in. long. Brazil, 1866. (B. M. 5688; G. C. 1866, 219; W. O. A. 204.)

T. capistratum (haltered). *f.* one to a peduncle; sepals and petals yellow; lip white, dotted and blotched with purple, remarkable for having its base extended into five short spurs. *l.* oblong-lanceolate, purplish. Costa Rica, 1871.

T. cornucopia (cornucopia). A small plant, with yellowish-white flowers, having more botanical than horticultural interest. Rio Negro (?), 1866. (Ref. B. 77; R. X. O. 177.)

T. fuscum (fuscous). *f.* on short peduncles; sepals and petals purplish-green, spreading; lip much longer than the petals, cuneate, waved, with a slender spur at base, two-lobed at apex, lower down blotched with rose-colour and spotted with red. *l.* oblong, acute, spreading, somewhat twisted, purplish-green, minutely dotted. Mexico, 1841. (B. M. 3969; B. R. 1851.)

T. f. Krameri (Kramer's). A large-flowered variety, with a longer and thinner spur than in the type. Brazil, 1885.

T. Hoegi (Hoeg's). *f.* very large, borne on a zigzag peduncle; sepals and petals greenish-yellow, with a purple middle area; lip white, with brilliant purple lines and blotches, and two blunt, yellow calli at the base, pandurate, undulated, notched at the tip; spur with a clavate, notched apex. *l.* robust, horny, cuneate-oblong, acute. Mexico, 1882. A small but distinct plant.

T. ionophthalmum (violet-eyed). *f.*, upper sepal and petals very light yellowish-maroon-brown, with brown dots at top, unguiculate, blunt; lateral sepals wholly brown; lip whitish, with a large, violet blotch on each basal angle, pandurate. *l.* broader and shorter than those of *T. albo-purpureum* (which this plant resembles). Amazons, 1876.

T. maculatum (spotted). *f.* large; petals white, spotted with purple, oblong, obtuse; lip with a yellow crest, obovate, bilobed, *g.* February. *l.* very thick, fleshy, *d* with red. Sierra Nevada, 1844.

T. orthoplectron (straight-spurred). * *f.* large; sepals and petals light cinnamon-brown, tipped with yellow, cuneate-oblong; lip white, with a crimson-lake blotch on each side of the base, and five bars or semi-abortive keels of the same colour between the blotches, the disk in front of the crest being yellow; spur tapering to an acute point. October. Brazil. A curious and beautiful epiphyte. (W. O. A. 272.)

f. in pairs on a raceme, as large as those of *f.*; sepals and petals half brown, half white, spatulate, obtuse; lip white, with a red blotch in the middle of its stalk, cuneate-fabellate, bilobed, crisped. Central America, 1881. (G. C. n. s., xvii. 117; I. H. ser. iii. 587; B. G. 1103.)

(zonal). *f.*, sepals and petals entirely brown at their base, or the brown broken up into blotches, obtuse or acute; lip having one large, purple blotch or two darker ones before its base. 1883. An interesting and variable form.

T. porphyrio (porphyry-like). *f.* solitary, about 2in. in diameter; sepals and petals brown, unequally margined and tipped with yellow, cuneate-oblong, acute; lip rich magenta-purple, faintly margined with white towards the point and having a rectangular, sulphur-yellow blotch on the disk in front of the three purple lines of the crest. *l.* cuneate-oblong. South America, 1864. A very handsome species. (I. H. ser. iii. 508.)

T. pulchrum (pretty). *f.* yellow and white; sepals much spreading, oval-elliptic; lip erect, obovate, cuneate at base, emarginate at apex. July. *l.* two or three, thickened at base, oblong, obtuse or acute, sometimes mucronate. Peru.

T. purpureum (purple). *f.*, sepals and petals of a dull olive-green; lip purple, obovate-oblong, emarginate; spur thick, curved; scapes small, radical, one or two-flowered. Demerara.

T. tenuiflorum (slender-flowered). *f.* dingy brown and white, small; sepals and petals narrow, the former acute, the latter obtuse; lip linear-obovate, with a pair of plates occupying the whole of the base. Bahia.

T. tigrinum (tiger-striped). * *f.* one or two to a peduncle; sepals and petals greenish-yellow, transversely barred and distinctly

and on each side at the base a wedge-shaped blotch of purple. *l.* oblong, more or less dotted with deep red. Ecuador, 1869. A remarkably handsome and desirable species, producing its blossoms while in a very small state. (I. H. ser. iii. 282.)

T. splendens (splendid). A fine variety, having the base of the large, obovate lip of a rich purple colour. 1886.

TRICHOCEPHALUS. Included under **Phylcia** (which see).

TRICHOCEBROS (from *thrix*, *trichos*, a hair, and *keras*, a horn; alluding to the two hairy, antenna-like processes from the column). ORD. *Orchidæ*. A small genus (six or seven species, which may be reduced to three or four) of stove, epiphytal Orchids, natives of Peru and Columbia. Flowers loosely racemose at the apices of the peduncles, mediocre or small, rather long-pediceolate; sepals sub-equal, free, and spreading, larger than the petals; lip sessile at the base of the column, spreading; pollen masses four; bracts shorter than the pedicels. Leaves few, distichous, coriaceous or fleshy. *T. parviflorus*, the only species yet introduced, thrives in small pans or baskets of peat and sphagnum.

T. parviflorus (small-flowered). *f.* green, marked with purple and brown spots and bars, small; lip three-parted, minutely ciliate; peduncle slender, nearly terete, axillary. Pseudo bulbs small, bearing a single, fleshy leaf. Columbia, 1870. (R. X. O. 1. 9.)

TRICHODESMA (from *thrix*, *trichos*, a hair, and *desmos*, a bond; the anthers are bound to each other by hairs). SYNS. *Borraginoides*, *Friedrichsthalia*, *Lævocarya*, *Pollichia*, *Spirucanus*, *Sireblanthera*. ORD. *Borragina*. A genus comprising nine or ten species of coarse, hardy or half-hardy herbs, inhabiting Africa, tropical and Central Asia, and Australia. Flowers in terminal racemes; calyx deeply five-cleft; corolla of five often long-acuminate lobes; stamens five; anthers connivent by means of hairs. Leaves opposite or alternate, entire. *T. zeylanicum*, the only species known to cultivation, is a coarse, hardy annual, thriving under ordinary treatment.

T. zeylanicum (Cingalese). Ceylon Borage. *f.* pale blue, in simple racemes; calyx segments ½ in. to ¾ in. long; corolla lobes broad, longer than the calyx. *l.* linear to oblong-lanceolate, often 3in. to 4in. long, the margins usually recurved. *h.* several feet. Southern India, Ceylon, Mascarene Islands, and Australia. (B. M. 4820.)

TRICHOIDIUM. This genus is now included under

TRICHOGLOTTIS (from *thrix*, *trichos*, hair, and *glottis*, a tongue; alluding to the fine hairs on the labellum). ORD. *Orchidæ*. A small genus (four or five species) of inconspicuous, stove Orchids, mostly natives of the Malayan Archipelago. Flowers small or mediocre, one or a few on very short, lateral peduncles; sepals spreading, the lateral ones very broad, adnate to the foot of the column, the dorsal one and petals oblong; lateral lobes of lip short, erect, the middle one rather broad; column short, wingless. Leaves distichous, scattered at the sides of the stem, narrow. Stem leafy, elongated, not pseudo-bulbous. The species mentioned below thrive in small pans of peat and sphagnum, in the East India house, and require an abundant supply of moisture when growing.

T. oochlearis (spoon-like). *f.* white, with purple bars on both sides of the sepals and petals, smaller than those of *Saccolabium violaceum*; spur conical; lip spoon-like, very thick, with a few purple blotches; inflorescence very short, zigzag, four-flowered. *l.* like those of *Sarcanthus rostratus*, but thicker, and with a quite unequal point on one side projecting much farther than the other one. *h.* 8in. Sumatra, 1883.

T. fasciata (banded). * *f.*, sepals and petals cuneate-oblong, acute, the lateral sepals falcate; sepals closely cross-banded with pale chestnut-brown; lip whitish, with yellow tips to the side plates of the anterior part and a few purplish spots on the keel of the under side. *l.* distichous, oblong, bilobed. Eastern tropical Asia, 1872. (W. O. A. 208.)

TRICHOLENA. Included under **Panicum**.

TRICHOMANES (the old Greek name used by Theophrastus, from *thrix*, *trichos*, a hair, and *manos*, soft; to the delicate nature of the fronds). Bristle Fern. Including *Fesa*, *Hymenostachys*, *Involucraria*, *Lacostea*, *Lecanium*, *Microgonium*, *Phlebiophyllum*. ORD. *Filices*. A genus comprising about 100 species of mostly stove Ferns, inhabiting tropical and temperate climates. Fronds varying from simple to decomposed-multifid,

Trichomanes—continued.

membranous and pellucid, smooth or bearing simple, forked, or stellate hairs. Sori marginal, always terminating a vein, more or less sunk in the frond; involucre monophyllous, tubular, closely corresponding with the frond in texture, the mouth truncate or winged, or slightly two-lipped; receptacle filiform, elongated, often considerably exerted beyond the mouth of the involucre, capsuliferous principally at the base; capsules sessile, depressed, surrounded by an entire, broad, nearly transverse ring, bursting vertically. The introduced species are here described; except where otherwise stated, they need stove heat. They should be "grown in square, shallow pans and boxes, well-drained in the ordinary way, and having about 2 in. of peat soil mixed with nearly half its bulk of sand and small broken potsherds; but soft sandstone is best. For the creeping sorts, the soil should be raised in the form of a mound; and for those that have long-extending rhizomes, if soft stone cannot be had, it desirable to invert a pan or common deep pot, covering it with a layer of soil, as already explained, to which the plant will cling, and soon form a green hillock. Junks of wood answer the purpose, but in a moist, close, and warm atmosphere, Fungi and insects breed, and in a short time the wood decays, causing unnecessary disturbance of the whole mass of the plant" (J. Smith).

See also Ferns.

T. achillosefolium (Achillea-fronded). A synonym of *T. rigidum*.

T. alatum (winged).* *sti.* tufted, 2 in. to 4 in. long, winged above, fronds 3 in. to 12 in. long, 1 in. to 4 in. broad, lanceolate or ovate-lanceolate, bi-tripinnatifid; main rachis winged throughout; pinnae lanceolate, acute, cut more than half-way to the rachis; lobes again often sharply toothed. *sori* two to twelve to a pinna, terminal on the segments, the mouth spreading. West Indies, 1824. Very variable in robustness and hairiness. SYN. *T. artonucatum* (H. N. F. l. 39c). Greenhouse.

T. anceps (double). A synonym of *T. maximum*.

T. angustatum (narrowed). A synonym of *T. tenerum*.

T. apifolium (Aplium-fronded).* *sti.* tufted, 4 in. to 6 in. long, strong, erect, fibrillose, the tuft densely so at the crown. fronds 9 in. to 18 in. long, 4 in. to 8 in. broad, ovate, quadri-pinnatifid; main rachis only slightly winged towards the apex; lower pinnae 4 in. to 6 in. long, 1 in. to 1 1/2 in. broad, lanceolate, acuminate; pinnales with numerous segments, which are again cut down into ultimate divisions about one line long. *sori* two to twelve to a pinna; involucre short, turbinate. Philippine Islands, &c. SYN. *T. mefolium*. Greenhouse.

T. attenuatum (attenuated). A synonym of *T. alatum*.

T. auriculatum (eared). *rhiz.* strong, wide-creeping, tomentose. fronds nearly sessile, 6 in. to 12 in. long, 1 1/2 in. to 2 in. broad, bipinnatifid; rachis very, very slightly winged throughout or above only; pinnae short-stalked, ovate, rhomboidal, obliquely acute at base, irregularly pinnatifid half-way down or more, the lowest anterior lobes often considerably prolonged beyond the others. *sori* two to twelve to a pinna, the mouth truncate. Japan, &c., 1871. SYN. *T. dissectum*.



FIG. 93. PORTION OF FERTILE FROND (UNDER SIDE) OF TRICHOMANES BANCROFTII.

T. Bancroftii (Bancroft's).* *sti.* 1 in. to 2 in. long, broadly winged to the base. fronds 3 in. to 6 in. long, 1 in. broad, ovate-oblong, pinnatifid down to a broadly-winged rachis; segments oblong, blunt, crenate, either imbricated or with a small space between them. *sori* two to six to a pinna, the mouth rather dilated; receptacle long, filiform. Tropical America. See Fig. 93. (H. G. F. 56.) Greenhouse.

T. bipunctatum (two-dotted). *rhiz.* wide-creeping, tomentose, rather slender. *sti.* 1 in. to 2 in. long, naked, slightly winged above. fronds oblong-lanceolate or oblong-deltoid, 2 in. to 4 in. long, about 1 in. broad, tripinnatifid, the rachis winged through-

Trichomanes—continued.

out; pinnae lanceolate, cut away on the lower side at the base; ultimate segments strap-shaped, 1/2 in. to 1 in. long. *sori* one or more to a pinna; involucre winged. Mauritius. SYN. *T. Filicula*.

T. Bojeri (Bojer's). A synonym of *T. cuspidatum*.

T. botryoides (Botrys-like). *cau.* erect, tufted, barren fronds 2 in. to 3 in. long, 1 in. or rather more broad, on very short stipes, pinnatifid to a slightly-winged rachis, with linear-oblong, deeply-toothed lobes, the apex rooting and copiously proliferous. *fertile fronds* on stipes 1 in. to 2 in. long, narrow-linear, the apex foliaceous. *sori*, lower ones stalked, usually free; upper ones connected at the base. Tropical America. SYN. *Pesa nana*.

T. brevisetum (short-bristled). A synonym of *T. radicans*.

T. concinnum (neat). *rhiz.* filiform, tomentose. *sti.* three to four lines long, proliferous, winged upwards. fronds ovate, 1/2 in. to 3/4 in. long, rounded at top, cuneate at base, bipinnatifid; lower pinnae flabellately pinnatifid, the lowest pinnales bifid. *sori* usually lateral, rarely terminal; involucre immersed. Tahiti.

T. crinitum (hairy). *sti.* tufted, one to three lines long, slender, villous. fronds 2 in. to 8 in. long, 1/2 in. to 3/4 in. broad, ovate-lanceolate or linear-oblong, bipinnatifid; pinnae reaching nearly to the rachis, the lower ones ovate-oblong, cut about half-way down into broadly linear segments; surface slightly hairy; margins ciliated. *sori* one or two to a pinna, terminal, the mouth dilated. West Indies.

T. crispum (curled). *rhiz.* short or somewhat elongated, strong, tomentose. *sti.* scattered or tufted, 2 in. to 6 in. long, strong, tomentose. fronds 4 in. to 12 in. long, 1 1/2 in. to 2 in. broad, lanceolate, fully pinnate or pinnatifid nearly to the rachis; lower pinnae 1/2 in. to 1 in. long, oblong, obtuse, spreading, or even deflexed, often incurved and crisped; rachis clothed with reddish-brown hairs. *sori* one to eight placed round the apex of the pinnae, the mouth two-lipped; receptacle long, exerted. Tropical America, 1828.

T. c. pilosum (pilose). fronds clothed with reddish hairs. 1833.

T. ourvatum (curved). A synonym of *T. javanicum*.

T. cuspidatum (cuspidate). fronds indistinctly but very shortly stalked, about 1/2 in. broad, the outer edge rounded and more or less lobed, the base truncate or more or less cuneate. Involucres one to six, the tube sunk in the frond, the mouth dilated, but scarcely two-lipped. Mauritius. SYN. *T. Dajeri*.

T. dissectum (dissected). A synonym of *T. auriculatum*.

T. elongatum (lengthened). A variety of *T. rigidum*.

T. erosum (bitten). *rhiz.* thread-like. *sti.* filiform, 1/2 in. to 1 in. long. fronds very variable in shape, lanceolate to semicircular, entire or repand-pinnatifid, 1 in. to 2 in. long, abundantly veined. *sori* one or many placed along the upper margin of the frond; involucre immersed, cylindrical, with a large, collar-like limb. Seychelles. SYN. *T. nucoides*.

T. exsectum (scalloped). *rhiz.* wide-creeping, slender, tomentose. *sti.* slender, naked, 1 in. to 3 in. long. fronds 6 in. to 12 in. long, 1 in. to 2 in. broad, pendent, flaccid, lanceolate, tripinnatifid, the main rachis narrowly winged in the upper half; pinnae distant, flaccid, the upper ones often 3 in. to 4 in. long, the lower ones ovate or lanceolate, divided to a narrowly-winged rachis, with a few deeply-toothed or pinnatifid pinnales. *sori* one to four to a pinna, the mouth truncate. Chili.

T. Filicula (Little Fern). A synonym of *T. bipunctatum*.

T. fimbriatum (fringed). A synonym of *T. superbum*.

T. floribundum (bundle-flowered). A synonym of *T. pinnatum*.

T. gemmatum (twin). *rhiz.* strong, wiry, tomentose, beset with numerous long, black fibres. *sti.* 1 in. to 3 in. long, naked, wiry, winged above. fronds 2 in. to 6 in. long, 1 in. to 2 in. broad, erect, rather rigid, ovate-oblong, bipinnatifid, the main rachis narrowly winged; pinnae erecto-patent, cut down to a narrowly-winged rachis; lower pinnales deeply forked; segments linear-filiform. *sori* one to eight to a pinna, minute, axillary, the tube stalked. South America.

T. Hartii (Dr. Hart's). *cau.* short, slender, sub-erect. *sti.* tufted, 2 in. to 4 in. long, winged in the upper part. fronds deltoid, 3 in. to 6 in. long, tripinnatifid, the main rachis distinctly winged; pinnae eight to twelve-jugate, crowded, sessile, all except the lowest lanceolate; lowest pair lanceolate, deltoid; ultimate segments oblong, obtuse, erecto-patent. *sori* usually only one to each secondary segment, except in the deeply-pinnatifid, large ones on the lower side of the lowest pair of pinnae. Sierra Leone, 1882.

T. humile (dwarf). *rhiz.* creeping, deeply intermatted. *sti.* 1 in. to 1 1/2 in. long, slender, winged above. fronds 1 in. to 2 in. long, 1/2 in. broad, bipinnatifid, lanceolate-oblong, cut down to a narrowly-winged rachis; segments pinnatifid, with simple or once-forked, linear lobes. *sori* solitary on the upper side of the pinnae, the tube more or less exerted, the mouth two-lipped. Java, &c.

T. incisum (cut). A synonym of *T. sinuosum*.

T. javanicum (Javan). *cau.* tufted, with numerous strong, wiry roots. *sti.* 1 in. to 4 in. long, wiry, erect, naked or villous. fronds 2 in. to 8 in. long, 1 in. to 2 in. broad, ovate-lanceolate, acuminate, once fully pinnate; lower pinnae often 1 in. long, 1/2 in. broad, obtuse or acute, finely toothed. *sori* one to four, placed in the axils of linear segments on the upper side of the pinnae;

Trichomanes—continued.

receptacle much exserted. India, Java, &c. *SYNS.* *T. curvatum*, *T. rhomboideum*.

T. Kraussii (Kaulfuss'). *rhiz.* wide-creeping, strong, tomentose. *sti.* 2in. to 4in. long, strong, compressed, winged above. *fronds* 4in. to 12in. long, 1½in. to 2in. broad, ovate-lanceolate, acuminate, once-pinnatifid down to a broadly-winged rachis; segments linear-oblong, rounded or acute, toothed, the largest lin. long, ¼in. broad; main rachis densely, and the surface slightly, hairy. *sori* two to twelve to a pinna, the tube more or less exserted; receptacle long, filiform. West Indies, 1862.

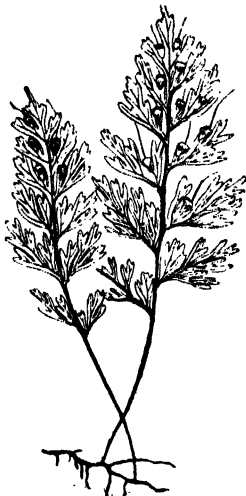


FIG. 94. TRICHOMANES KRAUSSII.

T. Kraussii (Krauss').* *rhiz.* wide-creeping, tomentose. *fronds* sessile or nearly so, lin. to 3in. long, ¼in. broad, oblong, attenuated or cuneate at base, once deeply pinnatifid down to a broadly-winged rachis; lobes linear-oblong, nearly entire, or toothed or sinuate-pinnatifid. *sori* one to six on the apex of the frond, the tube more or less exserted, the mouth with two large lips. West Indies. See Fig. 94. (Greenhouse.)

T. labiatum (lipped). *fronds* variable in shape, roundish and cordate at one or both ends, or sub-ovate and narrowed at base and apex, pellucid dark green; fertile ones with a distinct midrib. *sori* confined to the apex, usually one, rarely two to four; involucre tubular, free or slightly sunk, with tufts of hairs on the margined sides; lips large, expanded and rounded. British Guiana, 1865.

T. Luschnatianum (Luschnat's). A variety of *T. radicans*.

T. maximum (greatest).* *rhiz.* stout, creeping. *sti.* strong, erect, 3in. to 6in. long. *fronds* 1ft. to 1½ft. long, 6in. to 9in. broad, ovate, quadrifid; pinnae erecto-patent, ovate-lanceolate, the largest 4in. to 6in. long, 2in. broad; pinnules lanceolate-deltoid, lin. or more long, cut down to the rachis into segments, which are again deeply pinnatifid; ultimate segments ¼in. to ½in. long. *sori* two to eight to a pinnule; involucre cylindrical, the mouth two-lipped. Java, 1863. *SYN.* *T. anceps* (H. S. F. 1. 40c, 3). (Greenhouse.)

T. meifolium (Spignel-leaved). A synonym of *T. apiculatum*.

T. membranaceum (membranous). *fronds* sub-sessile, membranous, sub-orbicular, 2in. to 3in. broad, more or less deeply cut from the circumference towards the centre; lobes broad, rounded, or narrow, the margin fringed with a double series of petate scales. Involucres numerous, placed round the edge of the frond, the tube sunk, the mouth two-lipped. Tropical America. (H. E. F. 76.)

T. muscoides (Moss-like). A synonym of *T. erosum*.

T. obscurum (obscure). A synonym of *T. rigidum*.

T. parvulum (rather small). *rhiz.* wide-creeping, interlaced. *sti.* lin. long, wiry, slender, tomentose below. *fronds* ½in. to ¾in. each way, orbicular, flabellately cut about half-way down from the outer edge towards the base into narrow, irregular segments. *sori* four to six, terminal on the central segments. Japan and China, &c. Greenhouse. (H. S. F. 39A.)

T. Petersii (Peters'). *sti.* one to two lines long. *fronds* ½in. to ¾in. long, linear to obovate-spathulate, crenate or slightly lobed. *sori* solitary, terminal, the tube sunk in the frond, the mouth much dilated, but entire. United States, 1875. Greenhouse.

Trichomanes—continue d.

T. pinnatinerva (pinnate-nerved). *rhiz.* dark, tomentose, thread-like. *sti.* a quarter to one line long. *fronds* scattered, ovate, two to three and a-half lines long, one to two line-broad, pellucid, clear, bright green. British Guiana, 1865. A very minute Filix Fern.

T. pinnatum (pinnate). *cau.* erect, tufted. *sti.* strong, wiry, erect, naked or slightly hairy, 3in. to 1½in. long. *fronds* simply pinnate in the typical state, 4in. to 18in. long, 3in. to 12in. broad, the apex often rooting and profliferous; pinnae in two to two opposite or alternate pairs and a terminal one, 2in. to 6in. long, linear, obtuse or acute, sharply and finely toothed, the upper edge usually free from the stem at the base, the under one attached and often furnished with a broad, decurrent wing. *sori* placed all round the pinna; receptacle long, exserted. Tropical America, 1825. *SYN.* *T. horridum*.

T. Pluma (feathery). *rhiz.* short-creeping, clothed with bright brown scales. *sti.* 2in. to 4in. long, terete, wiry. *fronds* lanceolate, 4in. to 6in. long, 1in. to 1½in. broad, decoumpound; rachis stiff, terete throughout; pinnae crowded, twenty to thirty-jugate, spreading, less than ¼in. broad; lower pinnules sparsely pinnatifid, cut into distant, bristle-like, dichotomously-forked lobes, ½in. to 1in. long. *sori* few, placed near the base of the upper pinna; receptacle very long. Malay Isles.

T. punctatum (dotted). *fronds* stalked or sub-sessile, ½in. to 1in. broad, sub-orbicular or obovate, undulated or slightly lobed at the margin. *sori* one to four, placed on the outer edge of the frond and more or less exserted, the mouth distinctly two-lipped. Tropical America.

T. pusillum (dwarf). *rhiz.* wide-creeping, tomentose. *fronds* nearly sessile, 2in. to 3in. long, ¼in. to 1in. broad, oblong or obovate, cuneate-attenuated below, once deeply pinnatifid down to a broadly-winged rachis; lobes linear or oblong, toothed or deeply pinnatifid. *sori* one to four round the apex of the frond, the tube exserted, the mouth with two large, rounded lobes. Tropical America. *SYN.* *T. quercifolium*.

T. pyxidiferum (box-bearing).* *rhiz.* wide-creeping, tomentose, rather slender. *sti.* lin. to 2in. long, naked, winged above. *fronds* 1in. to 6in. long, ½in. to 1½in. broad, ovate-oblong, tripinnatifid, the main rachis very narrowly winged; pinnae ovate-rhomboidal, pinnatifid to the rachis, the lower pinnules again deeply pinnatifid; ultimate segments often emarginate at apex. *sori* one to four to a pinna, axillary, the tube more or less winged; receptacle filiform, exserted. Tropical America. (Greenhouse.)

T. quercifolium (Oak-fronded). A synonym of *T. pusillum*.

T. radicans (rooting).* Cup Goldilocks; Killarney Fern. *rhiz.* wiry, wide-creeping, tomentose. *sti.* strong, wiry, ascending, 2in. to 6in. long, naked or nearly so, the upper part sometimes winged. *fronds* 4in. to 12in. long, 2in. to 6in. broad, tripinnatifid, the main rachis very narrowly winged, often free, except near the apex; lower pinnae lin. to 4in. long, ovate-rhomboidal, cut down to a narrowly-winged rachis; pinnules again deeply pinnatifid, ovate-rhomboidal, with deeply-toothed lower segments. *sori* lateral, one to four to a pinnule, the tube small, more or less exserted; receptacle slender, elongated. Europe (Britain). Hardy. *SYN.* *T. hieracium*.

T. r. Andrewsii (Andrews'). *fronds* deep green, narrow-lanceolate; pinnae more distant than in the species, narrower and erect. A distinct and handsome, hardy, Irish variety.

T. r. dilatatum (dilated). *fronds* very dark green, much less divided than in the type; pinnae and pinnules broadly winged. Hardy.

T. r. Luschnatianum (Luschnat's). *fronds* lanceolate, acuminate, quite sessile. Brazil. Stove.

T. reniforme (kidney-shaped). *sti.* 4in. to 8in. long, naked, wiry. *fronds* orbicular-reniform, entire, with a deep sinus at the base, 2in. to 4in. broad. *sori* often encircling the whole of the outer margin; receptacle much exserted, stout, and covered with capsules. New Zealand. Greenhouse.

T. reptans (creeping). *sti.* ½in. long. *fronds* ½in. to ¾in. each way, obovate-cuneate, often with short, blunt lobes. *sori* one to four, placed on the outer margin, the tube partially or quite exserted, the mouth distinctly two-lipped. Tropical America. This is very closely allied to *T. punctatum*.

T. rhomboideum (rhomboid). A synonym of *T. javanicum*.

T. rigidum (rigid).* *sti.* tufted, erect, wiry, 2in. to 8in. long, naked or very slightly winged above. *fronds* 2in. to 8in. long, 2in. to 6in. broad, deltoid or ovate, acuminate, tri- or quadrifid; pinnae 2in. to 3in. long, erecto-patent, ovate or lanceolate-rhomboid, cut down to a rachis which is very narrowly winged throughout or free below; pinnules deeply pinnatifid, with deeply-toothed or even pinnatifid, linear lobes. *sori* two to twelve to a pinnule, small, axillary, the tube more or less exserted. New Zealand, &c. Stove or greenhouse. *SYNS.* *T. achilleefolium*, *T. obscurum*.

T. r. elongatum (lengthened). *fronds* deltoid, with broader segments; pinnae and pinnules often imbricated.

T. rufum (reddish). *sti.* (and under side of the fronds) most profusely covered with long, rufous, woolly hairs. *fronds* pale green above, about 10in. long and 1½in. broad, pinnate; pinnae

Trichomanes—*continued*.

overlapping each other, the veins exerted at their tips. Demerara. A very rare, distinct, erect-growing Fern.

T. saxatile (rock-loving). *sti.* terete, hairy. *fronds* tufted, triangular-ovate, pinnate below; pinnules bipinnatifid, the upper ones decurrent; pinnules ovate, the margins more or less decurved, giving the surface a pretty, undulating character; ultimate segments broad, short, obtuse-pointed. Involucres cylindrical, supra-axillary, slightly two-lipped. Borneo, 1862. A dwarf but very pretty species.

T. scandens (climbing). *rhiz.* wiry, wide-creeping. *sti.* strong, erect, naked, 2in. to 4in. long. *fronds* 6in. to 18in. long, 3in. to 6in. broad, fully pinnate, or the hairy rachis very slightly winged above, ovate, acuminate; lower pinnae ovate-lanceolate, nearly pinnate, 2in. to 4in. long; pinnules divided down to a narrow wing; segments again pinnatifid about half-way down; margins finely hairy. *sori* one to four to a pinnule, the mouth with two lateral projections. Mexico, &c., 1852.

T. Sellowianum (Sellow's). *sti.* clothed with short hairs. *fronds* bright green, linear-lanceolate, deeply pinnatifid; segments oblong, obtuse, wavy at the edges, where there are a few hairs. Brazil. An extremely rare plant in cultivation.

T. setigerum (bristle-bearing). *sti.* quite terete, 2in. to 6in. long, furnished with hair-like scules. *fronds* tufted, 9in. to 15in. long, linear or linear-lanceolate, pinnate, smooth, curving; pinnae bipinnatifid; pinnules palmate; ultimate segments elongated and very narrow, almost capillary, the lower ones incurved, sub-erect. Involucres supra-axillary, small, sub-cylindrical, terminal on a narrow segment. Borneo, 1862.

T. sinuosum (waved). *rhiz.* wide-creeping, sinuous, rather strong. *sti.* varying from hardly any to 2in. long. *fronds* 2in. to 9in. long, 1in. to 1½in. broad, linear-lanceolate, very gradually decurrent below, pinnatifid down to a broadly-winged rachis; lobes oblong, obtuse, crenate-margined. *sori* two to four to each lobe; receptacle much exerted. Tropical America. *SYN. T. incisum.*

T. spicatum (spiculate). *cau.* erect, tufted. *barren fronds* 4in. to 6in. long, 1in. to 1½in. broad, on stipes 1in. to 2in. long, pinnatifid nearly to the rachis, the apex not rooting; segments incise-crenate, linear-oblong. *fertile fronds* composed of a rachis and two rows of *sori*, without any connecting membrane. West Indies. (H. G. F. 60.) *SYN. Poca polypodina.*

T. superbum (superb). *rhiz.* strong, wide-creeping. *sti.* 2in. to 5in. long, strong, winged nearly down to the base. *fronds* 4in. to 9in. long, 2in. to 4in. broad, broadly ovate, pinnatifid down to a narrowly-winged rachis; lower pinnae lanceolate, divided more than half way to the rachis, with oblong, crenate lobes. *sori* two to six to each lobe; receptacle long, filiform. Trinidad, 1865. *SYN. T. finbriatum.*

T. tenerum (slender). *rhiz.* creeping, tomentose, very slender. *sti.* 1in. to 2in. long, slender, naked. *fronds* 3in. to 8in. long, 1in. to 1½in. broad, pendent, flaccid, lanceolate, tripinnatifid, the main rachis only very slightly winged towards the apex; pinnae distant, flaccid, cut down to a narrowly-winged rachis, with distant, deeply-incised or pinnatifid pinnules; ultimate segments about two lines long. *sori* one to four to a pinna, the tube exerted. Tropical America. *SYN. T. angustatum.*

T. trichoideum (hair-like). *rhiz.* creeping, slender. *sti.* 1in. to 2in. long, very slender, naked. *fronds* 4in. to 8in. long, 1in. to 2in. broad, pendent, flaccid, lanceolate, tripinnatifid, the main rachis only slightly winged at the apex; pinnae flaccid, 1in. to 2in. long, the rachis only winged above; pinnules deeply cut, with distant, linear-filiform segments one to two lines long. *sori* one to four to a pinna, the tube exerted, sometimes stalked. West Indies, 1862. Greenhouse.

T. trichophyllum (hair-fronded). *sti.* densely tufted, wiry, terete, 1in. to 2in. long. *fronds* 2in. to 4in. long.

Trichomanes—*continued*.

1in. to 1½in. broad, oblong, decomposed; rachis stiff, terete throughout; pinnae twelve to fifteen-jugate, much imbricated, many of them deltoid, ½in. broad; lower pinnules copiously pinnatifid; ultimate divisions bristle-like, ½in. to ¾in. long, spreading in all directions. *sori* copious, free, placed near the base of the pinnules on the upper side. Borneo and New Caledonia, 1862.

T. venosum (veined). *rhiz.* slender, wide-creeping. *sti.* 1in. to 2in. long, very slender, naked. *fronds* 2in. to 5in. long, 1in. to 1½in. broad, pinnatifid, the main veins free in the lower half, broadly winged above; lower pinnae about 6in. long, varying from linear and nearly simple to lanceolate and deeply pinnatifid below. *sori* only one to a pinna, axillary on the upper margin, the tube slightly two-lipped. Australia and New Zealand. Greenhouse.

TRICHONEMA. A synonym of *Romulea*.

TRICHOPE TALUM (from *thrix*, *trichos*, a hair, and *petalon*, a petal; the inner perianth segments are fringed). *ORD. Liliaceae.* A monotypic genus. The species is a curious, half-hardy, perennial herb, with a thick rhizome, and fascicled, fleshy or tuberous root fibres. A light, rich soil is most suitable. The plant succeeds in a pit, or in an effectively-drained frame, with a southern aspect. It will also thrive in pots, if ample drainage be afforded. Propagation may be effected by divisions.



FIG. 95. TRICHOPILO SUAVIS

Trichopetalum—continued.

- T. gracile** (slender). A synonym of *T. stellatum*.
T. stellatum (star-like). *f.*, perianth greenish, six to seven line long, the outer segments keeled, the inner ones densely bearded; pedicels ascending; raceme straight, rather loose, few-flowered, simple or slightly forked, 3in. to 6in. long; scape 6in. to 12in. long, with one to three bracts (reduced leaves). Early summer *l.* six to eight, narrow-linear, glabrous, Grass-like, 4in. to 12in. long. *A.* 1ft. to 3ft. Chili, 1828. *SYNS.* *T. gracile* (B. R. 1535), *Anthericum plumosum* (B. M. 3084). The correct name of this plant is *Boltonia thysanotoides*.

TRICHOPIPHORUM. Included under *Er*

TRICHOPIHYLLUM. A synonym of *Bahia* (which see).

TRICHOPIILIA (from *thrix*, *trichos*, a hair, and *pilion*, a cap; the anther is concealed below a cap surmounted by three tufts of hair). *SYNS.* *Leucohyle*, *Pilumna*. Including *Helcia*, *Oliveriana*. *ORD.* *Orchidææ*. A genus embracing about sixteen species of beautiful, greenhouse, epiphytal Orchids, inhabiting the warmer parts of America. Flowers showy, pedicellate; sepals sub-equal, free, narrow, erecto-patent, often twisted; petals similar; lip with the claw adnate to the column, which it closely invests above, the limb spreading, the slightly-dilated lateral lobes connivent, the middle one continuous and undulated; pollen masses two, obovoid-oblong, exappendiculate; bracts small; scapes springing from a short rhizome, leafless, few-sheathed, one, two, or rarely three to five, flowered. Leaf fleshy, erect, complicated at base, narrow or rather broad. Pseudo-bulbs one-leaved. *Trichopilias* may be grown in pots, or in hanging baskets; in the latter their flowers are seen to the best advantage. The plants should be kept well elevated above the rims of the pots or baskets, in order that good drainage may be insured; the flower scapes also proceed from beneath the leaves and pseudo-bulbs. Fibrous peat and living sphagnum, with some pieces of charcoal intermixed, afford a suitable compost. A moderate supply of water should be given during the growing season, but very little is requisite in winter; still, the plants must not be allowed to suffer for want of it. *Trichopilias* in good health blossom very freely; the plants succeed best in the Mexican house. Sickly specimens—the result of growing in too high a temperature—are frequently met with. Propagated by carefully-made divisions.

T. albida (whitish). *f.*, sepals and petals pale greenish-yellow, nearly straight, the margins slightly hyaline; lip longer than the petals, four-lobed; the lobes whitish, the throat with scattered, ochraceous-yellow dots; hood trilobed; raceme pendulous, about three-flowered. *l.* oblong-lanceolate, flat, sub-cordate at base, acuminate at apex, recurved. Caraccas, 1851.

T. Backhousiana (Backhouse's). *f.* more fleshy than in *T. fragrans* (which this species closely resembles); lip much narrower and lobed near each end, but twice as broad in the middle as that of *T. fragrans*. *l.* faintly spotted and clouded with darker patches. New Grenada, 1876. Whole plant paler green than *T. fragrans*.

T. coccinea (scarlet). A garden synonym of *T. marginata*.

T. crispa (curled).* *f.*, sepals and petals light cherry-crimson, faintly edged with white, the margins crispate-crenate; lip white outside, somewhat deeper in colour than the sepals, large, the margin irregularly crisped, the throat rich deep

Trichopilia—continued.

crimson. April to June. Central America, 1857. A charming and rare species, resembling *T. marginata*.

T. c. marginata (marginated). *f.* large and very showy; sepals and petals pale purplish-red, white at the edges; lip white externally, the central lobe dull crimson, the throat of a darker and richer crimson, the limb narrowly edged with white. (F. d. S. 1925-6; W. S. O. i. 5.)

T. fragrans (fragrant).* *f.* deliciously sweet-scented; sepals and petals pale yellowish-green, 2½in. to 3in. long, wavy, and slightly twisted; lip pure white, orange-spotted towards the base; racemes pendent, three or four together. Winter.

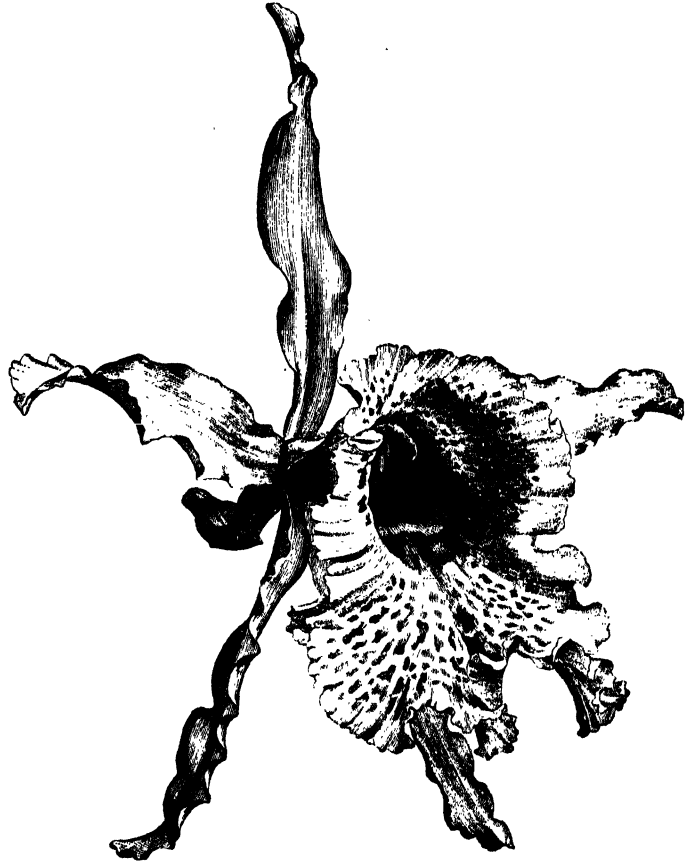


FIG 96. FLOWER OF TRICHOPIILIA SUAVIS (natural size).

l. broadly oblong-lanceolate. Pseudo-bulbs oblong, 4in. to 6in. long, slightly compressed. New Grenada, 1858. *SYN.* *Pilumna fragrans* (B. M. 5036).

T. fragrans (fragrant). A garden synonym of *T. nobilis*.

T. Galeottiana (Galeotti's).* *f.*, sepals and petals cuneate-lanceolate, acute, the latter somewhat broader, pale green, with a central bar of olive-brown; lip closely folded round the column, the front lobe obreniform, the disk pale yellow, with bars and lines of crimson-purple, the margin passing to white; peduncles one-flowered. August and September. *l.* cuneate-oblong, acute, dark green. Pseudo-bulbs tall, ligulate, ancipitous. Mexico, 1860. *SYNS.* *T. picta* (L. H. 225), *T. Turrialvæ*, of Bateman (B. M. 5550).

T. grata (pleasing). *f.* sweetly-scented; sepals and petals yellowish-green; lip expanded, white, blotched with yellow on each side of the keel; racemes few-flowered. *l.* oblong-ligulate. Pseudo-bulbs elongated, ancipitous, two-leaved. Peru, 1868. This species is allied to *T. fragrans*.

T. hymenantha (membrane-flowered). *f.* white, small; sepals

Trichopilia—*continued*.

and petals slightly twisted; lip sessile, nearly flat, with erose edges, speckled with deep sanguineous-purple towards the base and sides; racemes six to eight-flowered, drooping. Summer. *l.* thick, fleshy, elongated-ensiform, acuminate, narrowed to the base, the lower part representing a stem or pseudo-bulb. New Grenada, 1854. (B. M. 5949; I. X. O. i. 7.)

T. Kienastiana (Kienast's). *fl.* white, with a few yellow lines or spots on the disk of the lip; sepals and petals linear-ligulate; lateral lobes of lip median, obtuse-angled; anterior lobes protracted, wavy, emarginate; peduncle usually two-flowered. *l.* and pseudo-bulbs much like those of *T. suavis*. Habitat unknown. 1883.

T. lepida (pretty). *fl.* handsome, 4in. to 5in. in diameter; sepals and petals pale rosy-lilac, irregularly margined with white; lip prominent, fimbriated, in front deep purple-crimson with an irregular margin of white; peduncles deflexed. Spring. *l.* oblong-ovate, acute, leathery. Pseudo-bulbs oblong, obtuse, ancapitous. Costa Rica, 1873. (F. M. ser. ii. 98; W. O. A. v. 197.)

T. marginata (margined).* *fl.* 4in. to 5in. across; sepals and petals brownish-red, with greenish-yellow margins, narrow, once twisted; lip white outside, the mouth three-lobed, the lateral lobes roundish and the central ones emarginate, wavy, reddish-purple, sometimes edged with white, becoming deep crimson in the throat, or with the limb white and the throat only deep crimson; peduncles drooping, one-flowered. May and June. *l.* lanceolate, shortly acuminate, recurved at tip. Pseudo-bulbs clustered, oblong, furrowed, recurved at tip. Central America, 1880. (G. M. B. iii. 185.) SYN. *T. coccinea* (B. M. 4857; L. J. F. 184; I. & P. F. G. i. 54).

T. m. flaveola (yellowish). *fl.*, sepals and petals greenish-yellow; lip and column white. 1880.

T. mutica (beardless). *fl.* dirty-white, slightly tinged with red; sepals and petals linear, acute; lip parallel with the column, cordate-ovate, cucullate at base; raceme few-flowered, weak. August. *l.* linear-lanceolate, convex at back. Said to be a native of Trinidad, 1821. SYN. *Macradenia mutica*.

T. nobilis (noble).* *fl.* larger than those of *T. fragrans*, sweet-scented; sepals and petals white, unduluted; upper lobes of lip rounded and meeting over the throat, the front one pure snow-white, 1½in. broad, having on each side of the throat an orange-coloured blotch, the two blotches meeting to form a central, eye-like spot; scapus erect, four or five-flowered. *l.* broadly oblong, acute. Pseudo-bulbs elongated, oblong, compressed, clustered. Columbia. A beautiful species, perhaps a variety of *T. fragrans* (under which name it is figured in F. M. ser. ii. 21, I. H. ser. iii. 94, and W. O. A. iii. 128)

T. picta (painted). A synonym of *T. Galeottiana*.

T. rostrata (beaked). *fl.*, sepals and petals pale whitish-green, linear, acute, the petals twice twisted; lip white, with pale orange rays, fimbriate, trifid towards the apex; peduncle two-flowered. *l.* broadly ligulate, acute. Pseudo-bulbs linear-ligulate, the basal scales slightly dotted. New Grenada, 1872.

T. sanguinolenta (dark-bloody). *fl.* rather showy, 2½in across; sepals and petals yellowish-olive, marked with transverse bands or ocellate markings of brownish-crimson; lip emarginate, recurved, white, fimbriately veined, the veins in the basal half marked out by broken lines of crimson. *l.* undulated, petiolate, 4in. to 6in. long. Pseudo-bulbs ovate, elongated. Ecuador, 1843. SYN. *Heleia sanguinolenta* (I. H. ser. iii. 21; L. & P. F. G. ii. 182).

T. suavis (sweet).* *fl.* white or creamy-white, delicately Hawthorn-scented; sepals and petals narrowed to the base, scarcely twisted; lip yellow in the throat, spotted with pale violet-rose on the front part and on the sides, closely rolled up at the base, spread out in a funnel-shaped form, three-lobed in front; peduncles three or four-flowered. March and April. *l.* large, broad-oblong, acute, wavy, nearly sessile. Pseudo-bulbs oblong-obcordate, ancapitous, clustered. Costa Rica, 1850. A fine species. See Figs. 95 and 96. (B. M. 4654; F. d. S. 761; L. J. F. 227; L. & P. F. G. i. 11; W. S. O. iii. 8.)

T. s. alba (white). *fl.*, sepals and petals pure white; lip white, marked in the throat with a yellow stain. May and June. (W. O. A. i. 14.)

T. s. grandiflora (large-flowered). *fl.* more highly coloured than in the type, and expanding better; sepals and petals white; lip upwards of 5in. in diameter, white, with large, rich crimson spots, the throat deep orange. *l.* (as well as the pseudo-bulbs) very large. A lovely variety.

Trichopilia—*continued*.

T. tortilis (twisted). *fl.* drooping, large and attractive; sepals and petals yellowish-green, with lurid brownish-purple blotches along the middle part, spirally twisted, narrow-lanceolate; lip white outside, yellowish-white or white within, thickly spotted with rose-colour and blotched with yellow about the throat, the base closely rolled in, the front part spreading out and three-lobed; peduncle one-flowered. *l.* oblong, acute. Pseudo-bulbs oblong or ligulate, compressed, 2in. to 4in. long. Mexico, 1835. An interesting species. See Fig. 97. (B. iii. 122; B. M. 3739;



FIG. 97 FLOWER AND LEAF OF TRICHOPIILIA TORTILIS.

B. R. 1863.) There are several varieties of this species. One — *candidum* — has white, and another brighter-coloured, flowers.

T. Turialva (Turialva), of Bateman. A synonym of *T. Galeottiana*.

TRICHOPTERIS. Included under *Alsophila*.

TRICHOS. A term, used in Greek compounds, signifying hair-like or hairy; e.g., *Trichocentron*, *Trichomanes*.

TRICHOSACME (from *thrix*, *trichos*, a hair, and *acme*, a point; referring to the corolla's hairy appendage). ORD. *Asclepiadæ*. A monotypic genus. The species is a stove, climbing shrub, densely white-woolly on all parts except the corolla. For culture, see *Stapelia*.

T. lanata (woolly). *fl.* purple, mediocre or rather small, six to ten in umbelliform cymes; calyx of five lanceolate segments; corolla with a short, rotate tube, the lobes emarginate, the teeth produced in a long, filiform appendage; peduncles opposite the leaves. July. *l.* opposite, petiolate, cordate at base, elliptic or oblong, obtuse or slightly acute. Mexico, 1850. (F. d. S. 1123; L. & P. F. G. i. 106.)

TRICHOSANTHES (from *thrix*, *trichos*, a hair, and *anthos*, a flower; alluding to the fringed corolla). Snake Gourd. Including *Epepon*. ORD. Cucurbitaceæ. A genus comprising about thirty species of stove, greenhouse, or half-hardy, climbing, annual or perennial herbs, sometimes shrubby at base, occasionally tuberous-rooted;

Trichosanthes—continued.

caducous, the other racemose; bracts occasionally wanting. Female flowers solitary; ovary inferior, at the base of the calyx tube, one-celled, the style three or six-cleft at apex. Fruit lanceolate or globose, smooth, often large. Leaves entire or three to nine-lobed, denticulate; tendrils usually two or three-cleft. The common name of *T. anguina* refers to its fruits, which are eaten as a vegetable in India. Seeds of the species here described should be sown on a hotbed, in spring, and the plants afterwards treated like Cucumbers.

T. anguina (snake-like).* Common Snake or Viper Gourd; Serpent Cucumber. *fl.*, calyx tube 1 in. long; the earlier male peduncle occasionally replaced by a female. *fr.* elongated, cylindrical, sometimes twisted, edible. *l.* coriata-sub-reniform, three to seven-lobed or five-angular; lobes pubescent or puberulous on both surfaces, not acuminate. Stems twining, more or less pubescent. India, &c., 1735. Half-hardy. See Fig. 98. (B. M. 722.) SYN. *T. colubrina* (B. R. xxxii. 18).

T. colubrina (snake-like). A synonym of *T. anguina*.

T. japonica (Japanese). *fl.*, male racemes few-flowered; bracts large, broadly ovate, deeply subulate-toothed; peduncle robust, sulcate. *fr.* ovoid, slightly acute at base and apex. *l.* membranous, broadly ovate, glabrous and smooth, three to five-lobed; lobes triangular, acute, entire or undulate-denticulate on the margins. Stem slender. Japan, 1872. (Greenhouse. (R. G. 714.)

T. Kirilowii (Kirilow's). *fl.* dioecious; male racemes few-flowered at apex, the bracts acutely toothed. *fr.* ovoid or ovoid-oblong. *l.* sub-orbicular, often deeply palmately five to seven-lobed; lobes oblong or oblong-lanceolate, acute, deeply incised-serrated or lobulate. Stem annual, branched. Root perennial. China, 1872. Greenhouse. SYN. *Epepon nitifolius*.

T. palmata (palmate-leaved).* *fl.*, male racemes on long, stout peduncles, at first short and head-like, at length elongated, with a toothed or jagged bract, at least 1 in. across, under each pedicel; female flowers shortly pedicellate. *fr.* nearly globular. 2 in. to 3 in. in diameter. *l.* broad, palmately three to seven-lobed, pubescent. India and North Australia, 1825. Stove. (B. M. 6873.)

T. tuberosa (tuberous-rooted). *fl.*, corolla white, the tube intimately united and incorporated with the tube of the calyx; limb free of five long, deeply bifid segments, the divisions forked at the extremity. September. *l.* distant, formed of three deeply-cut, linear-oblong, divaricating lobes, acute at the points, the lower ones with a smaller, unidentate lobe at the base. Stems green, climbing. Root a large, rounded tuber. West India. Stove. (B. M. 2703.)

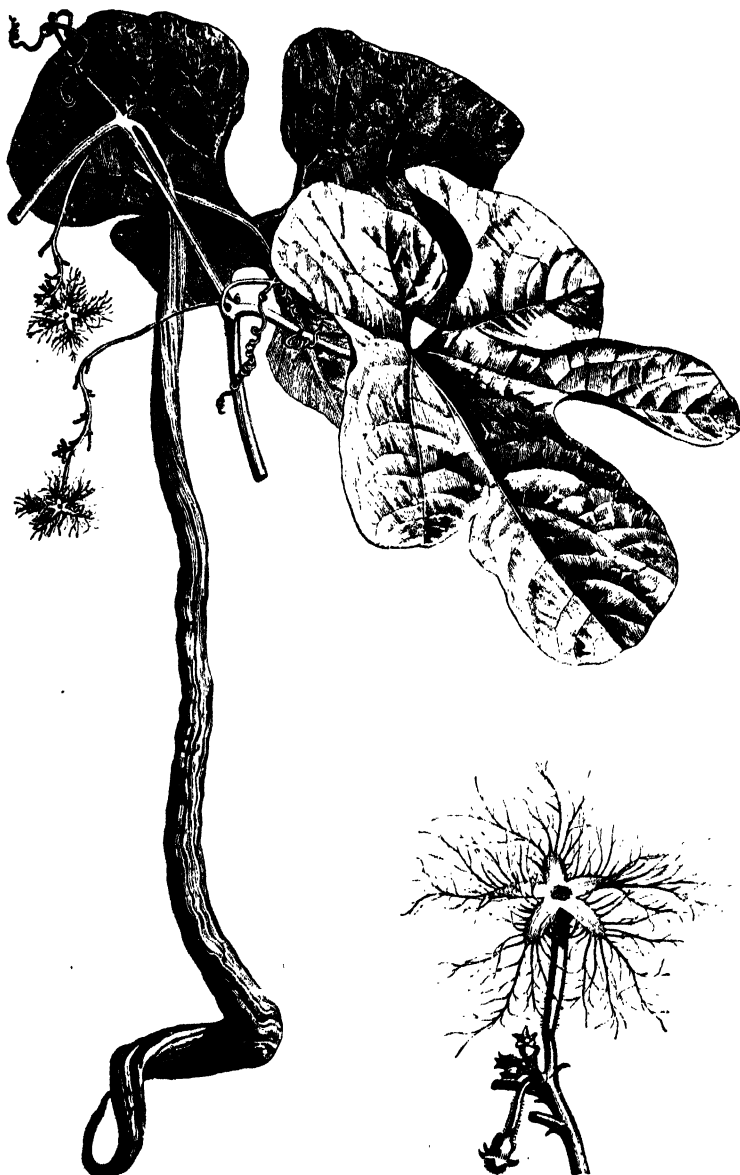


FIG. 92. TRICHOSANTHES ANGUINA, showing Portion of Stem, with Fruit and Male Flowers, and detached Cluster of Flowers.

they are found in tropical Asia, North Australia, and Polynesia. Flowers white, dioecious, less often monocious; calyx long-tubular, with five lanceolate, entire, serrated, or torn segments; corolla five-cleft nearly to the base, the lobes long-fringed. Stamens of the males three; peduncles usually in axillary pairs, one one-flowered and

three and *chasma*, a division; in allusion to the three-lobed labellum). ORD. Orchidæ. A monotypic genus. The species is a very distinct and scarce, stove, epiphytal Orchid. It may be grown in a well-drained pot or pan of fibrous peat and sphagnum. When in active growth, it must be kept moderately moist; and, as it has no fleshy pseudo-bulbs, it must never be allowed to get quite dry.

Trichosma—continued.

T. suavis (sweet). Hair Orchid. *f.* fragrant, rather large, in a short, terminal raceme; sepals and petals creamy-white, lanceolate; lip three-lobed, the side lobes white, striped with brownish-crimson, the middle one undulated, recurved, yellow, margined with crimson, and bearing several crispy crests on the disk.

TRICHOSPOBUM. A synonym of *Æschynanthus* (which see).

TRICHOSTEMA (from *thrix*, *trichos*, hair, and *stema*, stamen; referring to the capillary filaments). Blue Curls. ORD. *Labiatae*. A genus comprising about half-



FIG. 99. FLOWERING BRANCH OF TRICUSPIDARIA HEXAPETALA.

Spring. *l.* two, broadly lanceolate, obsolete three-nerved. Stems thin, tufted, terete, 8in. to 10in. high. Khasya Mountains, 1840. (B. R. 1842, 21; W. O. A. iii. 114.) SYNS. *Catogyne coronaria*, *Bria coronaria*, *K. suavis*

TRICHOSORUS. Included under *Alsophila*.

a-dozen species of hardy, North American herbs. Flowers commonly blue or violet, in axillary, dense or loose, many-flowered whorls. Leaves entire; floral ones conformed. Two of the species have been introduced, but they are probably not now in cultivation.

TRICHOTOMOUS. Branching in threes.

TRICLISSA. A synonym of *Kniphofia* (which see).

TRICOCCUS. A fruit consisting of three cocci, or elastically-dehiscing shells.

TRICOLORE. Three-coloured.

TRICONDYLIUS. A synonym of *Lomatia* (which see).

TRICOEYNE (from *treis*, three, and *koryne*, a club; in allusion to the form of the capsules). ORD. *Liliaceæ*. A genus embracing six species of greenhouse perennials with fibrous roots, limited to Australia. Flowers in terminal umbels, with small, imbricated, scarious bracts; perianth spirally twisted after flowering, but at length deciduous, of six narrow, three or five-nerved segments; stamens six, hypogynous. Leaves few and Grass-like or all reduced to scarious scales. Stems usually wiry and branching, the branches often clustered. It is doubtful whether any of the species are in cultivation. *T. elatior* thrives in light, rich soil, and may be increased by divisions.

T. elatior (taller). *fl.*, perianth white, usually about $\frac{1}{2}$ in. long; umbels three, four, or six-flowered. June. *l.*, lower ones often Grass-like, 2 in. to 4 in. long, the upper ones, and sometimes all, reduced to short scales. Stem 1 ft. to 2 ft. high. 1824.

TRICRATUS. A synonym of *Abronia* (which see).

TRICUSPIDARIA (from *tricuspidis*, three-pointed; alluding to the petals). SYN. *Tricuspidia*. ORD. *Liliaceæ*. A small genus (two species) of Chilian, greenhouse trees. Flowers rather large; calyx campanulate, truncate, obsoletely five-toothed, afterwards cut and deciduous; petals five, three-toothed or three-lobed, induplicate-valvate; stamens numerous, inserted above the torus; peduncles axillary, solitary, one-flowered. Leaves alternate and opposite, serrated. *T. hexapetala*, the only species introduced, is a very beautiful, greenhouse shrub. For culture, see *Correa*.

T. hexapetala (six-petaled). *fl.* red, on long peduncles. Capsule sub-rotund, silky-pilose. *l.* oblong-lanceolate, serrated or rarely entire. See Fig. 99. (*lin.*, Nov. 1820, under name of *Crinodendron Hookerianum*.)

TRICUSPIDIS (of Palisot de Beauvois). Included under *Triodia* (which see).

TRICUSPIDIS (of Persoon). A synonym of *Tricuspidaria* (which see).

TRICYRTIS (from *treis*, three, and *kyrtos*, convex; alluding to the three outer perianth segments having bags at their base). SYNS. *Compsanthus*, *Compsa*.

Liliaceæ. A small genus (five species) of half-hardy perennials, with shortly-creeping rhizomes, natives of the Himalayas, Japan, and China. Flowers few, rather large, on longish pedicels; perianth often elegantly spotted within, campanulate; segments distinct from the base, lanceolate, the outer ones saccate at base, the inner ones flat, all spreading above; stamens six, hypogynous; inflorescence terminal or in the upper axils, loosely dichotomous, erect. Leaves alternate, ovate or oblong, contracted, sub-sessile, or cordate-amplexicaul at base. Stem erect, simple below the inflorescence, leafy. The three species introduced are ornamental plants. They thrive in a compost of sandy loam and peat, and require the shelter of a greenhouse or cold pit in winter. Propagation may be effected by offsets.

T. elegans (elegant). A synonym of *T. pilosa*.

T. hirta (hairy).* Japanese Toad Lily. *fl.* six to fifteen, racemose or sub-corymbose; perianth nearly 1 in. long, the segments white, the outer ones decorated with large, purple dots. May. *l.* oblong, cuspidate, cordate-amplexicaul, $\frac{1}{4}$ in. to 6 in. long, slenderly pilose, Stem 1 ft. to 3 ft. high, clothed with soft, white, slightly spreading pili. Japan, 1863. See Fig. 100. (B. M. 5355.)

T. macropoda (large-footed).* *fl.* on pedicels $\frac{1}{2}$ in. to $\frac{3}{4}$ in. long, disposed in a loose corymb; perianth whitish-purple, with minute, purple dots, nine to ten lines long. May. *l.* oblong, acute, $\frac{1}{2}$ in. to 5 in. long, $\frac{1}{4}$ in. to 2 in. broad, sessile or very shortly petiolate,

rounded at base, glabrous above, pubescent beneath. Stem 2 ft. to 3 ft. high. Japan and China, 1869. (B. M. 6544; R. G. 613.)

T. m. striata (striped). A pretty plant, having leaves striped with white. (F. d. S. 1820, under name of *T. foliis albo-striatis*.)



FIG. 100. TRICYRTIS HIRTA, showing Habit, and Portion of Stem, with Flower.

T. pilosa (pilose). *fl.* many, loosely corymbose; perianth eight to nine lines long, the segments whitish, marked with large, purple spots. May. *l.* oblong, cuspidate, cordate-amplexicaul, $\frac{1}{4}$ in. to 6 in. long, slenderly pilose. Stem 2 ft. to 4 ft. high, pilose. Himalayas, 1851. (B. M. 4955; F. d. S. 1219.) SYN. *T. elegans*.

TRIDAX (from *Thridax*, the old Greek name used by Dioscorides for the Lettuce, from *treis*, three, and *akis*, a point; alluding to the ray florets). SYNS. *Balbisia* (of Willdenow), *Bartolina*. Including *Galinosega* and *Ptilostephium*. ORD. *Compositæ*. A genus embracing seven species of hardy, perennial herbs, natives of tropical America. Flower-heads yellow, or the disk greenish, mediocre, long-pedunculate, heterogamous; ray florets ligulate or sub-bilabiate, the outer lip large, sometimes three-toothed, three-cleft, or three-parted, the inner smaller or minute, two-lobed or two-parted, sometimes obsolete; involueral bracts in few series; receptacle flat or convex; achenes turbinate, silky-villous. Leaves opposite, incised-toothed or pinnately dissected; segments few, narrow. The species possess but little beauty, and require ordinary culture. Propagated by divisions, or by seeds.

T. coronopifolium (Coronopus-leaved). *fl.* heads yellow; ray florets unequally five-lobed; outer involueral sea macronate. June. *l.* variously pinnatifid or trifid; lobes linear, acute. *h.* 1 ft. Mexico. SYN. *Ptilostephium coronopifolium*.

T. trilobata (three-lobed). *fl.* heads yellow; ray florets five-toothed; pappus bristles very short and scarcely pinnately lobed, or longer and plumose-fimbriate; peduncles pubescent or glandular-puberulous at apex. June. *l.* three-lobed or pinnately incised. *h.* 1 ft. Mexico. SYN. *Galinosega trilobata* (B. M. 1895; S. B. F. G. 56).

TRIDENS. Included under *Triodia* (which see).



FIG. 101. TRIDENTATE LEAF.

TRIDENTATE. Trident-pointed. A Tridentate leaf is shown at Fig. 101.

TRIDENTEA. Included under *Stapelia* (which see).

TRIDIA. Included under *Hypericum* (which see).

TRIENTALIS (a Latin term, signifying one-third of a foot in height; in reference to the stature of the plants). Chickweed Wintergreen. ORD. *Primulaceæ*. A small genus (two species) of highly glabrous, hardy herbs, with creeping, perennial rhizomes; one is found in Europe, North Asia, and North-west America. Flowers white; calyx five to nine-parted, persistent; corolla hypogynous, rotate, five to nine-parted, the tube very short, the segments elliptic-lanceolate; stamens five to nine; peduncles one to three, one-flowered, filiform, abrotate. Leaves usually as many as the petals, somewhat whorled, obovate-elliptic or lanceolate, entire. Stems solitary, slender, erect. These pretty little plants require a light, rich soil and a shady situation. Propagated, in spring, by seeds, covered with a handlight; or by divisions.

T. americana (American). Star Flower. *fl.*, divisions of the corolla finely acuminate. May. *l.* lanceolate, acuminate at both ends. Stem very naked below, unequally five to nine-leaved at the summit, 8in. high. North-west America, 1816.



FIG. 102. TRIENTALIS EUROPEA, showing Habit and detached Flower.

T. europaica (European). *fl.* few, erect; corolla ½in. to ¾in. in diameter, the lobes ovate, acute. June and July. *l.* obovate or obovate-lanceolate, 1½in. to 2½in. long, shining, rigid, obtuse or acute, narrowed into short petioles. Stem wiry, slender, leafy at top, 4in. to 8in. high. Europe (Britain), &c. See Fig 102. (L. B. C. 105; Sy. En. B. 1139.)

TRIPARIOUS. Arranged in a triple rank, or in three rows.

TRIPID. Split half-way into three parts.

TRIFOLIOLATE. Bearing three leaflets from the same point; e.g., Clover.

TRIFOLIUM (from *tres*, three, and *folium*, a leaf; most of the species have trifoliate leaves). Clover; Trefoil. Including *Lupinaster* and *Pentaphyllon*. ORD. *Leguminosæ*. A large genus (nearly 280 species have been described, of which, probably, not more than 150 are really distinct) of hardy, annual or perennial herbs, copiously dispersed over the temperate and sub-tropical regions of the Northern hemisphere, a few being also found in the mountains of tropical America, Africa, and extra-tropical South America. Flowers often purple, red, or white, rarely yellow, spicate, capitate, umbellate, or rarely solitary; calyx teeth or lobes sub-equal, or the

Trifolium—continued.

lower ones longer; petals often marcescent, all long-clawed, or the four lower ones more or less adnate with the staminal tube; standard oblong or ovate; wings narrow; keel shorter than the wings, obtuse; stamens diadelphous. Pod oblong and sub-terete, or obovate-compressed, indehiscent. Leaves digitately three, rarely five or seven, foliolate, sometimes pinnately three or very rarely five-foliolate; stipules adnate with the petioles. This genus embraces several important fodder-plants. Eighteen species are included within the British Flora, viz., *T. arvense* (Hare's-foot Clover), *T. Bocconi*, *T. filiforme* (Yellow Suckling Clover), *T. fragiferum* (Strawberry Clover), *T. glomeratum*, *T. incarnatum* (Crimson or Carnation Clover), *T. maritimum*, *T. medium* (Cow Grass; Meadow or Zigzag Clover), *T. minus*, *T. ochroleucum*, *T. pratense* (Red or Broad-leaved Clover; Marl-grass), *T. procumbens* (Hop Trefoil), *T. repens* (White or Dutch Clover; Shamrock), *T. scabrum*, *T. striatum* (Knotted Clover), *T. strictum*, *T. subterraneum*, and *T. suffocatum* (Sand Clover); and *T. hybridum* (Alsike or Bastard Clover) has become naturalised. Four-leaved Shamrocks and other Clovers are considered "lucky," as being rare, but are by no means unfrequently met with. Few of the species of *Trifolium* boast of much horticultural merit; the selection given below embraces all that call for description here. All thrive in common garden soil. The annuals and biennials may be increased by seeds, and the perennials by divisions. Except where otherwise stated, the under-mentioned plants are perennials.

T. alpestre (alpine).* Owl-headed Clover. *fl.* purple; lower calyx segment longer than the gamopetalous corolla, the rest short and tooth-like; heads globose. June and July. *l.* leaflets lanceolate, coriaceous, ciliate serrulated; stipules narrow, nearly sessile, long. Stem erect, simple. *h.* 6in. to 12in. Alps of Europe and Western Asia, 1789. (B. M. 2779.)

T. œseruloum (blue). A synonym of *Trigonella œserula*.

T. canescens (hoary). *fl.* cream-coloured; calyx smooth, the lowest segment a little longer than the rest; corolla gamopetalous, much longer than the calyx segments; heads terminal, large, oblong, nearly sessile. May and June. *l.* leaflets obovate, emarginate, villous; stipules lanceolate-subulate. Stems ascending, adpressedly hairy. Cappadocia, &c., 1803. (B. M. 1168.)

T. fimbriatum (fringed). *fl.* purple; calyx teeth spiny, half as long as the slender corolla; heads ½in. in diameter. September and October. *l.* leaflets oblong or slightly cuneate, ½in. or more in length, conspicuously fringed with spinulose-setaceous teeth. Stems long and thick, prostrate, glabrous. North America, 1825. (B. R. 1070; L. B. C. 1421.)

T. fucatum (painted). *fl.* cream-colour mixed with red; corolla many times longer than the calyx; heads ½in. to 2in. in diameter, somewhat hemispherical, few-flowered; peduncles axillary, mostly longer than the leaves. June. *l.* leaflets roundish-cuneiform, sharply denticulate, rather thick; stipules large, entire, mucronate. *h.* 6in. California, 1824. Annual. (B. R. 1883.)

T. hybridum (hybrid). Alsike or Bastard Clover. *fl.* white or rosy, ½in. long, drooping; heads axillary, peduncled, globose, ½in. to 1in. in diameter. June to August. *l.* on long petioles; leaflets obovate or oblong, ½in. to 1½in. long, toothed; stipules oblong, with triangular tips. Stems 2in. to 10in. long, flexuous. Europe, &c. (B. M. 3702.)

T. incarnatum (flesh-coloured). Crimson Clover. *fl.* bright scarlet, ½in. long; calyx hairy; heads peduncled, terminal, ovoid or cylindrical, ½in. to 2in. in diameter. June and July. *l.* on short petioles; leaflets broadly obovate or orbiculate, ½in. to 1½in. long; stipules obtuse. Stems rather slender, clothed with spreading hairs. *h.* ½ft. South Europe, 1640. Annual. (B. M. 328.)

T. Lupinaster (Lupinaster).* Bastard Lupine. *fl.* purple, large, the wings and keel paler than the standard; heads pedunculate, bractless, umbellate. June to August. *l.* sessile; leaflets five, linear-lanceolate, sharply toothed, mucronate; stipules broad, acuminate. *h.* ½ft. to 1½ft. Siberia, 1741. (B. M. 279.) *albi-florum* is a white-flowered form.

T. olympicum (Olympic). *fl.* yellowish; calyx hairy; standard very long; spikes oblong, solitary. July. *l.* leaflets hairy, elliptic-lanceolate, entire; stipules subulate, sheathing. Stem erect, hairy. *h.* ½ft. Mount Olympus, 1817. (B. M. 2790.)

T. reflexum (reflexed). Buffalo Clover. *fl.* handsome; standard rose-red, broadly ovate; wings and keel white; heads sub-umbellate, dense; peduncles about twice the length of the heads. April to June. *l.* leaflets obovate or obovate-oblong,

Trifolium—continued.

sometimes emarginate, crenulate-serrulate; stipules leafy, long or decumbent, 1ft. to 1½ft. long nual. (B. M. 3471.)

... stalked; leaflets long, narrow; stipules large. Stems erect. A. 1ft. Central and South Europe. (R. G. 1885, p. 243.)

T. spadicum (chestnut-brown). Brown Clover. *f.* yellow; standard slightly ferruginous, obcordate; heads ovoid, pedunculate. June to August. *l.* stalked; leaflets oblong-ovate, sessile, denticulated; stipules leafy, acuminate. Stem erect, 6in. high. Europe, 1778. (B. M. 537.)

T. uniflorum (one-flowered).* *f.* axillary, solitary, on short peduncles; corolla very long, the standard blue, the wings and keel purple. May to September. *l.*, leaflets three, ovate, acuminate, toothed, nerved; stipules sheathing, long-acuminate. Stems very short. Syria, &c., 1800. Plant tufted, creeping. (L. B. C. 1832; S. B. F. G. ser. ii. 200.) The form *Sternbergianum* has white flowers.

T. vesiculosum (bladdery-calyxed). *f.*, reddish; calyx scarious, inflated, the segments subulate, much shorter than the corolla; heads ovate, thick, on long peduncles. June and July. *l.*, leaflets lanceolate, acute, sharply serrulated; stipules narrow, long-acuminate. Stems erect, firm, 9in. high. South Europe, 1805. (B. R. 1408.)

TRIFURCIA (from *tres*, three, and *furca*, a fork; alluding to the three-forked style). The correct name, according to Bentham and Hooker, is *Alophia*. SYN. *Herbertia*. ORD. *Iridææ*. A small genus (three or four species) of pretty, American, stove, greenhouse, or hardy, bulbous plants. Flowers long-pedicellate; perianth tube none; segments free, the three outer ones shortly unguiculate, spreading, obovate or broadly oblong, the three inner ones much smaller, acute, erect or scarcely spreading; filaments connate in a cylindrical tube; spathe narrow. Leaves few. Bulb tunicated. Only two species call for description here. They thrive in a mixture of equal parts loam, peat, and sand. With protection in winter, the plants will succeed in the open border. Propagation may be effected by offsets, or by seeds.

T. cœrulea (blue). *f.*, outer perianth segments having a white blue, the blade blue, with a deeper-coloured, base; inner segments blue, deeper-coloured in the middle; anthers and stigma short; peduncle shorter than the bractæ. April. Texas, 1842. Half-hardy. SYN. *Herbertia cœrulea* (B. M. 3862, figs. 3, d, e, f).

T. pulchella (pretty). *f.*, limb of the outer perianth segments lilac, undulate, the claw pale-yellowish or whitish, dotted with purple; inner segments deeper-coloured in the middle; anthers subulate, exceeding the stigma. July. *l.* 5in. or more long. Buenos Ayres, 1827. Greenhouse. SYN. *Herbertia pulchella* (B. M. 3862, figs. 1, 2; L. R. C. 1547; S. B. F. G. 222).

TRIGLOCHIN (from *treis*, three, and *glochis*, a point; in reference to the three angles of the carpel). Arrow Grass. ORD. *Naiadaceæ*. A genus consisting of about a dozen species of greenhouse or hardy, marsh-loving, erect, scape-bearing herbs, broadly dispersed over mostly temperate and frigid regions. Flowers small or rather large, spicate or shortly pedicellate and racemose, erect, bracteate and bracteolate; perianth segments scale-like, three, six, or rarely fewer; stamens six. Leaves elongated, flat or somewhat terete, sometimes swimming. Two species—*T. maritimum* and *T. palustre*—are British plants. *T. bulbosum* is the only one calling for description here. It thrives in pots of loamy soil, the bottoms of which are immersed in water.

T. Barrelieri (Barrelier's). A synonym of *T. bulbosum*.

T. bulbosum (bulbous-rooted). *f.* purplish, numerous and very variable, pedicellate, disposed in a simple, elongated raceme; scape erect, smooth. October. *l.* semi-cylindric, linear, bilobed, complanate or scarcely channelled above, the outer ones often reduced to sheaths. Rhizome short, more or less tuberous. A. 1½ft. Europe, Asia Minor, and South Africa, 1806. Greenhouse. (B. M. 1445; L. B. C. 1151.) SYN. *T. Barrelieri*.

TRIGLOSSUM. A synonym of *Arundinaria* (which see).

TRIGONAL. Three-angled, and having three plain faces.

TRIGONELLA (from *treis*, three, and *gonu*, an angle; the standard of the flower is flat, while the wings spread, thus imparting a triangular appearance). Fenu-greek. Including *Pocockia*. ORD. *Leguminosæ*. A genus comprising nearly fifty species of hardy, often strong-smelling, annual or perennial herbs; one is Australian, and the rest are dispersed over Europe, Asia, and Africa. Flowers yellow, blue, or white, variously disposed; calyx tubular or short, with sub-equal teeth or lobes; petals free of the staminal tube; standard obovate or oblong, sessile or contracted into a broad claw; wings oblong; keel obtuse. Leaves pinnately trifoliate; stipules adnate with the petioles. Scarcely any of the species are worth growing. The seeds of *T. Fœnum-Græcum* were anciently held in great repute for medicinal and culinary purposes; but their use in medicine is with us confined to veterinary practice. The genus is represented in Britain by *T. ornithopodioides*. Sowing in the open border is all that is required by the under-mentioned species.

T. cœrulea (blue). *f.* in dense, pedunculate heads; petals white, lined with blue. July and August. *l.*, leaflets ovate, the lower ones roundish-ovate, denticulated; stipules lanceolate, toothed at base. Stems erect, 1ft. to 2ft. high. Bohemia and Switzerland, 1562. Annual. SYN. *Trifolium cœruleum* (L. M. 2283).

T. Fœnum-Græcum. Fenu-greek. *f.* white; calyx pilose, the subulate teeth as long as the tube. June to August. *l.*, leaflets obovate, obsolete toothed; stipules lanceolate-falcate, entire. Stem erect, simple, 1ft. to 2ft. high. South of France, 1597. Annual. (B. M. Pl. 71; S. F. G. 766.)

T. ruthenica (Russian). *f.* yellow, disposed in racemose heads. June and July. *l.* lanceolate, very obtuse, sharply serrulated; stipules nearly entire. Stems prostrate, ascending, 1½ft. long. Siberia, 1759. Perennial. (L. B. C. 1391.)

TRIGONIA (from *treis*, three, and *gonu*, an angle; the fruit is triangular). SYN. *Mainea*. ORD. *Vochysiaceæ*. A genus embracing about twenty-five species of climbing or sarmentose, stove shrubs, natives of Brazil and Guiana. Flowers often small, in terminal panicles or racemes; sepals and petals five each; stamens five to twelve. Leaves opposite, on short petioles; stipules caducous. Three species have been introduced, but are now probably lost to

TRIGONIDIUM (from *trigona*, a triangle, and *eidos*, like; alluding to the triangular form of several parts of the plants). ORD. *Orchidææ*. A small genus (seven or eight species have been described) of curious, stove, epiphytal Orchids, inhabiting tropical America. Flowers rather large, shortly pedicellate within spathaceous bracts; sepals sub-squal, connivent or coherent at base in a triquetrous, turbinate tube, free above, spreading; petals similar, but much smaller; lip rising from the base of the column, erect, much shorter than the sepals, the lateral lobes erect, embracing the column, the middle one spreading; pollen masses four; scapes many-sheathed, one-flowered. Stem very short, mostly pseudo-bulbous. A selection of the species known in gardens is given below. They thrive on blocks, or in baskets of peat, fibre, and sphagnum, and like a fairly light position, near the glass.

T. acuminatum (taper-pointed). *f.* dull straw-colour externally, within elegantly pencilled with rich brown; sepals acuminate, recurved at apex; petals oval-lanceolate, mucronate. *l.* linear, longer than the peduncles. Pseudo-bulbs ovate, acute, sulcate, one-leaved. Demerara, 1834.

T. Egertonianum (Sir P. Egerton's). *f.* pale liver-colour, dashed and veined with brown; sepals acute, the lateral ones reflexed; petals slightly acute. *l.* narrow, often 1½ft. long, ensiform. Pseudo-bulbs clustered, oval, compressed, two-leaved. Honduras, 1834. A very distinct species.

T. obtusum (obtuse).* *f.*, sepals reddish-yellow, obovate; petals white, veined with rose, brown at apex, obtuse; lip white, tubercled at back, the lateral lobes red-margined, the middle one yellow in front. *l.* linear-lanceolate. Demerara, 1834. (B. R. 1923.)

T. tenue (slender). *f.* brownish-purple; sepals reflexed, very apex; scape erect, slender. *l.* obovate, very acute, longer than the scape. Pseudo-bulbs oval, compressed, one-leaved. Demerara, 1835.

TRIGONOTHECA. A synonym of *Catha* (which see).

TRIGUERA. Included under *Hibiscus*.

TRIGYNOUS. Having three styles.

TRILISA (from *trilis*, triple; in allusion to the divisions of the pappus). **ORD.** *Compositæ*. A small genus (two species) of hardy, erect, perennial herbs, natives of North America. Flower-heads purplish or white, rather small, paniculate; florets equal, regular, tubular, five-cleft; involueral bracts in two or three series; receptacle flat, naked. Leaves alternate, entire, amplexicaul; radical ones elongated. Only one species calls for description here. It thrives in any moderately good, light soil. Propagation may be effected by divisions, in spring; or by seeds, which are usually sown early in autumn.

T. odoratissima (very odorous). Vanilla Plant. *fl.* heads bright purple, numerous, pedicellate; involueral scales glandular. September. *l.* thick; radical ones large, obovate-spathulate, tapering at base, often slightly and obtusely toothed; cauline ones oblong, clasping at base, the upper ones small and scattered. Stem 2ft. to 4ft. high, corymbose at top. 1786. The leaves, when bruised, exhale the odour of vanilla. **SYN.** *Liatris odoratissima* (A. B. R. 633; S. B. F. G. ser. ii. 184).

TRILIX. A synonym of *Prockia* (which see).

TRILLIACEÆ. Included under *Liliaceæ*.

TRILLIUM (from *trilis*, triple; alluding to the triple parts of the flowers and leaves). American Wood Lily; Indian Shamrock; Three-leaved Nightshade. **ORD.** *Liliaceæ*. A genus comprising about a dozen species of hardy, perennial herbs, with short, thick rhizomes, natives of North America and extra-tropical Asia, from the Himalayas, as far as Japan. Flowers solitary, erect, drooping or reflexed, sessile or pedicellate within the leaves; perianth violet, lurid, white, or greenish, persistent; segments distinct, spreading, the three outer ones slender and herbaceous, green or rarely coloured, the three inner ones petaloid, often larger, less spreading, or sometimes recurved; stamens six; style deeply trifid, or three-parted from the base. Berry globose or ovoid, indehiscent. Leaves three, whorled at the apex of the stem, broad, sub-sessile or rather long-petiolate, three to five-nerved and reticulate-penniveined. Stem simple, erect, with a few short, scarious sheaths at base. The species best known to cultivation are here described. All are North American, and have violently emetic roots. A deep, well-drained bed of peaty soil, in a somewhat shady position, is the most suitable for these plants. During summer, a plentiful supply of water is essential. They may be increased, rather slowly, by dividing the roots, or by seeds. *T. grandiflorum* is the best species, and is one of the most desirable hardy plants for all collections.

T. Catesbei (Catesby's). A synonym of *T. stylosum*.

T. cernuum (drooping). *fl.* small; inner perianth segments white, eight to twelve lines long, oblong-ovate, wavy, recurved, rather longer than the lanceolate outer ones; peduncle usually shorter than the flower. April and May. *l.* broadly rhomboid, 2in. to 6in. long, abruptly acuminate, shortly petiolate. Stems two or three together, 1½ft. high. 1758. (B. M. 954.)

T. discolor (two-coloured). *fl.* inner perianth segments dark purple, varying into green, 1½in. to 2in. long, erect, oblong, obtuse, narrowed below; outer ones shorter, lanceolate, spreading. February and March. *l.* sessile, 3in. to 5in. long, ovate-lanceolate to broadly ovate, tapering from near the base to the apex, variegated above with green and brown, or dark purple. Stem stout, solitary, 6in. to 12in. high. 1831. (B. M. 3087.) According to Sereno Watson, the correct name of this plant is *T. sessile* Wray.

T. erectum (erect).* Beth-root; Birth-root; Lant's Quarters. *fl.* 1in. to 1½in. long, spreading, fetid; inner perianth segments dark purple, oval or oblong, rather longer than the lanceolate-ovate outer ones; peduncles 1½in. to 3in. long, at length declined, May. *l.* sessile, broadly rhomboid, abruptly acuminate, acute at base. Stem solitary, 1ft. high. 1753. See Fig. 103. (B. M. 470; F. d. S. 890; L. B. C. 1833.) **SYNS.** *T. fetidum* (G. C. n. s., xix., p. 605), *T. pendulum* (R. G. 656), *T. rhomboidum* (B. 139).

Trillium—continued.

T. e. album (white). *fl.*, inner perianth segments greenish-white, or rarely yellowish. (B. M. 1027; L. B. C. 1850.)

T. e. ochroleucum (yellowish-white). *fl.*, inner perianth segments yellowish-white. (B. M. 3250, under name of *T. e. viridiflorum*.)

T. erythrocarpum (red-fruited).* Painted Wood Lily. *fl.* ½in. to 1in. long; inner perianth segments white, striped with purple at the base, oblong, wavy, much longer than the lanceolate outer ones; peduncle 1in. to 2in. long, erect. April and May. *fr.* red. *l.* ovate, 3in. to 5in. long, long-acuminate, rounded at base, shortly petiolate. Stem solitary, 1ft. high. 1811. (B. M. 3002; L. B. C. 1232; S. B. F. G. 212.)

T. fetidum (fetid). A synonym.

T. grandiflorum (large-flowered).* Wake Robin. *fl.* 2in. long; inner perianth segments white, changing to rose-colour, obovate, much longer and broader than the lanceolate outer ones; peduncle longer than the flower, erect or slightly declined. May. *l.* 3in. to 5in. long, rhombic-ovate, abruptly acuminate, nearly sessile. Stem solitary, 1ft. to 1½ft. high. 1799. A fine plant. (F. d. S. 991; L. B. C. 1349; It. G. 575; B. M. 855, under name of *T. erythrocarpum*.)

T. nervosum (nerved). A synonym of *T. stylosum*.

T. nivale (snowy).* *fl.*, inner perianth segments, white, oblong, obtuse, 1in. long, scarcely wavy, spreading from an erect base, equalling the peduncle; outer ones lanceolate, obtuse. April. *l.* 1in. to 2in. long, oval or ovate, obtuse, rounded at base, distinctly petiolate. Stem 2ft. to 4ft. high. 1879. (B. M. 6449.)



FIG. 103. TRILLIUM ERECTUM.

T. obovatum (obovate). *fl.*, inner perianth segments pink, above 1in. long, elliptic-ovate, obtuse; inner ones shorter, oblong; peduncle erect, 1in. long. April. *l.* sessile, roundish-rhomboid, abruptly acuminate, green above, scarcely paler beneath, glabrous, 2½in. long. Stem erect, 8in. to 10in. high. 1810. This is regarded by Sereno Watson as probably identical with *T. erectum*.

T. pendulum (pendulous). A synonym of *T. erectum*.

T. rhomboidum (rhomboid). A synonym of *T. erectum*.

T. sessile (sessile). *fl.* ten to fifteen lines long, sessile, erect; inner perianth segments dark purple, lanceolate, erect, much longer than the lanceolate, spreading sepals. March and April. *l.* sessile, 1in. to 3in. long, broadly oval, widest in the middle, abruptly pointed, narrowed at base, variegated above with paler and deeper green. Stems slender, 6in. to 12in. high, commonly two or more in a cluster. 1759. (B. M. 40; F. d. S. 2311; L. B. C. 875.)

T. s. Wrayi. See *T. discolor*.

T. stylosum (large-styled). *fl.* 1½in. to 2in. long; inner perianth segments tinged with rose-colour, oblong, much longer and broader than the sepals; styles united below the middle; peduncle 1½in. to 2in. long. April and May. *l.* oval or oblong, 4in. long, acute, shortly petiolate. Stem solitary, slender, 1ft. to 1½ft. high. 1823. **SYNS.** *T. Catesbei*, *T. nervosum*.

TRILOBATE. Three-lobed. A Trilobate leaf, with ciliated margins, is shown at Fig. 104.



FIG. 104. TRILOBATE LEAF, WITH CILIATED MARGINS.

TRIOCLULAR. Three-celled.

TRIMERISMA. A synonym of *Platylophus* (which see).

TRIMESTRIS. Existing for three months.

TRIMEZIA (from *treis*, three, and *merizo*, to divide; in allusion to the trimerous division of the flower). **SYNS.** *Lansbergia*, *Poarchon*, *Remaclea*, *Xanthocromyon*. **ORD.** *Iridaceae*. A genus embracing about half-a-dozen species of stove, bulbous plants, natives of the West Indies and South America. Flowers many in a spathe, pedicellate; perianth tube none, the segments free, shortly unguiculate; stamens opposite the outer perianth segments; spathe solitary, terminal, or two or three at the axils of the floral leaves. Leaves few at the base of the stem, long, flat, and prominently ribbed, sometimes terete and Rush-like; floral one solitary, or the stem wholly leafless. Only one species has been introduced. For culture, see *Iris*.

T. martinicensis (Martinique). *f.* four to six in a cluster; perianth segments bright yellow, very fugacious, the three outer ones $\frac{1}{2}$ in. long, mottled at the throat, the three inner much smaller; scape equalling the leaves, with a single, reduced, clasping leaf. April. *l.* radical ones about six, erect, narrow-linear, 1ft. long, three to four lines broad, gradually narrowed to a point. West Indies, &c., 1848. **SYNS.** *Cipura martinicensis* (Ref. B. 310), *Iris martinicensis* (B. M. 416), *Lansbergia caracasana*.

TRINIA (named in honour of Dr. Karl B. Trinius, 1778-1844, a Russian botanist). **ORD.** *Umbelliferae*. A genus embracing seven or eight species of hardy, much-branched, perennial herbs, inhabiting the Mediterranean region and temperate Asia, one *T. vulgaris* being native of Britain. Flowers yellowish or white, in compound, often few-rayed umbels. Leaves pinnately or subternately decomposed. The species are of no interest from a garden standpoint.

TRINODAL. Having only three nodes.

TRIODIA (from *treis*, three, and *odous*, teeth; referring to the three-toothed glumes). **SYN.** *Uralepis* (erroneously spelt *Uralepsis*). Including *Tricuspis* and *Tridens*. **ORD.** *Gramineae*. A genus comprising upwards of twenty species of greenhouse or hardy, perennial Grasses, natives of Europe, extra-tropical America, South and sub-tropical Africa, Australia, and New Zealand, a few being also found in tropical America. Spikelets many-flowered, usually erect; glumes rather rigid, one to three-nerved, the two lower ones empty; panicle terminal, narrow or ample. Leaves narrow. *T. decumbens* (Heath Grass) is a native of Britain. Several species have been introduced, but they have no value from a garden standpoint.

TRIGECIOUS, TRIOICUS. Having male flowers on one individual, females on another, and hermaphrodite on a third.

TRIOLENA (from *treis*, three, and *olene*, the arm; alluding to the three processes from the base of the anthers). **ORD.** *Melastomaceae*. A small genus (three species) of nearly glabrous, pilose or paleaceous, stove herbs, natives of Mexico, Venezuela, and New Grenada. Flowers disposed in scorpioid racemes or spikes; calyx tube short, at length three-winged, the lobes five; petals five, obovate; stamens ten, sub-equal; anthers dissimilar. Leaves ample, petiolate, ovate or oblong. *T. scorpioides*, a perennial with the habit of *Bertolonia*, is the only species

Triolena—continued.

introduced. It requires a compost of rich, sandy loam and leaf mould, and a moist heat. Propagated by seeds; or by cuttings, inserted in sandy loam, under a bell glass, in bottom heat.

T. scorpioides (scorpioid-flowered). *f.* disposed in scorpioid racemes at the tips of axillary peduncles; petals oblong-obovate. *l.* somewhat acuminate, lightly serrulate. Stem 1in. or rather more in length, somewhat woody. *h.* 6in. Chiapas, 1859.

TRIONUM. Included under *Hibiscus* (which see).

TRIOPTERYS (from *treis*, three, and *pteron*, a wing; the samaras are three-winged). **ORD.** *Malpighiaceae*. A small genus (three species) of stove, climbing shrubs, inhabiting the West Indies and Mexico. Flowers blue or violet; calyx five-parted, with eight glands; petals clawed; stamens ten, all perfect, the alternate ones longer; racemes or panicles axillary and terminal; peduncles bracteate and bibracteolate at base. Leaves opposite, highly glabrous, lucid, veined, petiolate, without glands or stipules. It is doubtful whether the plants here described are still in cultivation, as they are very shy flowerers in this country. A compost of peat and sand is best suited to their requirements. Propagation may be effected by ripened cuttings, inserted in sand, under a hand glass, in heat.

T. rigida (rigid). *f.* blue; racemes distant, forming a loose panicle. May. *l.* rigid, coriaceous, orbicular-obovate, elliptic, or oblong-linear, shining, with many parallel and anastomosing veins. West Indies, 1822.

T. r. jamaicensis (Jamaica). *l.* $\frac{1}{2}$ in. to 1in. long, $\frac{1}{2}$ in. to $\frac{1}{4}$ in. broad.

T. r. lucida (clear). *l.* retuse or blunt, $\frac{1}{2}$ in. long, eight to sixteen lines broad.

TRIOSTEUM (from *treis*, three, and *osteon*, a bone; alluding to the three bony seeds, or rather nutlets). **Feverwort; Horse Gentian.** **ORD.** *Caprifoliaceae*. A genus comprising three species of hardy, perennial herbs; one is Himalayan and the others are North American. Flowers dirty white, yellow, or purple, often axillary, solitary or clustered, rarely spicate; calyx tube ovoid, the limb of five persistent lobes; corolla tubular-ampullate, the tube gibbous at base; limb oblique, with unequal, imbricated lobes; stamens five. Drupe two to (rarely) five or six-stoned. Leaves opposite, slightly connate at base, sessile, somewhat panduriform or obovate, entire. *T. foliatum*, the best-known species, thrives in a light, sandy soil with a little leaf mould. It may be multiplied by divisions of the plant, in spring; or by cuttings of the young shoots, inserted under a handlight, in the beginning of summer.

T. perfoliatum (perfoliate-leaved). *f.* brownish-purple, mostly clustered, sessile. June. *fr.* orange-colour, $\frac{1}{2}$ in. long. *l.* ovoid, abruptly narrowed below, downy beneath. *h.* 2ft. to 4ft. North America, 1730. Plant softly hairy. (S. B. F. G. ser. ii. 45.)

TRIPARTED, TRIPARTITE. Parted to the base in three divisions.

TRIPETALEIA. A synonym of *Elliottia* (which see).

TRIPETELUS. A synonym of *Sambucus* (which see).

TRIPHENA. See *Tryphena*.

TRIPHASIA (from *triphasis*, triple; alluding to the number of sepals and petals). **ORD.** *Rutaceae*. A monotypic genus. The species is a greenhouse, evergreen, spiny shrub. Its fruits, when ripe, have an agreeable, sweet taste; they are sometimes preserved whole in syrup, and are occasionally sent to this country from Manila as Lime berries. The plant succeeds in a compost of turfy loam and peat, and requires careful watering in winter. Propagation may be effected by cuttings, inserted in sand, under a glass, in heat.

T. trifoliata (three-leaved). Lime-berry Tree of Manila. *f.* white, sweet-scented, solitary, axillary; calyx three-lobed; three, free, imbricated; stamens six, free, sub-equal.

Triphasia—continued.

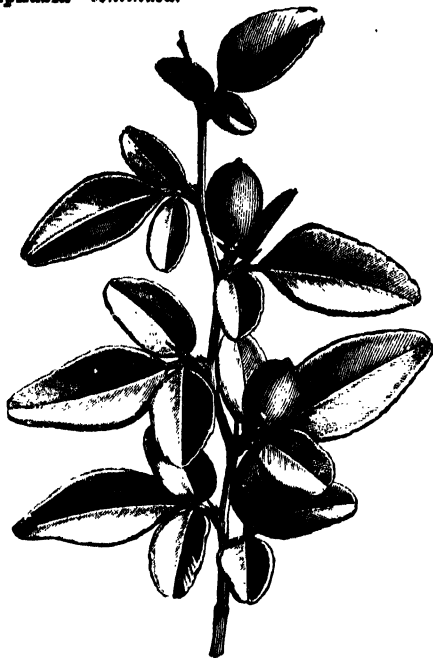


FIG. 105. FRUITING BRANCH OF *TRIPHASIA TRIFOLIATA*.

May to July. *fr.* red-bay colour, ovoid, as large as a hazel nut, by abortion one or two-celled, one or two-seeded. *l.* alternate, trifoliate; leaflets ovate, obtuse, often crenate, the lateral ones smaller. *h.* 5ft. China (and broadly cultivated), 1798. See Fig. 105.

TRIPHORA. Included under *Pogonia* (which see).

TRIPHYSARIA (from *treis*, three, and *physis*, a bladder; alluding to the three saccate segments of the lower lip of the corolla). *SYN.* *Oncorrhynchus*. *ORD.* *Scrophularinæ*. A genus comprising about twenty-three species of hardy, annual, North American herbs, now regarded, by Bentham and Hooker, as synonymous with *Orthocarpus*. Flowers yellow or purplish, solitary in the axils of the bracts, disposed in terminal spikes; corolla with a conspicuously trisacate lip very much larger than the slender, straight galea. Leaves alternate or nearly opposite. *T. versicolor*, the only species introduced, requires ordinary treatment.

T. versicolor (various-coloured). *fl.* cream-coloured, changing to rose-purple; lip of the corolla not more than a quarter the length of the densely pubescent tube. June. *l.* incised at apex; segments few, linear-saccateous. *h.* 8in. or more. 1837. Plant fastigiate much-branched. The proper name of this annual is *Orthocarpus erianthus roseus*.

TRIPINNATE. When the leaflets of a bipinnate leaf are themselves pinnate.

TRIPLADENIA. A synonym of *Kreysigia* (which see).

TRIPLARIS (from *triplex*, triple; the parts of the fructification are disposed in threes). *SYN.* *Velasquezia*. *ORD.* *Polygonaceæ*. A genus comprising not more than ten distinct species of stove trees, broadly dispersed over tropical South America. Flowers dioecious, sessile or nearly so within the bracts, disposed in long, softly or silky-pilose, simple or often branched spikes; perianth six-cleft, the male funnel-shaped, the female narrow. Nut prominently and rather acutely trigonal. Leaves alternate, shortly petiolate, often ample, ovate, oblong, or lanceolate. *T. americana* has been introduced, but it is a doubtful species, and is probably lost to cultivation.

TRIPLE-NERVED, TRIPLE-RIBBED. When of three ribs the two lateral ones emerge from the middle one a little above its base.

TRIPLET LILY. See *Triteleia*.

TRIPLEURA. A synonym of *Zeuzine* (which see).

TRIPLO. Thrice.

TRIPOLIUM. Included under *Aster*.

TRIPOLY. See *Aster Tripolium*.

TRIPSACUM (from *tribo*, *tripeo*, to thresh; alluding to the purpose to which the grain may be applied). *ORD.* *Graminææ*. A genus consisting of two species of rather tall, greenhouse or hardy Grasses, inhabiting America, from Mexico to Texas. Spikelets unisexual, monœcious, often two or three, rarely four, many or only one at the tips of the spike, the upper part of which is male, the lower female; glumes four; peduncles solitary or twin in the upper axils. Leaves long, subulate-acuminate. The species are valuable fodder-plants in their native places, but are too tender for our climate.

TRIPTEROSPERMUM. A synonym of *Crawfordia* (which see).

TRIPTEYGIUM (from *treis*, three, and *pterygion*, a small wing; referring to the fruit). *ORD.* *Celastrinææ*. A monotypic genus. The species is a highly glabrous, hardy, sub-scandent shrub. For culture, see *Celastrus*.

T. Wilfordii (Wilford's). *fl.* white, small; calyx five-lobed; petals five, inserted at the base of the disk; stamens five, on the margin of the disk, the filaments subulate; disk broadly cup-shaped; racemes short, axillary and terminal. June. *fr.* ½in. long, dry, indehiscent, three-winged, one-seeded. *l.* alternate, petiolate, ovate-oblong, attenuated at apex, serrated, thickly veined, exstipulate. *h.* 2ft. to 3ft. Japan, Formosa, and Corea, 1867. (R. G. 612.)

TRIPTILION (from *treis*, three, and *ptilon*, a wing; alluding to the three divisions of the pappus). *ORD.* *Compositæ*. A genus embracing about half-a-dozen species of hardy or half-hardy, annual or perennial, Chilean herbs. Flower-heads blue or white, rather small, homogamous, forming a leafy panicle or corymb at the tips of the branches; florets bilabiate, the outer lip entire or three-toothed, the inner entire or bifid; involucrel bracts few, very acute and spinescent, the outer ones shorter; receptacle naked or bristly-fimbriiferous; achenes minutely papillose. Leaves alternate, scattered, ciliated- or spiny-toothed or pinnatifid. Two species have been introduced. Seeds should be sown on a slight hotbed, in the beginning of April. The seedlings may be pricked out, and either planted out in a sheltered place, at the end of May, or flowered in pots, in a cool, airy greenhouse. A rich, light soil is necessary. *T. spinosum* may also be increased by divisions.

T. cordifolium (cordate-leaved). *fl.* heads white, sub-ternately clustered at the tips of the branches and branchlets; pappus bristles three, ciliated at apex. July. *l.* sessile, cordate-amplexicaul, nearly round, the margins toothed and furnished with distant spines. Stem erect, branched at apex. *h.* 6in. 1824. Annual. (B. R. 853.)

T. spinosum (spiny). *fl.* heads, outer lips of the florets blue, inner white; involucre glabrous. July. *l.* pinnately lobed; lobes terminated by a spiny mucrone. Stem corymbose at apex. *h.* 6in. 1827. Perennial. (B. 224; B. R. xxvii. 22; P. M. B. x. 269.)

TRIQUETROUS. Three-edged; three-cornered.

TRISECTED. Cut into three parts.

TRISETUM (from *treis*, three, and *seta*, a bristle; alluding to the three awns of the flower). Including *Rostraria* and *Trichæte*. *ORD.* *Graminææ*. A genus embracing nearly fifty species of hardy, perennial or rarely annual, tufted Grasses, broadly distributed over temperate and mountainous regions. Spikelets two (rarely three to six) flowered, often shining; glumes membranous, sub-scarious, or the flowering ones hyaline, the two lower ones empty; panicles sometimes densely spike-formed,

Trisetum—continued.

ovate or oblong, sometimes lax and effuse. Leaves flat. *T. flavescens*, the British representative of the genus, is particularly useful for agricultural purposes. None of the species possess any horticultural interest.

TRISIOIA. A synonym of *Uniola*.

TRISMERIA. Included under *Gymnogramme*.

TRISTAGMA (from *treis*, three, and *stagma*, a drop; in reference to the three honey-glands). *SYNS.* *Stemmatium*, *Stephania* (of Willdenow), *Stephanolirion*. *ORD.* *Liliaceæ*. A genus comprising only three species of greenhouse, bulbous plants, natives of Chili. Flowers not numerous, in terminal umbels, pedicellate; perianth calver-shaped, with a cylindrical tube, and six sub-equal, spreading lobes; corona of three to six sub-conate or free scales, or wholly deficient; stamens six; involucrel bracts two; scape simple, leafless. Leaves radical, few, narrow-linear. Corm sub-globose, tunicated. *T. narcissoides*, the only species introduced, is a pretty and interesting plant, somewhat resembling a *Narcissus*. It thrives in a compost of rich, sandy loam, and does not require much water. Propagation may be effected by seeds, or by offsets.

T. narcissoides (*Narcissus*-like). *fl.*, perianth tube dirty white, scarcely $\frac{1}{2}$ in. long, with six green bands; segments pure white on the face, with a slender, two-nerved, greenish keel; corona bright orange, erect; umbel five or six-flowered; scape slender, terete, purple, above 1 ft. long. September. *l.* about four, erect, $\frac{1}{2}$ in. high, narrow-linear, glabrous, acuminate. Bulb globose, less than 1 in. thick, with several brown, membranous tunics. 1875. *SYNS.* *Stemmatium narcissoides*, *Stephanolirion narcissoides*.

TRISTANIA (named in honour of Jules M. C. Tristan, 1776-1861, a French botanist). *ORD.* *Myrtaceæ*. This genus embraces about a dozen species of stove or greenhouse trees or tall shrubs: four inhabit the Indian Archipelago, two are natives of New Caledonia, and the rest are Australian. Flowers yellow or white, often rather small, disposed in axillary, pedunculate cymes; calyx five-parted; petals five, spreading; stamens indefinite. Leaves alternate, or approximate at the tips of the branches, somewhat whorled, rarely opposite. The following species are known to cultivation. They are very pretty, greenhouse, Australian plants, thriving in a compost of loam, peat, and sand. Half-ripened cuttings will root freely in sand, under a glass.

T. conferta (clustered). Australian Turpentine-tree. *fl.* yellow, in cymes of three to seven, usually on the young wood below the cluster of leaves; peduncle $\frac{1}{2}$ in. to $\frac{3}{4}$ in. long, or rarely elongated. July to September. *l.* alternate, crowded at the ends of the branches so as to appear whorled, ovate-lanceolate, acuminate or rarely almost obtuse, $\frac{3}{4}$ in. to $\frac{1}{2}$ in. long. 1805. A tall tree. (B. G. 1188.) *SYN.* *T. macrophylla* (B. R. 1839).

T. depressa (flattened). A synonym of *T. suaveolens*.

T. macrophylla (large-leaved). A synonym of *T. conferta*.

T. nerifolia (Oleander-leaved). Water Gum-tree. *fl.* yellow, in opposite, axillary cymes, but forming usually a terminal corymb, the central shoots not growing out till after flowering. June to September. *l.* opposite, lanceolate, acute, narrowed into a short petiole, $\frac{1}{2}$ in. to $\frac{3}{4}$ in. long, nerveless except the prominent midrib. 1804. A tall, slender shrub, or small tree, (L. B. C. 157.) *SYNS.* *Melaleuca nerifolia* (B. M. 1055), *M. salicifolia* (A. B. R. 485).

T. suaveolens (sweet-scented). *fl.* yellow, usually small, in axillary cymes; common peduncles $\frac{1}{2}$ in. to $\frac{3}{4}$ in. long, more or less flattened. August. *l.* alternate, petiolate, ovate-elliptic, ovate-lanceolate, or elliptic-oblong, obtuse or acuminate, more or less distinctly pinnveined and reticulated, $\frac{1}{2}$ in. to $\frac{3}{4}$ in. long. 1820. Shrub or tree. *SYN.* *T. depressa*.

TRISTICHOS. In three rows or ranks.

TRITELEIA (from *treis*, three, and *teleios*, complete; alluding to the perfect ternary arrangements of the parts of the flower). Triplet Lily. *ORD.* *Liliaceæ*. A genus consisting of about nine species of half-hardy, American, bulbous plants, now included, by Bentham and Hooker, under *Brodiaea*. Stamens affixed in the tube or throat, biseriate; filaments filiform, all bearing anther. The species best-known to gardeners are here described;

Triteleia—continued.

they are often confused with *Milla*. All thrive in a rich, well-drained soil, in sunny positions. Propagated by offsets, and by seeds. *T. uniflora* is now and then planted amongst short grass; but, although very pretty for a season or two, it does not permanently hold its own under such conditions. It forms a good bulbous plant for pots, flowering profusely in early spring. The flowers open in bright, and remain nearly or quite closed in dull, weather.

T. aurea (golden). *fl.*, perianth yellow, five to six lines long, the segments green-striped, oblong-spathulate, slightly spreading; spathe valves two, connate at base; umbels two to six flowered; scapes one to three, erect, $\frac{1}{2}$ in. to $\frac{3}{4}$ in. long. April. *l.* six to eight, filiform, $\frac{3}{4}$ in. to $\frac{1}{2}$ in. long. Bulb whitish, tunicated. Monte Video, 1838. (Ref. B. 42.)

T. conspicua (conspicuous). A variety of *T. uniflora*.

T. laxa (loose).* Jthuriel's Spear. *fl.*, perianth blue, funnel-shaped, $\frac{1}{2}$ in. to $\frac{1}{4}$ in. long, the segments lanceolate, acute, erectopatent; spathe valves many; umbels eight to twenty-flowered; scapes fragile, erect, 1 ft. to $\frac{1}{2}$ ft. high. July. *l.* nearly flat, $\frac{1}{2}$ in. to $\frac{1}{4}$ in. long, two to four lines broad. Bulb globose, $\frac{1}{2}$ in. to $\frac{3}{4}$ in. thick. California, 1832. (B. R. 1685.)

T. Leichtlinii (Leichtlin's). *fl.* slightly fragrant; perianth $\frac{1}{2}$ in. to $\frac{3}{4}$ in. long, the tube greenish, cylindrical, twice as long as the oblong, spreading segments, which are pure white on the face, but marked with a distinct, green keel down the back; umbels two or three, each one to three-flowered. January. *l.* about six to a cluster, overlapping the flowers, erect, glabrous, obtuse, $\frac{3}{4}$ in. to $\frac{1}{2}$ in. long. Chilian Andes, 1873. *SYN.* *Milla Leichtlinii* (B. M. 6236).

T. porrifolia (Leek-leaved).* *fl.*, perianth whitish-violet, funnel-shaped, nine to ten lines long, the segments lanceolate-spathulate, nearly thrice the length of the tube; spathe valves two, connate at base; umbels four to six-flowered; scape equalling the leaves. July. *l.* four or five, $\frac{1}{2}$ in. to $\frac{3}{4}$ in. long, one to two lines broad. Bulb ovoid, eight to twelve lines thick. Chili, 1868. *SYN.* *Milla porrifolia* (B. M. 5977; G. C. 1868, p. 990.)



FIG. 106. TRITELEIA UNIFLORA.

T. uniflora (one-flowered).* Spring Starflower. *fl.*, perianth pale lilac, $\frac{1}{2}$ in. to $\frac{1}{4}$ in. long, the segments lanceolate-spathulate, slightly spreading; pedicels $\frac{1}{2}$ in. to $\frac{3}{4}$ in. long; spathe valves

Triteleia—*continued*.

two, 3in. to 1½in. long; scapes one or (in gardens) very rarely two-flowered. April and May, l. six to nine, 6in. to 12in. long, ½in. to ¾in. broad. Bulb proiferous. Buenos Ayres, 1836. See Fig. 106. (B. R. 1821.) SYN. *Milla uniflora* (B. M. 3327).

T. u. conspicua (conspicuous). *fl.* broadly imbricated when expanded, the segments oblong-spathulate; pedicels often longer than in the type. SYN. *T. conspicua* (Ref. B. 43).

TRITERNATE. "When a common petiole divides into three secondary petioles, which are each sub-divided into three tertiary petioles, each bearing three leaflets" (Lindley).

TRITHINAX (from *treis*, three, and *thrinax*, a fan; alluding to the division and form of the leaves). ORD. *Palmar*. A small genus (two or three species) of stove, unarmed Palms, natives of Brazil, and one Chilean. Flowers small, hermaphrodite; spathes many, the lower ones inserted on the peduncle, oblong, obliquely cut, the upper ones obliquely truncate; spadices spreading, on thick peduncles, with flexuous branches. Fruit baccate, one-seeded. Leaves terminal, orbicular-ovate, flabellately multifid, glabrous; sheaths fibrous and spiny, erect or deflexed. For culture, see **Thrinax**.

T. acanthocoma (spine-covered). *fl.* spadix branched. l. large, flabelliform, cut two-thirds of the way down into numerous linear, bifid segments. Caudex dwarf, clothed with the persistent, netted sheaths, armed with numerous, stout, reflexed spines. Rio Grande, 1879. (R. G. 959; G. C. n. s., ix., p. 661.)

T. aculeata (prickly). A synonym of *Acanthorhiza aculeata*.

T. brasiliensis (Brazilian). *fl.* spadix within the upper leaves, much branched. l. large, 3ft. or more long, flabelliform, nearly orbicular; sheaths at the base composed of fibres, which are at first parallel and longitudinal, then obliquely interlaced, and finally plaited together at right angles like the pandanus mats in which coffee is sent from the Antilles and Bourbon; at the summit these stripes unite, forming a series of very long, stout spines, abruptly curved downwards. Caudex slender, 5ft. to 10ft. high, 2in. to 3in. thick. Brazil, 1875. (I. H. 203.)

T. mauritiiformis (Mauritia-like). A synonym of *Sabal mauritiiformis*.

TRITICUM (the old Latin name for Wheat, probably derived from *tritum*, crushed or ground). Wheat; Wheat Grass. Including *Agilops*. ORD. *Gramineæ*. A genus comprising scarcely half a score species of hardy, annual or biennial, erect Grasses, natives of the Mediterranean region and Western Asia. Spikelets two to five-flowered, distichously spicate, sessile, slightly compressed; glumes rigid, the two lower ones empty; spikes terminal, cylindrical or elongated; rachis flexuous, alternately excavated, continuous or rarely articulated. Grain ovoid or oblong, often villous at apex. Leaves flat. The plants formerly included in British Floras under this genus—viz., *T. caninum*, *T. junceum*, and *T. repens* (Creeping Couch or Cooch Grass), the last-named being only too well known—are now referred to *Agropyrum*, the specific names being the same in both genera. To *T. vulgare*, may be referred nearly all the varieties of Wheat, a grain well known to every one.

T. aestivum (summer). A form of *T. vulgare*.

T. hybarnum (winter). A form of *T. vulgare*.

T. vulgare (common). Wheat. *fl.* awned or muticous; spikelets usually four-flowered; valves ventricose, ovate, truncate, mucronate; spikes tetragonal, imbricated, the rachis tenacious. Grain free. *h.* 3ft. *T. aestivum* and *T. hybarnum* are mere forms of this, and *T. dicoccum*, *T. monococcum*, and *T. Spelta* (Spelt) are very nearly allied.

TRITOMA. A synonym of **Kniphofia** (which see).

TRITOMANTHE. A synonym of (which see).

TRITONIUM. A synonym of **Kniphofia** (which see).

TRITONIA (from *triton*, a weathercock; alluding to the variable direction of the stamens in different species). SYN. *Aletris*, *Waitzia* (of Reichenbach). Including *Montbretia*. ORD. *Irideæ*. A genus including about two dozen species of cool greenhouse or hardy, bulbous plants, indigenous to South Africa. Flower one in a spathe, sessile;

Tritonia—*continued*.

perianth tube slender, straight, sometimes very short, sometimes elongated, rarely loosely incurved at apex; limb concave or broadly campanulate, nearly regular or slightly oblique, the lobes broad, all similar, or the three lower ones thickened or marked with a spot at the base, or sometimes slightly smaller; stamens affixed to the base of the limb; filaments filiform, free; spathes at the sides of the peduncle or on a few scattered branches, short, membranous, often three-toothed. Leaves few, narrow-linear or broader and ensiform, often falcate. Stem simple or slightly branched. The most important garden species are here described. All thrive in the cool greenhouse, except where otherwise indicated. The hardy species like a well-drained, sunny border, and luxuriate in a fairly dry, rich soil. Some of the greenhouse species do well in the open air if planted in a sheltered, sunny spot—such as the foot of a south wall; they should, however, be housed during winter. When grown in pots, Tritonias require plenty of water during the period of growth, and a light, airy place close to the glass. When the leaves turn yellow, water should be gradually withheld, and the roots kept dry, or nearly so, until growth recommences. Propagated by division, or by seeds.



FIG. 107. UPPER PORTIONS OF INFLORESCENCE AND LEAF OF TRITONIA HYALINA.

T. aurea (golden). A synonym of *Crocossmia aurea*.

T. capensis (Cape). *fl.* three to five, pale reddish or yellowish-white; perianth tube pale rose, twice as long as the segments; segments unequal, the lower ones red-spotted; spathe unequal-valved, straw-colour; scape 1ft. high, branched or simple, terete, flexuous at apex. September. l. linear-ensiform, nerved, attenuated, long-sheathing at base, shorter than the scape. 1811. (B. M. 618, 1531.) SYN. *Montbretia capensis*.

T. crispata (curled). *fl.* four to eleven, secund; perianth yellowish-white, funnel-shaped, the tube thrice as long as the segments; segments irregular, the upper ones slightly gaping, oblong-ovate, obtuse, unguiculate, flat, the lower ones narrower, obtuse, ligulate, slightly ventricose, connivent, purple-spotted in the middle; scape 6in. to 10in. long, terete, six-leaved, flexuous. April. l. broadly lanceolate-ensiform, undulate-crippled, margined with minute bristles. 1787. (B. M. 678.) SYN. *Gladiolus crispus* (A. B. R. 142).

T. crocata (saffron-coloured)* *fl.* seven to nine, distichous; perianth saffron-coloured, campanulate, 1in. long, the tube equalling the spathe, sub-erect, the segments sub-equal, obovate, hyaline-fenestrate at base; scape terete, flexuous, leafy at base, nearly 2ft. long. June. l. broadly linear-ensiform, curved, striated, acute, shorter than the scape. 1758. SYN. *Ixia crocata* (B. M. 184).

T. crocosmiflora (Crocossmia-flowered)* *fl.*, perianth about 1½in. long, funnel-shaped, with a slender, curved tube, and a spreading, six-parted, orange-scarlet limb; panicle many-flowered, erect, bent in a zigzag fashion. A handsome, hardy hybrid, raised between *T. Pottii* and *Crocossmia aurea*. (F. M. n. s. 472; R. H. 1882, p. 124.)

T. deusta (copper-coloured). *fl.* five to ten, spicate, secund; perianth cinnabar-red, 1in. long, campanulate-infundibular, the tube short, erect; segments broadly ovate, the three inner ones carinate and spotted beneath with dark purple; spathe scarious; scape terete, flexuous, 6in. to 12in. long. May. l. broadly lanceolate-ensiform, acute, shorter than the scape, sheathing at base (B. M. 622.) SYN. *Ixia crocata nigro-maculata* (A. B. R. 134).

Tritonia—*continued*.

- T. fenestrata** (window-like). A synonym of *T.*
- T. flava** (yellow). *f.* three or four, secund, irregularly funnel-shaped; perianth yellow, lin. long, the tube cylindrical, erect, enlarged; segments ovate, acute, the lower ones narrower; scape 6in. to 9in. long, terete, leafy at base. February. *l.* lanceolate-ensiform, acute, curved, sheathing at base, shorter than the scape, two lines broad. 1780. (B. R. 747.) *SYN.* *Montbretia flava*.
- T. hyalina** (hyaline). *f.* seven to nine, spicate, distichous; perianth rose-colour, lin. long, the tube short and erect; segments regularly spreading, rounded and unguiculate at apex; scape terete, 1ft. long, curved above, leafy at base. May. *l.* broadly lanceolate-ensiform, acute, thickly striated. 1801. See Fig. 107. *SYN.* *T. fenestrata* (B. M. 704).
- T. lineata** (lined). *f.* two to seven, spicate; perianth straw-colour, veined, with orange spots, lin. long, the tube short and sub-erect; segments sub-equal, elliptic, the lateral ones retuse, the inner ones marked with three parallel, yellow lines; scape 8in. to 18in. long, terete, erect, curved at apex, leafy at base. May. *l.* lanceolate-ensiform, acute, white-ribbed and margined. 1774. *SYNS.* *Gladiolus lineatus* (B. M. 487), *Montbretia lineata*.
- T. miniata** (scarlet).* *f.* two to fourteen, secund or distichous; perianth scarlet, spreading-infundibular, 3in. to 1in. long, with a short, erect, enlarged tube, and nearly regular, ovate segments; scape terete, 9in. to 12in. long, erect, curved at apex, six to eight-leaved at base. August. *l.* broadly lanceolate-ensiform, long-acuminate, yellow-striated. 1795. (B. M. 603.)
- T. Pottsi** (Potts)* *f.*, perianth bright yellow, flushed on the outside with brick-red, about lin. long, funnel-shaped, the sub-equal, oblong-obtuse segments about half as long as the tube, which is cylindrical at the base, dilated suddenly at the middle;



FIG. 108. TRITONIA POTTSII, showing Habit and detached Flower.

spikes 6in. to 9in. long, equilateral, 2in. broad when expanded, twelve to twenty-flowered. August. *l.* about four in a distichous rosette at the base of the stem, linear-ensiform, 1½ft. to 2ft. long, 3in. to 5in. broad. Stem 3ft. to 4ft. long. Bulb globose. 1877. A very valuable and ornamental, hardy plant. See Fig. 108. (B. M. 6722.) *SYN.* *Montbretia Pottsi* (Gin. 1880, p. 84).

T. scillaris (Squill-like). *f.* scentless; perianth reddish, varying to white; perianth segments regularly and equidistantly disposed; tube capillary, twice or thrice as long as the spathe. May. *l.* narrow, Grass-like. *SYNS.* *Ixia polystachya* (B. M. 629), *l. p. incarnata* (A. B. R. 128), *l. reflexa* (A. B. R. 14).

T. securigera (hatchet-bearing). *f.* spicate, secund; perianth brown, lin. long, with an erect, enlarged tube, and equal, ovate, obtuse segments; scape terete, nearly 1ft. long, curved at apex, leafy at base. May. *l.* lanceolate-ensiform, flat, acute, striated, shorter than the scape, sheathing at base. 1774. *SYN.* *Gladiolus securiger* (B. M. 383).

T. squalida (squalid). *f.* distichous, infundibular-campanulate; perianth whitish-rose, 2in. long, with a short, erect tube, and equal, rounded-ovate, unguiculate segments; scape erect, simple, 2ft. high, leafy at base. May. *l.* lanceolate-ensiform, thick, yellow-ribbed and margined, acute. 1774. (B. M. 561.)

Tritonia—*continued*.

T. undulata (wavy). *f.* three or four, scentless; perianth red (said to vary through white and blue), the segments obovate, blunt, spreading; spathe membranous. June. *l.* six, linear, elegantly waved, half the length of the scape. Bulb somewhat oblong, attenuated upwards. *h.* 1ft. 1787. *SYN.* *Ixia crispata* (B. M. 599).

T. viridis (green). *f.* four to seven; perianth green, the tube twice as long as the segments, somewhat arcuate-reflexed, the segments linear-oblong, sub-equal, obliquely nodding, rotate-reflexed; scape triquetrous, nearly 1ft. long, dichotomous, flexuous at apex. July. *l.* filabelloid-distichous, wavy-crisped on the margins, acute, shorter than the scape. 1788. (B. M. 1275.)

T. Wilsoni (Wilson's). *f.*, perianth white, flushed with purple, the obovate, cuspidate segments twice as long as the tube; spikes simple or forked, lax, four to seven-flowered; scape 2ft. long below the spikes. *l.* five or six, narrow-linear, 1ft. to 1½ft. long, nearly quadrangular in section. 1886. Greenhouse.

TRIUMFETTA (named after Gio. Batt. Trionfetti, 1658-1708, an Italian botanist and author). Jamaican Paroquet-Bur. *ORD.* *Tiliaceæ*. A genus comprising about forty species of widely-dispersed, stove or greenhouse, stollate-pubescent herbs, sub-shrubs, or shrubs. Flowers yellow, axillary or leaf-opposed; sepals and petals five; stamens numerous. Leaves entire, or three to five-lobed, serrated. Several of the species have been introduced; but none of them are worth cultivating for ornament.

TRIURIDÆE. A natural order of very slender, white or discoloured herbs, inhabiting tropical forests of Asia and America. Flowers minute, racemose or spicate, monoecious or dioecious, rarely unisexual; pedicels bracteate; perianth three, four, six, or eight-parted, hyaline; segments connate at base, valvate, the tips often caudate; stamens few, various in number, sessile in the base of the perianth; anthers four-celled, two-valved. Carpels many; ripe ones obovoid, coriaceous and indehiscent, or two-valved, one-seeded. Leaves wanting, or bract-like, alternate, and nerveless. Stem simple, rarely divided, filiform, straight or flexuous, erect. The order comprises only a couple of genera — *Sciaphila* and *Triuris* — and about sixteen species.

TRIXAGO (of Muench). A synonym of *Stachys* (which see).

TRIXIS (from *trixos*, triple; alluding to the three-celled, triangular capsule). *SYNS.* *Castra*, *Perdicium* (in part). *ORD.*

Compositæ. A genus embracing about thirty species of stove or greenhouse herbs or shrubs, of variable habit, natives of Central and South America and the West Indies. Flower-heads yellow or whitish; florets bilabiate, the outer lip three-toothed, the inner bipartite or bifid;

involucral bracts often two-seriate; receptacle small; pappus bristles copious. Leaves alternate, sometimes decurrent. The two members of the genus which have been introduced are described below. Both thrive in a compost of sandy loam and leaf mould. *T. divaricata auriculata* requires the protection of a warm greenhouse in winter; it may be increased by cuttings, inserted in sand, under a bell glass, in May. Seeds of *T. senecioides* should be sown in the open ground, in April.

T. auriculata (eared). A synonym of *T. divaricata auriculata*.

T. divaricata auriculata (divaricate, eared). *f.*—heads white or yellowish-white; involucral scales acuminate. August and September. *l.* sessile, oval-lanceolate, acuminate, denticulate, nearly glabrous, dilated at base into obtuse auricles. Stems climbing, suffruticose. *h.* 1½ft. Brazil, 1827. (B. M. 2765, under name of *T. auriculata*.)

T. senecioides (Senecio-like). *f.*—heads white, solitary, on long peduncles; involucral scales in two or three series. August and September. *l.* all sessile and amplexicaul, oblong, sinuate-lobed,

Trixis—*continued*.

toothed, pilose-glandular above, slightly woolly beneath. Stems branched from the base, panicled, pubescent and pilose-glandular. *h.* 1ft. *Chill*, 1821. Annual. (*H. E. F.* 101.)

TRIXIS (of Gartner). A synonym of **Proserpinaca** (which *see*).

TRIZEUXIS (from *treis*, three, and *zeuxis*, a union; alluding to the cohesion of the three sepals). **ORD.** *Orchidææ*. A monotypic genus. The species is a small, stove, epiphytal Orchid, of no great beauty, but remarkable in having the lip superior, *i.e.*, with the parts of the flower in their proper position, the ovary not being twisted as in the generality of Orchids. The plant will succeed if fastened to a piece of wood. It may be multiplied by divisions.

T. falcata (sickle-leaved). *fl.* green, minute, densely racemose along the branches of the slender scape, which is 6in. to 12in. high. *l.* *oblongo-ovoid*, *oblong-linear*, *acuminate*, slightly *falcate*, 3in. to 6in. long, 3in. broad. (Columbian Andes and Trinidad, 1820. (*H. E. F.* 126; *L. E. C.* 975; *L. C. B.* 2.)

TROCHETA (named in honour of R. I. G. du Trochet, 1771-1847, a French physiologist and writer on botany). **ORD.** *Sterculiaceæ*. A genus comprising about half-a-dozen species of stove or greenhouse, evergreen shrubs or trees, natives of Mauritius, St. Helena, and Madagascar. Flowers rather large, often pendulous; calyx five-parted, coriaceous; petals five, flat, broad, persistent; staminal column short, bearing five ligulate staminodes; bracteoles none, or minute and deciduous; peduncles axillary, one to three-flowered. Leaves entire, coriaceous. Two species have been introduced. They thrive in a compost of well-drained loam, leaf mould, and sand. Cuttings will root in sand, under a glass.

T. erythroxyton (red-wooded). The correct name of plant described in this work as *Melbania erythroxyton*.

T. grandiflora (large-flowered). A synonym of *T. triflora*.

T. triflora (three-flowered). *fl.* white and yellow; sepals acuminate, 1in. long; petals obovate, 1½in. long; staminal column cylindrical; peduncles much deflexed, exceeding the petioles, three-flowered. December. *l.* oblong, crowded near the ends of the branches, 4in. to 6in. long, acute, sub-entire or dentate, broadly rounded at base, coriaceous, brown-tomentose beneath; petioles erect, 1in. to 2in. long. *h.* 10ft. Mauritius, 1842. Stove. (*B. R.* 1844, 21, under name of *T. grandiflora*.)

TROCHISCANTHES (from *trochiskos*, a small wheel, and *anthos*, a flower; in allusion to the form of the umbels). **ORD.** *Umbellifera*. A monotypic genus. The species is a tall, hardy, perennial herb, with small, white, polygamous, umbellate flowers, and ample or ternately compound radical or lower leaves. It is a native of the South of France and the Alps, and has no horticultural value.

TROCHLEATE. Twisted like a pulley.

TROCHOCARPA (from *trochos*, a wheel, and *karpos*, fruit; alluding to the radiated arrangement of the cells of the fruit). **SYN.** *Decaspora*. **ORD.** *Epacridææ*. A genus including half-a-dozen species of greenhouse, erect or diffuse shrubs or small trees, limited to Australia. Flowers spicate, each sessile within the small, subtending bract and two bracteoles; calyx five-parted; corolla tube cylindrical or campanulate, glabrous or with reflexed hairs inside at the top; lobes recurved, usually shorter than the tube; filaments short, filiform. Fruit a globular or depressed drupe, containing ten stones (or fewer by abortion). Leaves usually petiolate, flat or convex. *T. laurina*, the only species yet introduced, is a handsome tree, thriving in sand and fibry peat. Cuttings of the points of young shoots, or stubby, short side shoots getting firm at the base, should be inserted in sand, under a bell glass, and kept close in a frame or pit, at any time during spring or summer. More heat and moisture must be allowed after the flowering period, and an abundance of air and light before the end of the autumn.

Trochocarpa—*continued*.

T. laurina (Laurel-like). *fl.* white, small, in terminal, solitary or clustered, interrupted spikes, ½in. to 1in. long. June. *l.* usually clustered at the end of each year's shoots, so as to appear almost whorled, petiolate, broadly oval or elliptic, acuminate, shining, five to seven-nerved on both sides, mostly 1½in. to 2in. long. *h.* 20ft. to 40ft. 1829. (*B. M.* 3324.)

TROCHOSTIGMA. A synonym of **Actinidia** (which *see*).

TROLL FLOWER. An old name for the genus *Trollius*.

TROLLIUS (said to be derived from an old German word *trol*, a globe). (Globe Flower; Globe Ranunculus. **ORD.** *Ranunculaceæ*. A genus comprising about nine species of hardy, perennial, erect herbs, inhabiting the temperate and frigid regions of the Northern hemisphere. Flowers yellow or lilac, ample, solitary or few; sepals five or indefinite, regular, petaloid, commonly deciduous; petals five to eight, small, clawed, rarely indefinite, long-linear. Leaves alternate, palmately lobed or dissected. The best-known species are here described. A rather heavy soil and moist situation are most generally suitable, but Globe Flowers succeed well in the front part of mixed borders, and in many other positions where the soil is fairly good. The plants are of very compact and floriferous habit. Propagation may be effected by divisions, which should preferably be made in September; or by seeds. The latter do not usually vegetate until the year after they are sown.



FIG. 109. FLOWERING STEM AND ROOT-LEAF OF TROLLIUS EUROPEUS.

T. acaulis (stemless). *fl.* golden-yellow, 2in. in diameter; sepals seven, broadly oval, obtuse; petals fourteen, narrow-cuneate, ½in.

Trollius—continued.

T. altaicus (Altaiian). *f.* pale orange or yellow, 2in. in diameter; sepals ten, often fifteen to twenty, broad, obtuse, rarely acute, occasionally crenulate; petals five to fifteen, narrow-linear, obtuse. *l.* much divided, similar to those of *T. europæus*. *h.* 1ft. to 1½ft. 1857. (B. G. 188.)

T. americanus (American). A synonym of *T. laxus*.

T. asiaticus (Asiatic). *f.* dark yellow; sepals ten, spreading; petals ten, longer than the stamens. May and June. *h.* 1ft. to 1½ft. Siberia, 1817. This species closely resembles *T. europæus*, but the stems are usually one-flowered. (B. M. 235; R. G. 403.)

T. caucasicus (Caucasian). *f.* yellow; petals shorter than the stamens. Otherwise this species closely resembles *T. asiaticus*. Caucasus, 1817.

T. europæus (European).* Boits; Common Globe Flower; Golden Ball, &c. *f.* pale yellow, globose, 1in. to 1½in. in diameter; petals orbicular, concave; petals oblong, equalling the short stamens. June to August. *l.* radical ones petiolate, sub-orbicular, five-partite, the segments cuneate, lobed and cleft; cauline ones smaller, sessile. Stem 6in. to 2ft. high, simple, leafy. Arctic Europe (Britain), &c. See Fig. 103. (Sy. En. B. 42.)

T. laxus (loose). *f.* pale greenish-yellow or nearly white, twice the size of the common Buttercup; sepals five or six, spreading; petals fifteen to twenty-five, inconspicuous, much shorter than the stamens. May. *l.* palmately cut, *h.* 6in. to 9in. North America, 1805. SYN. *T. americanus* (B. M. 1968; L. B. C. 56).

T. patulus (spreading). *f.* golden-yellow; sepals five, spreading; petals one to five, equalling the stamens. *h.* 3in. to 12in. Siberia, 1800.

TROMOTRICHE. Included under **Stapelia** (which see).

TROPEOLEE. Included under **Geraniaceæ**.

TROPEOLUM (from *tropaion*, a trophy; the leaves are of the form of a buckler, and the flowers resemble an empty helmet). Golden Nasturtium; Indian Cress; Yellow Larkspur. ORD. **Geraniaceæ**. A genus comprising about thirty-five species of very hard-ome, twining or rarely diffuse, greenhouse or hardy, South American, annual or perennial herbs. Flowers orange, yellow, or rarely purple or blue, irregular; sepals five, loosely imbricated or sub-valvate, connate at base, the dorsal one produced into a free spur; petals five, or fewer by abortion, loosely perigynous, imbricated, the two upper ones more or less dissimilar to the rest; stamens eight, free, unequal; peduncles axillary, one-flowered. Fruit consisting of indehiscent, hardened-fleshy, wrinkled, one-seeded carpels. Leaves alternate, peltate or palmately angled, lobed or dissected; stipules wanting, or rarely minute. Tropæolums are mostly familiar twining plants, well adapted for growing in pots or planting out in greenhouses, and training up rafters, &c. They also succeed well outside during summer, but the foliage will not withstand the least frost without injury. For covering arbours, &c., or anything which is unsightly, the tall-growing annuals are not easily surpassed; *T. Lobbianum*, *T. majus*, and *T. peregrinum* are the best for the purpose. The dwarf varieties of *Tropæolum* are beautiful objects for mixed flower borders, and for placing in beds by themselves; they are exceedingly compact and floriferous. The annual species are readily raised from seeds, sown in the open border, in any moderately rich soil, in spring; or, as is best with *T. peregrinum*, they may be sown in pots, under glass, hardened off, and planted out at the end of May or beginning of June. The double varieties are practically perennials, as they must be increased by cuttings, which root readily in bottom heat; during winter, the plants must be kept in a light, airy situation. The tuberous-rooted section, such as *T. azureum* and *T. tricolorum*, thrive in sandy peat and leaf mould, or in turfy loam and peat, and do best under cool-house treatment. They are best grown singly in pots, and each plant trained over a little trellis; when in flower, they are exceedingly pretty and interesting. When growing, they require plenty of light, and abundance of water; when the stems die down, the pots should be stored away in some dry, cool spot, and water withheld until growth recommences, when the tubers must

Tropæolum—continued.

be carefully shaken out and reotted; this section may be increased from seeds, or by means of cuttings of the slender, wiry shoots, which callus and form small tubers in one season. *T. speciosum* requires a constantly moist and shaded position in a peat border, and is impatient of disturbance at the roots; it is propagated either from seeds, or by division of the long-creeping, underground rhizomes. *T. polyphyllum* likes a warm, sunny spot, rather dry than otherwise. Tropæolums do not require a very rich soil; they flower more profusely if not encouraged to grow over-luxuriantly.

Except where otherwise stated, the under-mentioned species are perennial twiners.

T. aduncum (hooked). A synonym of *T. peregrinum*.

T. albiflorum (white-flowered). *f.* petals whitish, within lined and dotted with gold and purple, large, plicate, undulated, the lower ones very long, and narrowly-ungulate. Summer. *l.* small, glaucous, digitate; segments three to five. Stems very slender, elongated. Peru or Chili. Greenhouse. (F. d. S. 241.)

T. azureum (azure-blue).* *f.* scarcely odorous; petals azure-blue, equal, obovate, attenuated into a long, greenish-white claw, deeply emarginate at apex. October. *l.* peltate, deeply five-lobed; lobes obovate or obversely lanceolate, the middle one larger and mucronate. Chili, 1822. Greenhouse. (B. R. xxviii. 65; F. d. S. May, 1846; P. M. B. ix. 247.) *grandiflorum* is a large-flowered form. (F. d. S. 1160; L. H. iii. 85.)

T. azureum (azure-blue), of Hooker. A synonym of *T. violajolium*.

T. Benthii (Benth's). *f.* calyx segments apiculate, equalling the straight spur; petals yellow; peduncles filiform, twice as long as the leaves. June. *l.* sub-orbicular, deeply peltately cut, pale green beneath; leaflets five or six, obovate, the front one larger, retuse-apiculate at apex. Root tuberous. Bolivia, 1853. Half-hardy.

T. brachycorac (short-horned). *f.* calyx segments obtuse; spur very short, obtuse; petals yellow, conformed. June. *l.* peltately cut; segments six or seven, oblong-obovate, entire, sessile. Root tuberous. Chili, 1850. Half-hardy. (B. M. 3851; B. R. 1926; F. d. S. 368; P. M. B. iv. 55; S. B. F. G. ser. ii. 370.)

T. chrysanthum (golden-flowered). *f.* petals golden-yellow, the two upper ones cuneate, shorter than the calyx and lined below with orange red veins, the three lower ones longer, unguiculate, flabellately plicate. Summer. *l.* peltate, orbicular-triangular, truncate at base, angularly three-lobed at apex, the margins absolutely repand entire. New Grenada, 1674. Greenhouse. (F. d. S. x. 1009; L. H. xiv. 162.)

T. crenatiflorum (crenate-flowered). *f.* petals yellow, obovate, spreading, sub-equal, truncate, and somewhat bicrenate at apex, the two upper ones lined with blood-colour. June. *l.* peltate, semi-orbicular, five-lobed; lobes obtuse or retuse, mucronulate. Peru, 1844. Greenhouse. (B. M. 4245; F. d. S. 166.)

T. Dockerianum (Decker's). *f.* calyx pubescent, longer than the straight, scarlet spur; petals blue, unequal, toothed, fibrillate-ciliated; filaments and anthers blue; style yellow. July. *l.* peltate, triangular, five to seven-lobed, transversely truncate at base. Venezuela, 1849. Greenhouse. (B. H. ii., p. 245; F. d. S. 490; L. & P. F. G. i. 16.)

T. digitatum (digitate-leaved). *f.* sepals appendiculate at base; petals golden, dentate-ciliated. July. *l.* peltate, five to seven-lobed; lobes rounded, entire. Venezuela, 1850. Hardy annual. (R. G. 1146, bearing name of *T. Gartnerianum* on plate, but *T. digitatum* in letter-press.)

T. edule (edible). *f.* spur acuminate; petals orange and green, sub-conformd, orbicordate, equalling the sepals. March. *l.* pseudo-compound, peltate, six-lobed; leaflets or segments oblong-lanceolate, attenuated at both ends, glabrous. Stems terete. Chili, 1841. Half-hardy. (B. 243; P. M. B. ix. 127.)

T. Gartnerianum. See **T. digitatum**.

T. Jarrattii (Jarratt's).* *f.* calyx bright orange-scarlet, spotted with yellow at base; petals bright yellow, the two upper ones pencilled with rich brown; pedicels 2½in. to 3½in. long. June. *l.* alternate, six or seven-lobed; petioles 1in. long, slender, twining. Santiago, 1856. Greenhouse. (P. M. B. v. 29.)

T. Lobbianum (Lobbi's).* *f.* calyx long-spurred, pilose; petals orange, obovate, the two upper ones entire, scarcely lobed, the three lower ones smaller, deeply toothed, fringed below, long-clawed. November. *l.* peltate-orbicular, obscurely lobed; glaucous beneath; lobes mucronulate; petioles (and peduncles) pilose. Columbia, 1843. Greenhouse. (B. M. 4037; F. d. S. ii. 3; P. M. B. xi. 271.)

T. L. fimbriatum (fringed). *f.* petals fringed. *l.* lobed. Of hybrid origin. (L. H. 1856, p. 101.)

T. majus (greatest). Great Indian Cress or Nasturtium. *f.* rich orange, large and showy, the two upper petals marked with deep reddish-brown, all obtuse; peduncles long. June to October. *l.* alternate, entire, nearly round peltate, sometimes

Tropaeolum—continued.



FIG. 110. PORTION OF FLOWERING STEM OF TROPAEOLUM MAJUS.

undulated or lobed. Peru, 1686. Hardy annual. The flowers and young leaves are frequently used in salads, and the former also for garnishing. If gathered when young and quite green,



FIG. 111. TROPAEOLUM MAJUS ATROPURPUREUM NANUM, showing Habit, detached Flower, and Leaf.

the fruits make an agreeable pickle. In certain conditions of atmosphere, the flowers have the power of emitting electric

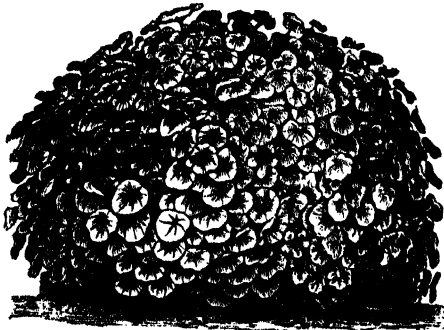


FIG. 112. TROPAEOLUM MAJUS NANUM COCCINEUM FOLIIS-AUREIS.

Tropaeolum—continued.

sparks in the evening. See Fig. 110. (B. M. 23.) There are very many varieties of this species, including *atropurpureum nanum* (see Fig. 111; F. d. S. 1236), a dwarf sort, known in gardens as TOM THUMB; *atrocaeruleum* (B. M. 3375; P. M. B. l. 176; S. B. F. G. ser. ii. 204), a form with dark blood-coloured flowers; and numerous double-flowered forms of which, perhaps, GRANDIFLORUM PLENISSIMUM, double yellow, with a deep maroon blotch at the base of each petal, and HERMINIA GRASHOFF (Gn. xx. 398), with scarlet flowers, are two of the best. A few of the finest dwarf kinds are: EMPRESS OF INDIA, bright crimson; GOLDEN KING, golden-yellow; KING OF TOM THUMBS, scarlet; KING THEODORE, very dark; PEARL, creamy-white; RUBY KING, rosy-scarlet. A TOM THUMB form, with golden leaves, is represented in Fig. 112.



FIG. 113. TROPAEOLUM TRICOLORUM, showing Habit and Portion of detached Flowering Stem.

T. minus (smallest). Small Indian Cress or Nasturtium. *f.* deep yellow, streaked with orange and red; petals each ending in a bristle-like point. June to October. *l.* somewhat repand. Peru, 1596. Hardy annual. This resembles *T. majus*, but is much smaller and weaker. The fruits, being smaller, are preferred to those of *T. majus* as a substitute for capers. (B. M. 98.)

T. Moritzianum (Moritz). *f.* spur dirty yellow, greenish towards the apex, straight; petals yellow, the upper ones margined and nerved with cinnamon-red, incised-cliate. July. *l.* peltate, seven-lobed, transversely truncate at base, glabrous; lobes rounded, obsolete mucronate. Caracas, 1839. Greenhouse. (B. v. 221; B. M. 3844; P. M. B. viii. 199.)

T. pendulum (pendulous). *f.* pendulous; calyx yellow, the spur straight; petals yellow, spatulate, the two upper ones marked with parallel red lines and a dingy violet spot, the three lower ones self-coloured. July. *l.* peltate, glaucous beneath, rounded-truncate at base; lobes five, the middle one mucronate. Branches terete. Central America, 1852. Greenhouse.

T. pentaphyllum (five-leaved). Five-fingered Indian Cress. *f.* calyx dull purple, 1½ in. long, the limb greenish, marked with deep purple within; petals bright vermilion, small, roundish, sub-ungulate; peduncles 4 in. long, solitary, axillary. June and July. *l.* about 2 in. across, digitate, of five oblong, entire, petiolulate, soft, glabrous, spreading leaflets; petioles purple, 2 in. long, twisted like tendrils. Stem purple, slender, greatly elongated, slightly twisted, branched. Root a large, oblong tuber. Buenos Ayres, 1829. Half-hardy. (B. M. 1390.) SYN. *Chymocaryus pentaphyllum*.

T. peregrinum (exotic).* Canary-bird Flower; Canary Creeper. *f.* petals yellow, scarcely longer than the calyx, the two upper ones lobed, mucronate, the three lower ones smaller, fringed; spur hooked, about the length of the upper petals. June to October. *l.* peltate-nerved, somewhat kidney-shaped, five to seven-lobed; lobes entire, mucronate. Peru and Mexico, 1810. Hardy annual or greenhouse perennial. (A. B. R. 597; B. M. 1351; B. R. 718; S. B. F. G. ser. ii. 134.) SYN. *T. aduncum*.

T. pinnatum (pinnate-flowered). *f.* pinnate; petals yellow, wedge-shaped, toothed at the apex. June to November. *l.* somewhat peltate; lobes obtuse, unequal. Hybrid, raised in 1800. Greenhouse. (A. B. R. 535.)

T. polyphyllum (many-leaved).* Yellow Rock Indian Cress. *f.* calyx with an attenuated spur; petals yellow, longer than the calyx, obovate, the upper ones obovate, sessile, the lateral lower ones emarginate, clawed. June. *l.* leaflets ten to twelve, digitate, fleshy, oblong, entire, the middle one trifid. Chili, 1827. Plant prostrate. Hardy. (B. M. 4042; F. d. S. 2066; G. C. n. a., xx., p. 241; P. M. B. x. 175.)

Tropæolum—continued.

T. sessilifolium (sessile-leaved). *f.* on solitary or twin terminal peduncles; calyx with a long spur; petals red, shaded with violet, conformed, spatulate-obovate, emarginate, exceeding the calyx. Summer. *l.* sessile, five-lobed; lobes oblong, glabrous, glaucous. Chili, 1868. Plant prostrate. Greenhouse. (G. C. 1868, p. 842.)

T. Smithii (Smith's). *f.*, spur of the calyx straight, twice as long as the corolla; petals yellow, all lobed and fringed. June. *l.* peltate-nerved, deeply palmately five-lobed. New Grenada, 1776. Hardy annual or greenhouse perennial. (B. M. 4385; F. d. S. 384.)

T. speciosum (showy).* Flame-flowered Nasturtium. *f.*, spur long; petals scarlet, obovate, exceeding the calyx, the upper ones narrow-cuneate, the lower ones sub-orbicular. June. *l.* sub-peltate, six-lobed; lobes oblong, obtuse, pilose-pubescent beneath. Stems pilose-pubescent. Chili, 1846. Hardy. (B. M. 4323; F. d. S. 281; P. M. B. xiv. 173.)

T. tricolorum (three-coloured).* *f.* solitary, much shorter than the pedicels; calyx orange-scarlet, tipped with black, turbinate; petals orange, obovate, entire, equal, shorter than the slender, attenuated spur. June to October. *l.* peltate y five or six-parted; segments obovate or oblong, obtuse. Chili, 1828. Half-hardy. A very showy plant. See Fig. 113. (B. M. 3169; B. R. 1935; F. d. S. 369, 1881; P. M. B. ii. 123; S. B. F. G. 270.) There are varieties of this species with yellow and green flowers, viz., *T. t. Regelianum* and *T. t. Schultzei* (R. G. 428).



FIG. 114. PORTION OF FLOWERING STEM OF *TROPÆOLUM TUBEROSUM*.

T. tuberosum (tuberous-rooted). Peruvian Nasturtium. *f.*, petals yellow and red, almost as long as the calyx, entire or toothed. September. *l.* peltate-nerved, five-lobed, transversely truncate at base, smooth. Roots tuberous, depressed, edible when boiled. Peru, 1827. Half-hardy. See Fig. 114. (B. H. ii. 36; B. M. 3714; F. d. S. 452; P. M. B. v. 49; R. H. 1853, 18.)

T. umbellatum (umbellate-flowered). *f.* umbellate; calyx cylindrical, longer than the slightly curved, obtuse spur; petals orange-red, spatulate, straight, acute, three of them exceeding the calyx, the other two minute and scale-like. June. *l.* somewhat peltate, cordate, five-lobed. Quito, 1846. Greenhouse. (B. M. 4337; F. d. S. 302.)

T. violæfolium (Viola-leaved). *f.*, spur short, slightly curved; petals at first of a beautiful azure-blue, becoming paler, spreading, equal, obovate, deeply emarginate at apex, attenuated into long, whitish claws. October. *l.* peltate, deeply five-lobed; segments unequal, obovate or obversely lanceolate, obtuse, the middle one larger, mucronate. Root tuberous. Chili. Greenhouse. (B. M. 3685, under name of *T. azureum*.)

T. Wagnerianum (Wagner's). *f.*, spur pink straight, tubular, lin. to 1½ in. long; petals violet, wedge-shaped, seven-toothed towards the apex; pedicels very slender, about 2 in. long. July. *l.* peltate, oblong-triangular, rather obliquely hastate, truncate at base, acuminate at apex, pale beneath. Venezuela, 1850. Greenhouse. (B. H. ii. 1; F. d. S. 553.)

TROPHIANTHUS. A synonym of *Aspasia* (which see).

TROPHIS (from *trophis*, fodder; alluding to the use of some of the species). Ramoon-tree. SYN. *Bucephalon*. ORD. *Urticaceæ*. A small genus (five or six species) of stove trees or shrubs, inhabiting the West Indies, Mexico, and the Andes of South America. Flowers sessile or shortly pedicellate; spikes or racemes solitary or twin in the axils, the males loosely bundle-flowered, the females often short and few-flowered. Leaves alternate, petiolate, entire or few-toothed, those of the sterile branches sometimes lobed. The leaves of *T. americana* are said to be occasionally used in the West Indies as fodder. One or two of the species have been introduced, but they are probably lost to cultivation.

TROPICAL DOCKWEED. See *Pistia Stratiotes*.

TROPIDIA (from *tropis*, *tropidos*, a keel; in allusion to the keel-shaped labellum). SYNS. *Cnemidia*, *Decaisnea*, *Govindovia*, *Plychochilus*. ORD. *Orchideæ*. A small genus (about five species) of tall, leafy, often branched, stove, terrestrial Orchids, natives of the East Indies, the Malayan Archipelago, and the Pacific Islands. Flowers mediocre, in short spikes; sepals connivent; lip sessile at the base of the column, erect. Leaves ample or reed-like. None of the species are in cultivation in this country.

TEOPIS. In Greek compounds, this term signifies the keel of a papilionaceous flower or any part resembling it.

TROS. Included under *Narcissus*.

TROTTLER. See *Symphytum asperillum*.

TROWEL. A garden Trowel is a most useful and well-nigh indispensable tool for lifting small plants from one place and inserting them in another, and for planting anything out which has previously been growing in pots, as, for example, during the bedding-out season, when numerous subjects have to be so transferred. Trowels are preferable to dibbers at any time, as with them the holes may be made larger, and the roots spread out better. Fern Trowels are narrower than the ordinary garden kind; as the name implies, they are intended for lifting Ferns, and are chiefly used by collectors of these plants when searching for them in their native habitats.

TROXIMON (from *troximos*, edible, which the plants of this genus are not). SYN. *Agoæris*. Including *Ammogelon* and *Mucrorhynchus*. ORD. *Compositæ*. A genus comprising about sixteen species of hardy, almost stemless, annual or perennial herbs, natives of North-western and Southern extra-tropical America. Flower-heads yellow or orange, homogamous; florets ligulate, truncate five-toothed at apex; involueral bracts in many series, the outer ones gradually shorter and broader; receptacle flat, naked or foveolate, rarely bearing a few pulvæ between the florets; achenes glabrous; pappus bristles copious; scape erect, leafless, one-headed. Leaves radical, entire, deeply toothed, or pinnatifid. *T. glaucum* and its variety are now probably the only known garden representatives of the genus, although others have been introduced. They are perennials, thriving in sandy loam. Propagation may be effected by divisions.

T. glaucum (glaucous). *f.* heads bright yellow, nearly lin. in diameter; involueral bracts loosely imbricated in three or four series. May and June. *l.* linear-lanceolate, acute, entire, or rarely with one or two small teeth. *h.* lft. United States, 1811. (B. M. 1667.)

T. g. dasycephalum (thick-headed). *f.* heads often bearing a few chaffy scales among the florets; involucre woolly, at least when young. *l.* (and scape) often somewhat pubescent. (B. M. 3462). SYN. *Ammogelon graveolens*.

TRUE LOVE. See *Paris quadrifolia*.

TRUFFLES. Fungi, living below ground, or rarely on the surface of the soil. They are, externally, somewhat like potatoes or other tubers; hence, the genus of most importance has been named *Tuber*, and from it

Truffles—*continued.*

the order is called *Tuberacei*. The structure of the order is as follows: The exterior is covered with a layer of thickened cells, which incloses a mass of mycelium. In

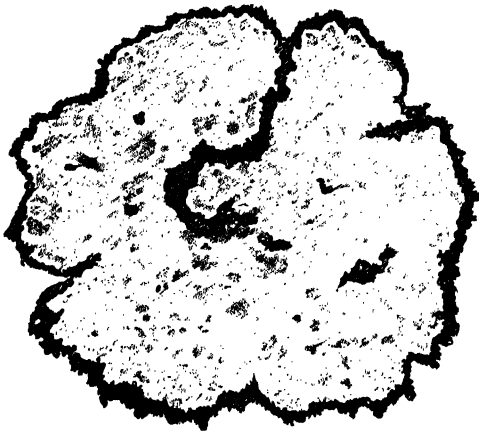


FIG. 115. TUBER.—Section showing dark Surface Layer and Cavities (shaded) in which the Asci and Spores lie.

this may be cavities (see Fig. 115), lined with a layer of cylindrical asci; or the asci may be packed among the coils of the mycelium, without cavities. In each ascus is a definite number of spores (usually four or eight), which are often beautifully marked and ridged, and are usually coloured. The *Tuberacei* thus belong to the division *Ascomycetes*. While young, they are fleshy in texture; but when mature, the interior is filled with a dusty-brown mass of spores, so that, in this stage, they look much like Puff-balls (see *Lycoperdon*), to which, however, they are not nearly related. The term Truffle is sometimes employed to denote a second group of subterranean Fungi, of very similar appearance, namely the *Hypogei*; but in the latter there are no asci, and the spores are produced, singly, on the tips of outgrowths from the ends of large cells (basidia), as in Mushrooms; but the basidia line internal cavities, instead of being exposed on the surface, as in the last-named (which see). It is better to restrict the name Truffles to the *Tuberacei*, or to distinguish the latter as the "true Truffles." They include a considerable number of genera, of which a good many are represented in the South of England; but they become much rarer northwards, and few reach Scotland. The number of species is comparatively small. They vary in size, from about $\frac{1}{2}$ in. to 3 in. or 4 in. in diameter. The genera are distinguished by the nature and markings of the outer coat (peridium), and by the forms of the asci and spores.

The chief importance of Truffles arises from the fact that several species are highly esteemed as condiments, on account of the flavour that they impart to the food with which they are cooked. The edible Truffles chiefly belong to the genus *Tuber*, *T. aestivum* being almost the only species sold in English markets. In France and other European countries, several other species are also made use of, and are even more highly esteemed. The large White Truffle (*Choiromyces albus*) is sometimes employed, but is inferior to the genus *Tuber*. Owing to their concealed growth, Truffles are very apt to be overlooked; and Truffle-hunters take advantage of the keen sense of smell of dogs, or occasionally of pigs, these animals being trained to hunt over the ground, and to stop over the spots where they scent the Fungi. The plants prefer chalky soils, and there seems to be a connection between the various species and certain trees. For example, *T. aestivum*

Truffles—*continued.*

is usually found in the shade of Beeches, though it also grows under Birches, Chestnuts, Hazels, Hornbeams, and Oaks; and *T. macrosporum* and *T. brumale* prefer the shade of Oaks. Attempts have been made to cultivate Truffles, or, rather, to promote their growth in suitable localities. The method found most successful in France is to inclose spaces over chalky soils, and to sow them with acorns. When the Oaks are about twelve years old, Truffles are usually sufficiently abundant in the plantation to be worth working; and they continue to be produced for twenty or thirty years. It has been observed on Salisbury Plain that when plantations of Beeches are formed, alone or mixed with Firs, in a few years Truffles are to be found in them, and they continue productive for from ten to fifteen years. Experiments by watering the soil with the washings from sliced Truffles have not given decisive results.

TRUMPET CREEPER. A common name for *Tecoma radicans* and other species.

TRUMPET FLOWER. A common name for various large trumpet-shaped flowers; e.g., those of *Bignonia*, *Tecoma*, &c.

TRUMPET HONEYSUCKLE. A common name for *Lonicera sempervirens* (which see).

TRUMPET LEAF. See *Sarracenia*.

TRUMPET LILY. See *Richardia africana*.

TRUMPETS. A common name for *Sarracenia flava* (which see).

TRUNCARIA. A synonym of *Adelobotrya* (which see).

TRUNCATE. Terminating very bluntly and abruptly, as if a piece had been broken off.

TRYMALIUM (from *trymalia*, a perforation; in reference to the small holes at the top of the ORD. *Rhamnea*. A small genus (five species) of Australian, greenhouse shrubs, with the habit and deciduous stipules and bracts of *Pomaderris*, but with smaller flowers and a more slender inflorescence. Calyx limb five-lobed to the base; petals five, hood-shaped, entire or three-lobed, but not usually inclosing the anthers; stamens five, the filaments rather short; panicles usually narrow, or the cymes few-flowered. None of the species are particularly ornamental. *T. Billardieri* is grown in this country. It thrives in sandy loam and leaf mould, and may be increased by cuttings, inserted in a similar compost, under a bell.

T. Billardieri (Labillardière's). *f.* numerous, in loose, narrow, terminal panicles 2 in. to 6 in. long. *l.* sometimes broadly ovate or obovate, very obtuse, 1 in. to 2 in. long, sometimes ovate or ovate-lanceolate, more or less acuminate, 2 in. to 3 in. long, entire or crenate, glabrous or pubescent above, white, hoary, or villous beneath. A tall shrub.

TRYPHENA (from a Greek proper name). Also written *Triphama*. A genus of Night-moths, nearly related to *Noctua* (which see) and *Agrotis*; but the species are readily distinguished from those of both genera by the hind wings, which are yellow or orange, with a black band near the hind margin, from which it is separated only by a fringe similar in colour to the area of the wings. There is usually a dark, crescentic mark near the middle of each hind wing. These moths are well known to amateur entomologists as the "Yellow-Underwings." The fore wings are rather narrow, and vary in ground-colour from grey to olive-green or rich amber-brown. Their front margin is sometimes pale; and there are several narrow cross-bars (some paler and others darker than the ground-colour), and two spots near the middle of each wing outlined with grey. There are six British species, varying from 1 in. to 2 in. in spread of front wings. They differ, also, in the breadth

Tryphæna—continued.

of the black band, and in the depth of colour in the yellow or orange area of the hind wings. The larvæ mostly belong to the group of **Surface Caterpillars** (which see) in general appearance and in habits. The body is smooth and cylindrical, and the head small. The colour varies from dingy ochreous, or dull yellowish-green, to dark brown, with (usually) a paler line down the back, and pale and dark mottlings; but space will not permit of giving minute

A very common species is *T. pronuba* (Common Yellow Underwing). The front wings expand to from 2in. to 2½in.; the hind wings are yellow, with the black marginal band rather narrow, and there is no dark spot in their middle. The larvæ of this species feed near the top of the roots of Lettuces, Cabbages, and almost all other kinds of garden vegetables, as well as on many flowering plants. They burrow into the plants, or hide just below the surface of the soil; and when full-fed, in spring, they make earthen cocoons, and become pupæ in the soil. *T. lanthina* (Lesser Broad-bordered Yellow Underwing) has an expanse of wing of about 1½in. The front wings are rich brown, with purple tints, and three wedges of grey extending inwards from the front margin. The hind wings have the base black, and the broad, marginal band intense velvety-black; the crest of each wing is orange. The larvæ feed in Primroses, and in other garden flowers, during winter, and become pupæ, in spring, in cocoons in the soil. *T. interjecta* (Least Yellow Underwing) reaches only about 1½in. in span. The front wings are rusty-brown or dull red, with darker lines, and a smoky band near the hind margin. The hind wings are dark at the base, with a smoky-black marginal band, a similar shade along the inner margin, and a dark spot in the yellow median area. The larvæ feed on low plants, such as Dock and other weeds, in winter and spring, like those already mentioned. *T. fimbria* (Broad-bordered Yellow Underwing) has a spread of wings of 2in. to 2½in. It is easily known by its size, and by the very broad, intensely black marginal band, and the deep orange, unspotted area (extending to the base) of the hind wings. The larvæ feed in autumn on leaves of Birch, Sallow, and other trees, hibernate, and in spring eat the young leaves of the same trees, crawling down the trunk before daylight appears, and hiding in the ground all day, to crawl up again in the evening. *T. orbana* (Lesser Yellow Underwing) varies in spread of wings from 1½in. to 1¾in. The front wings vary in depth of colour. The hind wings are yellowish, clouded with grey at the base, and have a dark grey, crescentic spot in the middle, and a rather narrow, blackish marginal band. The larvæ feed in autumn on Chickweed and other low plants;

but, after hibernation, in spring they ascend the stems of Hawthorn and Sallow, and eat the young leaves. *T.* is too uncommon to call for special mention here

Remedies. These should be employed as recommended against **Noctua** (which see)

TSIANA. A synonym of **Costus** (which see).

TSUGA (the Japanese name for these trees). ORD. *Coniferae*. A small genus (eight species) of hardy, evergreen trees, with the ultimate branches slender and often pendulous; three are North American, and two Asiatic. Flowers monocious; males sub-sessile, solitary in the axils of the upper leaves; female catkins solitary, terminal, globose, with few empty, stipitate scales. Leaves acicular

continued.

or narrow-linear, spirally scattered, sometimes distichously spreading, flat or (in one species) convex above. Cones sub-globose, often reflexed, lin. or less in length, or (in one species) rather longer. The species of this genus are often confused with those of *Abies*. For culture, see **Pinus**.

T. Brunoniana (Brown's). *I.* solitary, somewhat distichous or scattered, flat, linear, spreading, obtuse or slightly pointed, minutely toothed towards the apex, reflexed on the margins, glossy-green above, milky-mexy below. cones terminal, lin. long, solitary, sessile. Branches numerous, slender, pendulous. h. 70ft. to 80ft. Bhotan. (G. C. n. s., xxvi., pp. 73, 501.) SYNS. *Abies Brunoniana*, *A. dumosa*.

T. canadensis (Canadian).* Hemlock Spruce. *I.* solitary, flat, irregularly distichous, ½in. to ¾in. long, downy when young, rough at the margins, blunt, vivid light green above, with two

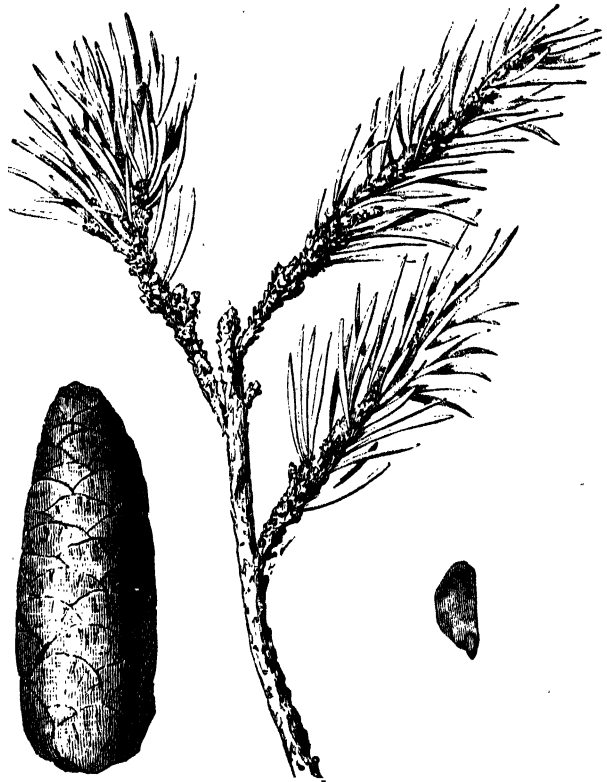


FIG. 116 BRANCH, CONE, AND SEED OF TSUGA ROEZLII.

silvery stripes beneath. cones pendulous at the tips of the branches, ½in. to ¾in. long, oval. Branches numerous, slender and downy when young, spreading, rather flat. h. 60ft. to 80ft. North America, 1736. SYNS. *Abies canadensis*. The following varieties are enumerated by Gordon, in "The Pinetum":

T. c. alba-spica (white-spiked). A rather pretty form, differing from the type in having the leaves on the ends of the young growth of a whitish colour.

T. c. gracilis (slender). *I.* linear, blunt-pointed, glossy above, glaucous beneath, more or less obliquely placed all round the shoots, and seldom more than ½in. long. Branches and branchlets very slender, little divided, more or less drooping at the ends.

T. c. milfordensis (Milford). A dwarf variety, globular in form, with the shoots slender and drooping, and the leaves much smaller than those of the type; but it is quite distinct from

T. c. nana (dwarf). A dwarf variety, not exceeding 3ft. in height, and spreading on the ground, with a more tufted foliage than the type.

v—continued.

T. caroliniana (Carolina). *L.* larger, wider, and darker-coloured than in *T. canadensis*, six to ten lines long, and nearly one line broad, retuse or often notched at the ends. *cones* also larger, ten to sixteen lines long, the scales oblong, longer than wide, spreading when ripe at nearly right angles, the broad bracts slightly cuspidate, the seeds less than half the length of the narrow wing. *h.* 50ft. to 60ft. North Carolina, 1836. A compact, pyramidal tree, with flatt-topped spray. (G. C. n. s., xxvi., p. 781.)

T. Hookeriana (Hooker's). *L.* closely set, linear, mucronate, and erect, of a pale, slightly glaucous tint. *cones* ovoid-cylindrical, 2 to 2½ in. long, ½ in. wide, pendent, dark purple, when ripe pale fawn-coloured; scales coriaceous-imbriated; bracts short, persistent. California, 1834. A very graceful tree, thickly branched, and very distinct.

T. Mertensiana (Mertens'). *L.* Very similar to *T. canadensis*, distinguished by its shorter, slenderer leaves, more robust and rapid growth, more spreading branches, and deeper, red-coloured bark; and also by the more elongated scales of its cones and the proportionately longer wings of the seeds. *h.* 100ft. to 150ft. California, 1851. *SYN. Abies Mertensiana.*

T. Pattoniana (Patton's). *L.* Californian Hemlock Spruce. *L.* angular, acutish, attenuate at the base, often curved, ½ in. to 1 in. long. *cones* cylindrical-oblong, 2 in. to 3 in. long. Sierra Nevada, 1851. Described by Dr. Engelman as "a tall, strictly pyramidal tree, 100ft. to 150ft. high, and 2ft. to rarely 4ft. through, of graceful habit, with slender, pubescent branchlets, and light green foliage." *SYN. Abies Williamsoni.*

T. Rooslii (Roosli's). *L.* scattered, short, slightly twisted, flat above, rounded beneath, greener on both surfaces. *cones* about 2 in. long, with large, entire, thin scales; seeds deep red, very small, with a large, membranous wing. Branches pendulous. *h.* 50ft. to 60ft. North California. A curious species, with the habit of *Conarus Dodardus*. See Fig. 116. (R. H. 1870, 21.)

T. Sieboldii (Siebold's). *L.* solitary, somewhat distichous, thickly set on the branches, frequently alternate, flat, slightly linear, obtuse, rarely acute, entire, dark green above, with two white-glaucous bands beneath. *cones* terminal, 1 in. long, elliptic, blunt. Branches irregularly spreading, drooping at the ends; branchlets slender, recurved. *h.* 80ft. to 100ft. Japan. *SYN. Abies Tsuga.*

TUBEFORM. Hollow and dilated at one extremity, like the end of a trumpet.

TUBE. The part of a gamosepalous calyx, or gamopetalous corolla, formed by the union of the edges of the sepals or petals. A staminal Tube is formed from the cohesion of the filaments in monadelphous flowers.

TUBEFLOWER. A common name for *Clerodendron Siphonanthus* (which see).

TUBER. A roundish, underground, succulent stem, covered with buds or "eyes," from which new plants or Tubers are produced; e.g., the Potato. A receptacle of vegetable food.

TUBER. See *Truffles*.

TUBERCLED. Covered with small warts or excrescences.

TUBERCULE. A term applied to simple roots which acquire a succulent consistency, become reservoirs of vegetable food, and serve for propagating purposes, in consequence of being terminated by a bud. A little tuber.

TUBEROSE. See *Polianthes tuberosa*.

TUBER ROOT. A common name for *Asclepias tuberosa* (which see).

TUBS. Wooden Tubs are sometimes used for large plants, such as Palms, Oranges, Tree Ferns, &c. It is important that good drainage should be provided, and porous soil used at first, as the roots cannot be examined very readily afterwards. Trees in Tubs will often remain for several years without the soil being renewed, if watering is properly attended to, and an occasional top-dressing is given.

TUCKERMANNIA. A synonym of *Corema* (which see).

TULBAGHIA (named after Tulbagh, a Dutch governor at the Cape of Good Hope, who died in 1771). *SYN. Oenothera.* *ORD. Liliaceae.* About a dozen species have been referred as such to this genus, but Baker

Tulbaghia—continued.

accredits this rank to nine only. They are mostly green-house, rhizomatous, perennial herbs, with a garlic-like odour, inhabiting South and tropical Africa. Flowers numerous, in a terminal umbel, pedicellate; perianth urceolate or nearly salver-shaped, with six sub-equal, spreading lobes; corona rather fleshy shorter than the lobes; stamens six; involucrel two, scarious, broad; scape simple, leafless. Leaves radical, ligulate, the withered sheath sometimes forming, with the rhizome, an imperfect oorm. The species known in gardens are described below. They are interesting subjects when in flower. Sandy loam and peat form the most suitable compost for Tulbaghias. Propagation may be effected by offsets, or by seeds.

T. affinis (related). A form of *T. alliacea*.

T. alliacea (Onion-scented). *f.*, perianth greenish-purple, five to six lines long; corona obscurely red, fleshy, entire or crenate; umbels four to twelve-flowered; scapes 9 in. to 18 in. long. June. *L.* five or six, 6 in. to 9 in. long, two to three lines broad. 1820. (Ref. B. 349.)

T. a. affinis (related). *f.*, perianth segments half the length of the tube, narrower. *L.* 1 ft. or more long, three to six lines broad. Altogether a more robust plant than the type. *SYN. T. affinis.*

T. a. Ludwigi (Ludwig's). *f.*, scape 1½ ft. to 2 ft. long. *L.* 1 orate, 6 in. to 8 in. long, eight to nine lines broad. *SYN. T. Ludwigi* (B. M. 3547).

T. alliacea (Onion-like), of Sims. A synonym of *T. capensis*.

T. capensis (Cape). *f.*, perianth greenish-purple, the segments half the length of the tube; staminodia obscurely purple, deeply emarginate; umbels six to eight-flowered; scapes 1½ ft. to 2 ft. high. June. *L.* ten to twelve, 1 ft. or more long, four to six lines broad. 1774. (B. M. 806, under name of *T. alliacea*.)

T. Ludwigi (Ludwig's). A form of *T. alliacea*.

T. violacea (violet). *f.*, perianth purplish-violet, eight to nine lines long, the segments lanceolate, half the length of the cylindrical tube; staminodia ligulate, emarginate; umbels eight to twenty-flowered; scapes 1 ft. to 2 ft. long. March. *L.* six to ten, green, 8 in. to 12 in. long, two to three lines broad. 1838. (B. M. 3555.)

TULIP. See *Tulipa*.

TULIPA (the Italian rendering of the Turkish *tulband*, a turban, which the flower resembles). Dalmatian Cap; Tulip. Including *Orithyia*. *ORD. Liliaceae.* A genus comprising, according to Mr. Baker, upwards of sixty species of very beautiful, hardy, bulbous plants, inhabiting Europe, North Africa, Western and Central Asia, and extending as far as Japan. Flowers erect or very rarely nodding, showy; perianth deciduous, campanulate or nearly funnel-shaped; segments distinct, erect or erecto-patent, sub-equal, often spotted inside near the base; stamens six, hypogynous, shorter than the perianth; filaments more or less complanate, attenuated or shortly filiform at apex; anthers oblong-linear, erect, the cells laterally dehiscing. Leaves linear or rather broad. Stem simple, few-leaved, one, or rarely two or three, flowered. Bulb tunicated, the tunics sometimes woolly within. "In the middle of the seventeenth century, Tulips became the object of a trade such as is not to be met with again in the history of commerce, and by which their price rose above that of the most precious metals. It is a mistake, however, to suppose that the high prices paid for bulbs—amounting, in some instances, to 2,500 and even 4,600 florins—represented the estimated value of a root, since these large sums often changed hands without any transfer of property. Bulbs were bought and sold without being seen—without even being in existence. In fact, they were the subject of a speculation not unlike that of railway scrip in this country at no very distant date" (Lindley and Moore). Tulips still take front rank amongst the most familiar and beautiful of hardy, bulbous plants. Many hundreds of varieties have been raised by means of careful hybridisation; and they are mostly offered at prices that place them within the reach of the average amateur gardener.

Propagation. New varieties of Tulips are obtained

Tulipa—continued.

from seeds, and some of the species which increase but slowly by offsets may be similarly raised. The most general method of propagation for perpetuating varieties is that of offsets, which are generally produced in fair quantities. Seeds may be sown in boxes of light, sandy soil, about February, and placed in a cold frame, where they will germinate in due course, and may be protected during the following winter. The next season the young bulbs should be planted in a prepared bed outside, for growing on into a flowering size. This takes four or five years, and the first flowers which appear are usually self-coloured; after another period, the length of which is quite an uncertainty, these flowers, which at the first are called "breeders," break into other colours and markings, which admit of their being placed into one or another of the several classes adopted. The process of raising flowering bulbs of Tulips from seed is, therefore, a very slow one. Offsets may be detached from established bulbs, when they are lifted, and grown by themselves until large enough for flowering. The chief supplies of Tulips are imported from Holland, where, —with other, commonly called, Dutch bulbs—they are grown in immense quantities for exportation to all parts of the world. When young seedlings and offsets are raised in gardens, they should be planted in a border or bed prepared with sandy loam, leaf mould, and light manure, and provided with efficient drainage, which, if possible, should be secured by selecting a position where the subsoil is gravelly. A situation exposed to sun and air is preferable, but sheltered from rough winds, which blow the plants about, and break their leaves.

Cultivation. Planting of all kinds of Tulips is best performed in October, and early in November; the bulbs should be placed from 3in. to 4in. deep, to preserve them against injury from severe frost; a little sand round each is generally recommended, but in light, sandy soil this need not be considered absolutely essential—except, perhaps, with scarce sorts or valuable seedlings. Planting with a trowel is best, as the soil is better adapted for the roots to enter than when a dibber is used. A distance of 6in. between the bulbs is sufficient; but when there are not many to be planted they may be more widely disposed. In the spring, so soon as the flowers begin to expand, a light awning placed over the bed will preserve those of any particular variety for a longer period than if they were exposed; but flower-beds filled with Tulips for a spring display cannot receive such attention. The bulbs may be lifted after the foliage turns brown and the stalks become limp, and placed in a cool, airy place, not in the sun. When thoroughly ripened, they may be stored in drawers or bags, where provision can be made for air circulating amongst them, until planting time again arrives. If it becomes necessary to lift the bulbs to clear flower-beds for summer occupants, they should be planted again in reserve beds, and allowed to ripen there.

The arrangement of colours, and the selecting of showy varieties which flower at about the same period, are matters of great importance in planting beds of Tulips. Both single and double kinds succeed admirably, but preference must be accorded the former, which are very distinct and beautiful.

For pot-culture and forcing, Tulips—at least, the early-flowering varieties—are invaluable. So soon as the annual consignments arrive from Holland, the supply for the season should be procured, and a portion potted. From three to five bulbs, according to size, are requisite for a 5in. pot, and a compost of two parts loam to one of light manure, with some sand intermixed, is suitable. Afterwards plunge the pots in ashes or cocoa-nut fibre outside, and introduce into gentle heat when the bulbs are well rooted, and begin to push their shoots. Successional supplies should be similarly treated, according to requirements, and the quantity of bulbs at command.

Tulipa—continued.

The species here described are those best known in gardens, and are based on Mr. Baker's admirable monograph of the genus, which appeared in the "Gardeners' Chronicle" for 1883. His synopsis of the species, adjusted to the requirements of this work, is given below.

Sub-genus I. Tulipa proper.

Ovary with a sessile stigma.

SECTION 1. ERIOBULBÆ. Perianth bright red; filaments without a tuft of hairs at the base. Lower leaf usually oblong-lanceolate. Outer bulb coats densely coated inside with soft, intertangled, cottony hairs.

maleolens
montana
Oculus-solis
præcox

SECTION 2. CLUSIANÆ (type, *T. Clusiana*). Flowers mainly white, between funnel-shaped and campanulate; filaments without a tuft of hairs at the base. Leaves narrow and grass-like. Outer bulb coats densely hairy inside.

Clusiana
stellata

SECTION 3. GESNERIANÆ (type, *T. Gesneriana*). Perianth usually bright red, campanulate; filaments without a tuft of hairs at the base. Lower leaf broad, with two or three exceptions. Bulb coats glabrous, or with only a few adpressed hairs inside. This is the largest section of the genus, and the one to which all the species most valuable for garden purposes belong. It may be best divided into groups by characters derived from the shape of the perianth segments and the vestiture of the peduncles:

Group 1. Perianth segments all uniform and acuminate.

acuminata
elegans
retroflexa

Group 2. Perianth segments all, or the three outer, oblong, acute; peduncle glabrous.

brachystemon
cruciata
Didieri
Elwesii
Kesselringii
Kolpakowskiana
triphylla
undulatifolia

Group 3. Perianth segments all broadly rounded at the apex, with a small cusp in the centre; peduncle glabrous.

Borseczowi
Gesneriana
macrosepala
Ostrowskiana

Group 4. Perianth segments all narrowed to an acute point.

altata
Kaufmanniana
strangulata
suaveolens

Group 5. Perianth segments all obtuse; peduncle permanently pubescent.

Alberti
Kichleri
Greigi
flensis
maculata
pubescens

SECTION 4. SAXATILES. Perianth red or lilac; filaments furnished with a tuft of hairs at the base. These are a little group of fine species, all belonging to the oriental flora, and all, as yet, little known in cultivation.

Aucheriana
Hageri
pulchella
saxatilis

SECTION 5. SYLVESTRIS. Perianth always yellow or yellowish-white; filaments with a tuft of hairs at the base. The species of this section have been comparatively little cultivated, and are of much less interest from a horticultural point of view than those of any of the foregoing. They may be divided into three groups by the colour of the flower:

Group 1. Flowers bright yellow, flushed with green on the outside.

Hiebersteiniana
fragrans
Griselbachiana
sylvestris

Tulipa—continued.

Group 2. Perianth bright yellow, flushed with red on the outside...

australis
humilis
Orphanidea

Group 3. Perianth pale yellow or whitish inside, tinged with green or reddish outside.

biflora
patens
primulina
turkestanica

Sub-genus II. *Orithya*.

Ovary narrowed gradually into a distinct style, which is tipped with three small stigmas. The species of this sub-genus are all dwarf, small-flowered, fragile plants, of little horticultural interest, natives of Siberia, China, and Japan. They may be arranged in three groups, according to leafage:

Group 1. Leaves two, sub-opposite, placed about the middle of the stem.

uniflora

Group 2. Leaves three, crowded near the base of the stem.

thianschanica

Group 3. Leaves, two large ones low down on the stem, and two to four small ones near each flower.

oculis



FIG. 117. TULIPA ACUMINATA, showing Habit and detached

T. acuminata (acuminate). Turkish Tulip. *f.*, perianth variable in colour, 3in. to 4in. long, the segments all alike, narrowed gradually into a very long point; peduncle glabrous. April. *l.* (and bulb) as in *T. Gesneriana*. Native country unknown. A distinct type. See Fig. 117. SYN. *T. cornuta* (B. R. 127).

T. Alberti (Albert Regel's). *f.*, perianth orange-scarlet, the base faintly blotched with red brown on a yellow groundwork, campanulate, 2in. long, the three inner segments obtuse, the three outer sub-acute; filaments yellow, exceeding the dark purple anthers; peduncle erect, pubescent, 6in. to 9in. long. April. *l.* glaucous-green, lanceolate, without blotches. *h.* 2ft. Central Asia, 1877. (B. M. 6761; R. G. 912.)

T. altaica (Altaian). *f.*, perianth usually yellow, rarely red, 1in. to 1½in. long in wild specimens, the segments oblong and decidedly acute, without any basal blotch; peduncle pubescent, 3in. to 4in. long. April. *l.* usually three, the lowest lanceolate, about 1in. broad. Stem 6in. to 9in. long. Bulb ½in. to 1in. in diameter, the outer tunics without any hairs inside. South-central Siberia. The red-flowered variety is figured in R. G. 942.

T. Aucheriana (Aucher Eloy's). *f.* strongly fragrant; perianth oblong-infundibular, 1in. to 1½in. long, all the segments mauve-lilac, nearly alike, oblong, acute, ½in. broad, with a bright yellow claw; stamens ½in. long, the yellow filaments twice as long as the anthers, densely hairy at base; peduncle slender, glabrous. April. *l.* three or four, linear, glabrous, acute, 4in. to 6in. long, ½in. broad, gradually narrowed from the middle to the base and apex. Stamens 4in. to 8in. long, slender, glabrous, one-headed. Bulb ovoid, medium-sized. Teheran, 1880.

T. australis (Southern).* This is distinguished from *T. sylvestris* by its more funnel-shaped perianth, flushed with red on the outside, 1in. to 1½in. long, its narrower leaves, and its more slender habit. SAVOY. SYN. *T. Breyniana* (B. M. 717), *T. Celsiana*. *T. humilis* is a dwarf species closely allied to *T. australis*; it is a native of the mountains of Persia.

T. Biebersteiniana (Bieberstein's). This resembles *T. sylvestris*, but the perianth is smaller and more funnel-shaped, and the plant is less robust in habit. Asia Minor, Siberia, &c., 1820.

yellow eye, ungued green outside, oblong, imbricoid, the segments oblong, acute; anthers minute. April. *l.* two or three, ½in. to ¾in. broad. Stems 3in. to 6in. long, with often two or three, rarely four or five, flowers. Bulb ovoid, the outer tunics woolly outside. Caucasus, 1806. This is a connecting link between the sub-genus *Orithya* and the true Tulips.

T. Bonarotiana (Buonarotti's). A form of *T. strangulata*.

T. Borszczowi (Borszczow's). *f.*, perianth bright red, 1ft. to 1½ft. long, all the segments obovate-oblong, obtuse, with a cusp at the tip, and furnished with a large, brown-black, basal blotch, margined with yellow, as in *T. Oculus-solis*; peduncle glabrous. Spring. *l.* four, with a distinct, cartilaginous, very crisped border, the lower one lanceolate. Dwarfier than *T. Gesneriana*. Central Asia. (R. G. 1175.) The form figured in B. M. 6635 has the flowers yellow without any basal blotch.



FIG. 118. TULIPA GESNERIANA.

T. brachystemon (short-stamened). This is very near *T. Kessel-vingii*, from which it is said to differ by the flower being smaller with more acute segments, and the leaves being narrower and only two in number. Turkestan. (R. G. 1039, fig. 2.)

T. Breyniana (Breyn's). A synonym of *T. australis*.

T. Celsiana (Cels'). A synonym of *T. australis*.

T. campopetala (flexible-petaled). A form of *T. Didieri*.

T. Clusiana (Clusius').* Lady Tulip. *f.*, perianth delicate white, flushed with red on the outside, with a conspicuous, purplish-black base, middling-sized; anthers and filaments black. July. *l.* four or five, long-linear, acuminate, channelled. Stem slender, 1ft. to 1½ft. long. Bulb small, densely pilose. Mediterranean region, 1636. (B. M. 1390; S. F. G. 329.)

T. cornuta (horned). A synonym of *T. acuminata*.

T. cruciata (cruciate). *fl.*, perianth bright cherry-red inside, campanulate, 1½ in. to 1 in. long, the outer segments acute, the inner obtuse, both having a large, black blotch with a yellow border filling up the whole claw; stamens black, ½ in. long; peduncle obscurely glandular-pubescent. Spring. *l.* four or sometimes five, crowded, spreading, linear; lowest 6 in. to 9 in. long, ½ in. broad. Bulb middle-sized, with a long neck. Asia Minor, 1874.

T. Didieri (Didier's). *fl.*, perianth bright red, campanulate, 2 in. to 2½ in. long, with a black blotch ½ in. to ½ in. long, and having a yellow or whitish border covering the whole of the claw; the three outer segments oblong, acute, the three inner ones more obovate and obtuse; stamens blackish-purple, the anthers equaling in length the glabrous filaments. May. Bulb-coats scarcely hairy inside. Stature, leaves, and peduncle, as in *T. Gesneriana*. Alps. (B. M. 6639.) SYN. *T. Fransonianna*.

T. edulis (edible). *fl.*, perianth pale yellow, sometimes flushed with red, strongly tinged with green on the outside, funnel-shaped, ½ in. to 1 in. long, all the segments acute. May and June. *l.*, two lower ones linear, flaccid, 6 in. to 12 in. long; two below each flower small, linear, erecto-patent. Stem slender, 3 in. to 5 in. long, one to three-headed. Bulb ovoid, the outer tunics densely woolly inside. Japan.

T. Eichleri (Eichler's)* *fl.*, perianth bright crimson, having a distinct, black blotch spread over the whole claw, with a yellow border; segments obovate, obtuse. April and May. Georgia, 1874. This fine plant closely resembles *T. Gesneriana*, but differs in having a pubescent peduncle. (B. M. 6191; R. G. 799.)



FIG. 119. TULIPA GESNERIANA DRACONTIA, showing Habit and detached Flower.

T. elegans (elegant)* *fl.*, perianth bright red, campanulate, with a yellow eye, the six nearly uniform, oblong segments gradually narrowed to a very acute point; stigma moderately large; peduncle finely downy. End of April. Probably a hybrid between *T. acuminata* and *T. suaveolens*.

T. Elwesii (Elwes). *fl.*, perianth bright scarlet, erect, campanulate, 1½ in. long, all the segments having a small, black blotch with a yellow margin filling up the whole claw, the three outer ones oblong, acute, the three inner ones obovate; stamens dark purple; peduncle erect, glabrous. Early in April. *l.* three, rather glaucous, glabrous; lowest lanceolate, 5 in. to 6 in. long, ½ in. to ½ in. broad, concave down the face above; two upper much smaller, linear. Stem slender, 6 in. to 8 in. long. Bulb ovoid, ½ in. in diameter; tunics dark brown, glabrous inside. Teheran. (B. G. 1147.)

T. fragrans (fragrant). A synonym of *T. sylvestris*.

T. Fransonianna (Franson's) A synonym of *T. Didieri*.

T. fulgens (brilliant). A form of *T. Gesneriana*.

T. Gesneriana (Gesner's)* *fl.*, perianth large, campanulate, the segments variable in colour, when bright red having only an obscure basal blotch, broadly rounded at the apex; stigmas crisped, ½ in. in diameter; peduncle glabrous, erect. May and June. *l.* (in a wild state) three or four (often more numerous when growing vigorously under cultivation), broad. Bulb large, the outer coats having a few adpressed hairs on the inside. *h.* 2ft. Levant, &c., 1677. "This is evidently the original stock of most of the late-flowering garden forms" (Baker). See Fig. 118. (B. H. xiv. 46; F. & P. 537, under name of *T. G. Strangwaysii*.) SYN. *T. Schrenkii* (B. M. 6439). *T. fulgens* is a form having bright scarlet flowers with a yellow eye and yellow stamens. The variable race of Parrot Tulips are referred to *T. G. Dracontia*. See Fig. 119. (F. d. S. 2211, under name of *T. turcica*.)

T. G. spathulata (spathulate)* This differs from the type in its larger flowers, of a brilliant-red colour, with a large, purplish-black blotch at the base of each of the segments. Italy. Probably the largest of all the wild Tulips. SYN. *T. spathulata*. This is catalogued by many bulb-growers as *T. G. vera*.

T. G. Strangwaysii (Strangways'). A synonym of *T. Gesneriana*.

T. G. vera. See *T. G. spathulata*.

Tulipa—continued.

An enormous number of garden forms, both double and single, varying most widely in colour, have originated from *T.* See Figs. 120, 121, 122, and 123.



120. FLOWERS OF TULIPA GESNERIANA FLAMANDE.



FIG. 121. TULIPA GESNERIANA FLORE-PLENO, showing Habit and detached Flower.

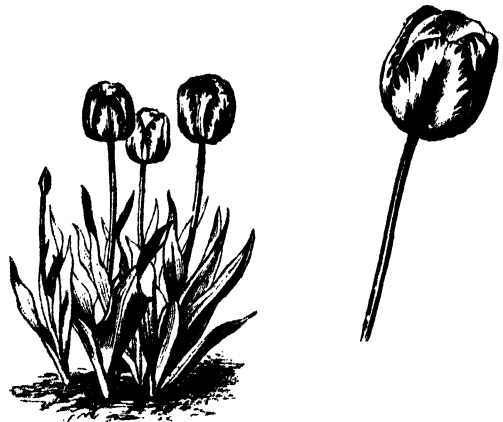


FIG. 122. TULIPA GESNERIANA GRAND PIED, showing Habit and detached Flower.

T. Greigi (Greig's)* *fl.*, perianth bright flame-red, campanulate, 2½ in. to 3 in. long, all the segments very obtuse and furnished with a very distinct, linear-oblong, black blotch, sometimes 1 in.

Tulipa—continued.

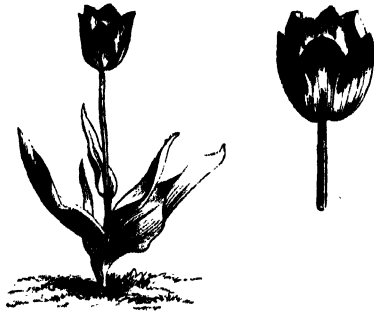


FIG. 123. TULIPA GESNERIANA NATIVE, showing Habit and detached Flower.

long, with a yellow border; stigma large; anthers bright yellow; peduncle pubescent. April. *l.* broad-oblong, glaucous, with numerous distinct, brown blotches. *h.* 9in. Turkestan, 1873. A showy and robust species. See Fig. 124. (B. M. 6177; F. d. S. 2261; F. & P. 1876, 217; R. G. 773.)



FIG. 124. TULIPA GREIGI, showing Habit and detached Perianth Segments.

T. Grisebachiana (Grisebach's). *f.* faintly scented; perianth of a lemon-yellow colour, less than 2in. long; peduncle 1ft. long, one-flowered, glaucous. Spring. *l.* three, very glaucous, erect, 6in. to 7in. long, 3in. to 2in. broad, concave. Bulb ovoid, the outer tunics brown, glabrous. Herzegovina, 1884. Closely allied to *T. sylvestris*.

T. Hageri (Hager's). *f.*, perianth campanulate, 1 1/2in. to 2in. long, the segments bright red, often tinged with yellow outside, oblong, acute, 3in. to 3 1/2in. broad, furnished with a large, rhomboid, blue-black blotch on the claw, with a yellow border; stamens purplish-black, under 1in. long; filaments densely pilose at base; peduncle glabrous, stiffly erect. April. *l.* three or four, linear, green, acute, channelled down the face, the lowest 6in. to 8in. long, 3in. broad. Stem one-headed, 1ft. long. Bulb ovoid, middle-sized. Atlica, 1874. (B. H. 1877, 2; B. M. 6242; R. G. 790.)

T. humilis. See *T. australis*.

T. Hienais (Trojan). Cowslip-scented Tulip. *f.*, perianth lemon-yellow, not more than 1in. long, all the segments obtuse; stigma minute; filaments twice as long as the yellow anthers; peduncle slender, pilose. Spring. *l.* four, linear, aggregated near the base of the peduncle, all under 3in. broad. Bulb small, ovoid, the outer tunics slightly pilose inside. Central Asia, 1879. (B. M. 6518, b; R. G. 976, 982.)

Tulipa—continued.

T. Kaufmanniana (Kaufmann's). *f.*, perianth bright yellow, slightly tinted with red outside towards the top, nearly 3in. long; the segments oblong, acute, without any basal blotch; peduncle erect, downy, 5in. to 6in. long. Spring. *l.* three, glaucous; the lowest oblong-lanceolate, 1 1/2in. to 2in. broad. Stature of *T. Gesneriana*. Central Asia, 1877. (B. M. 6387; R. G. 906, figs. 6-10.)

T. K. albo-variegata (white-variegated). *f.*, perianth white inside, yellow towards the base, with the back of the three outer segments rose-coloured and white-margined. 1877.

T. K. luteo-variegata (yellow-variegated). *f.*, perianth pale yellow inside, with a red spot below the middle, the three outer segments rose-coloured on the back, with yellow margins. 1877.

T. Kesselringii (Kesselring's). *f.*, perianth bright yellow, oblong, 1 1/2in. to 2in. long, the six segments all oblong and sub-acute, the three outer flushed with red down the back; stamens bright yellow; peduncle obscurely pubescent. April. *l.* four, linear, channelled, glabrous, not undulated, the lowest 6in. long. Dwarfier than *T. Gesneriana*, with a smaller bulb, the outer tunics of which are slightly rugose inside. Turkestan, 1879. (B. M. 6754; R. G. 964.)

T. Kolpakowskiana (Kolpakowski's). *f.*, perianth faintly scented, campanulate, 2in. to 2 1/2in. long, all the six segments varying from bright scarlet to bright yellow, when red having only a small, black-yellow blotch at the base without any distinct border, oblong, acute, the three outer ones spreading away from the three inner; filaments in the red-flowered form glabrous, shorter than the dark purple anthers; peduncle 6in. to 9in. long, obscurely pubescent. April. *l.* three or four, lanceolate, the lower 1ft. long, with a minutely ciliated margin. *h.* 2ft. Central Asia, 1877. A fine species. (B. M. 6710; G. C. n. s., xliii., p. 652; R. G. 951.)

T. macrospella (broad-stained).* *f.*, perianth bright crimson, campanulate, 2 1/2in. to 3in. long, all the six segments decidedly obtuse, 1 1/2in. to 1 3/4in. broad, having a large, distinct, nearly black, cuneate blotch, with a broad, yellowish-white border, filling up the whole claw; stamens black, one-third the length of the perianth; stigmas 3in. in diameter, much crisped; peduncle glabrous. May. Habit of *T. Gesneriana*. Origin unknown; probably a hybrid between *T. Gesneriana* and some other species.

T. maculata (spotted). A well-marked, garden race, with the habit of *T. Gesneriana*, from which it differs by its bright red perianth segments, with a broad, black basal blotch, small stigma, and pubescent peduncle. End of May.

T. maleolens (strong-smelling). This "agrees with *T. Oculus-soleis* in bulb, leaves, stature, and peduncle; but the black blotch at the base of the perianth segments covers the whole claw" (Baker). The flowers have a faint, unpleasant scent. Italy, 1827. (B. R. 1839, 66.) *variegata* is a variegated form. (S. B. F. G. ser. ii. 153.)

T. montana (mountain-loving). *f.*, perianth bright red, erect, 1 1/2in. to 2in. long, with oblong, acute outer, and often obovate, obtuse inner, segments, with a very distinct, black basal blotch; peduncle glabrous. July. *l.* three or rarely four, often curved and much crisped at the edges; lowest at most 6in. long, and about 1in. broad. Stems about 6in. long. Bulb large, ovoid. Persia, &c., 1826. (B. R. 1106.) There are several varieties of this species, exhibiting marked differences in the colour of the flowers.

T. neglecta (neglected). A form of *T. strangulata*.

T. Oculus-soleis (sun's-eye).* *f.* scentless; perianth 2 1/2in. to 3in. long; segments bright red, having a great, oblanceolate, black blotch, 1in. or more long, with a yellow border, in the centre of the base. April. *l.* three or four; lowest 1ft. long when fully developed, 1 1/2in. broad. Stem 1ft. to 1 1/2ft. high. South of France, 1816.

T. Orphanidea (Orphanides). *f.*, perianth bright yellow, 2in. to 3in. long, the acute segments tinged with red on the outside; anthers oblong, 3in. long; peduncle long, one-headed. May. *l.* three, linear, channelled. Stem 1ft. to 2ft. long. Mountains of Greece, 1862. (B. M. 6310; R. G. 373.)

T. Ostrowskiana (Ostrowski's). *f.*, perianth bright red, 2in. or more in diameter, each of the segments having a black spot at the base; filaments very short, dilated, and, as well as the anthers, purple. Spring. *l.* linear-lanceolate, glaucous. Turkestan, 1884. Closely allied to *T. Oculus-soleis*. (B. M. 6385; R. G. 1144, figs. 1, 2.)

T. patens (spreading). *f.*, perianth whitish, oblong-infundibular, 3in. to 4in. long, with a yellow eye inside, tinged green outside; stamens half as long as the perianth. April. *l.* two or three, 3in. to 4in. broad. Stems 3in. to 9in. long, usually one, rarely two, flowered. Bulb-tunics obscurely pilose inside upwards. Central Siberia, 1817. Syn. *T. sylvestris tricolor* (R. G. 827), *T. tricolor* (B. M. 3587).

T. præcox (early).* This "cannot be regarded as distinct specifically in a broad sense from *T. Oculus-soleis*, from which it differs in its more robust habit of growth, earlier flowering, and ovate, more imbricated perianth segments, with a less clearly marked basal blotch" (Baker). Italy, 1825. (S. B. F. G.

Tulipa—continued.

157; B. R. 380, under name of *T. Gesneriana*; B. R. 204, 1143, 1419, under name of *T. Oculata-soita*.)

T. primulina (Primrose-like). *f.* strongly scented; perianth pale primrose-yellow, funnel-shaped, 1½ in. long; outer segments lanceolate, tinged with bright red all over the back; inner oblong; peduncle glabrous. 2 in. to 3 in. long. Spring. *l.* four to six, crowded near the surface of the ground, linear, green, glabrous, channelled down the face, the outer ones 3 in. to 4 in. long. Stem less than 6 in. above the surface, one-flowered. Bulb ovoid, 1 in. thick, with bright red-brown outer tunics. Eastern Algeria, 1882. (B. M. 6786.)

T. pubescens (downy).* *f.* faintly scented; perianth widely varying in colour. This is probably a hybrid between *T. Gesneriana* and *T. suaveolens*. It has the large stigma and six obtuse segments of the former, and the downy peduncle of the latter; the bright red forms have no blotch at the base of the perianth segments. (S. B. F. G. 78; B. M. 2338, under name of *T. suaveolens latifolia*.) To this belong several of the April-flowering garden races, such as BRIDE OF HAARLEM, DUKE OF YORK, and POTTEBAKKER.

T. pulchella (pretty). *f.*, perianth funnel-shaped, 1½ in. long; segments mauve-red in the upper two-thirds, nearly uniform, oblong, acute, the claw slate-violet, with a yellow base; filaments whitish, densely pilose at base; peduncle slender, glabrous, 1 in. to 2 in. long. April. *l.* three, crowded near the surface of the ground, green, channelled down the face, obscurely ciliated; outer one about 3 in. long and ½ in. broad, the inner ones narrower. Bulb ovoid, 1 in. in diameter; outer tunics rigid, dark chestnut-brown. Cilician Taurus, 1877. (B. M. 6304.)

T. retroflexa (retroflexed).* *f.*, perianth bright yellow, about 3 in. long, with six uniform, oblong segments, narrowed gradually to an acute point; stamens yellow. Early in May. A garden plant, probably a hybrid between *T. acuminata* and *T. Gesneriana*.

T. saxatilis (rock-loving). *f.* faintly Primrose-scented; perianth oblong-infundibular, 2 in. to 2½ in. long; segments bright mauve-purple in the upper two-thirds, and bright yellow on the claw, without any spot, the inner ones obovate-cuspidate, 1½ in. broad, the outer oblong, less than 1 in. broad; stamens nearly 1 in. long; filaments bright yellow, twice the length of the blackish anthers; peduncle glabrous. March. *l.* three or four, lanceolate or linear, glabrous, the lowest above 1 ft. long, 1 in. to 1½ in. broad. Stems 1 ft. or more long, often two-headed. Bulb medium-sized, ovoid. Crete, 1827. (B. M. 6374.)

T. Schrenki (Schrenk's). A synonym of *T. Gesneriana*.

T. spathulata (spatulate). A synonym of *T. Gesneriana spathulata*.

T. stellata (star-like). A near ally of *T. Clusiana*, with similar leaves and habit, but the perianth segments are more obtuse, and without the distinct purplish-black eye. February. Himalayas, 1827. (B. M. 2672.) There is a bright yellow variety, with the flower sometimes self-coloured, sometimes flushed with red on the outside.

T. stragulata (constricted). *f.*, perianth segments furnished at the base with a large, black blotch, both in the typical red-flowered form, and also in some of the yellow varieties. April. This is very like *T. suaveolens*, but much taller. *T. Bonariotiana*, *T. neglecta*, and *T. vario-picta* are doubtless mere colour varieties. Four of the forms are figured in B. R. 1930, under name of *T. scabriscapa*.



FIG. 125. TULIPA SUAVEOLENS, showing Habit and detached Flower.

T. suaveolens (sweet-smelling).* Van Thol Tulip. *f.* fragrant; perianth red and yellow, large, with six equal, oblong, acute segments; stigma large; peduncle very downy. March and April. *l.* broad. *h.* 6 in. South Europe, 1603. See Fig. 125. (B. M. 839; F. d. S. 1223.) Mr. Baker regards this as the original stock of many of our early-flowering garden forms.

T. a. latifolia (broad-leaved). A synonym of *T. pubescens*.

T. sylvestris (sylvan).* Wild Tulip. *f.* fragrant; perianth bright yellow, 2 in. long, the segments elliptic-lanceolate; filaments woolly at base. April and May. *l.* few, 6 in. to 10 in. long,

Tulipa—continued.

linear, ½ in. to 1 in. broad, glaucous. Stem 1 ft. to 2 ft. long, terete, flexuous. Bulb small, ovoid, stoloniferous; scales chestnut-brown. Europe (Britain). See Fig. 126. (B. M. 1202; Sy. Kn. B. 1520.) SYN. *T. fragrans*. Forms with two-flowered peduncles are not uncommon in cultivation.



FIG. 126. TULIPA SYLVESTRIS, showing Habit and detached Flower.

T. s. tricolor (three-coloured). A synonym of *T.*

T. thianschanica (Thians-chan). *f.*, perianth segments obovate-oblong, obtusely or minutely apiculate, less than 1 in. in length; peduncle glabrous, much shorter than the leaves. *l.* three, linear-lanceolate, falcate, minutely denticulate on the edge. Bulb having its outer tunics strigose towards the tip. Thian-schan Mountains.

T. tricolor (three-coloured). A synonym of *T. patens*.

T. triphylla (three-leaved). *f.*, perianth bright lemon-yellow inside, tinged with green outside, rather funnel-shaped, erect, 1 in. to 1½ in. long, the outer segments oblong and sub-acute, the three inner more obtuse; stamens less than ½ in. long; peduncle glabrous, very slender. March. *l.* three or four, crowded near the base of the peduncle, falcate, linear, 3 in. to 4 in. long, 1 in. to ½ in. broad. Bulb small, with a few hairs inside the outer tunics. *h.* 6 in. to 8 in. Central Asia. (B. M. 6459; R. G. 942.)

T. t. Hoeltzeri (Hoeltzer's). *f.* small; perianth yellow, the three outer segments purplish. *l.* linear-oblong, glaucous, undulated, lying on the ground. Turkestan, 1884. (R. G. 1144, figs. 3, 4 a-b.)

T. turoica (Turkish). A synonym of *T. Gesneriana Dracontia*.

T. turkestanica (Turkestan). *f.* one to six. *l.* two, falcate, lanceolate. Bulb small, ovoid, the outer tunic densely hairy inside. Chiva. A near ally of *T. biflora*, from which it mainly differs in the long cusps of the valves of its capsule. (R. G. 1050, fig. 2.)

T. undulatifolia (undulated-leaved). *f.*, perianth bright crimson-red inside, greenish-red outside, campanulate, 1½ in. to 2 in. long, the uniform segments gradually narrowed to an acute point, a black blotch with a yellow border covering the whole claw; stamens ½ in. long, with black filaments and very small anthers; peduncle glabrous or pubescent. May. *l.* three, glaucous, lowest lanceolate, 6 in. long, 1 in. broad, with a concave face and undulated margins. Stems 6 in. to 8 in. long. Smyrna, 1877. (B. M. 6308.) There is a form with less acute perianth segments.

T. uniflora (one-flowered). *f.*, perianth segments pale yellow inside, oblancoolate, obtuse, 3 in. to 1 in. long, the three outer strongly tinged with green on the outside and spreading in the expanded flower; peduncle erect. April. Stem slender, one-flowered, with a couple of spreading, lanceolate leaves from its middle. Bulb small, ovoid, with brown, membranous tunics produced far above its neck. Altai Mountains. SYN. *Orithya uniflora* (R. G. 906, figs. 2-5; S. B. F. G. ser. II. 336.)

T. vario-picta (vario-dy-painted). A form of *T. stragulata*.

VARIETIES. Subjoined are selections from the most showy and generally useful varieties that are adapted for pot-culture and, with very few exceptions, for planting in outside beds.

Single Early-flowering and Bedding Tulips. ARTUS, brilliant dark scarlet, very handsome and effective, large. BACCHUS, rich dark crimson; splendid bedding variety. BELLE ALLIANCE, crimson-scarlet; dwarf, early, and lasts long. CANARY BIRD, clear rich yellow; early. CHRYSOLORA, deep yellow, large, handsome; one of the best. COTTAGE MAID, rose-pink and white, flaked, very pretty. COULEUR CARDINAL, crimson-scarlet, very showy and effective, extra fine. CRIMSON KING, bright crimson, very showy. DUC VAN THOL (scarlet), very early, and one of the best for early forcing. JOOST VAN VONDEL, crimson, flaked with white, magnificent. KEIZERS-KROON, intense scarlet, bordered with yellow, immense; a splendid variety, which lasts long in perfection. LAC VAN RHYM,

Tulipa—*continued*.

dark violet, silvery-white margin. LE MATELAS, deep rose, flushed white, very beautiful; excellent for forcing. L'IMMACULÉE, white; very early, good for forcing. PAUL POTTER, beautiful rose-magenta, distinct and fine. POTTERAKKEK WHITE, pure white, large, handsome; early. PRINCESS MARIANNE, creamy-white, large, handsome. PROSERPINE, rosy-crimine, very large, handsome; one of the best. QUEEN VICTORIA, rosy white; good bedder. ROSE APPLATI, rose, very large, handsome. ROSE GRIS-DE-LIN, rose, shaded with white, very fine. ROSE 7, fine, deep rose; splendid forcing variety. ROYAL D, white, feathered with rosy-crimson, showy. THOMAS MOORE, orange-scarlet, very pretty, and quite distinct. VAN DER NEER, rich violet, very handsome, extra. VERMILION BRILLIANT, dazzling scarlet; good forcing variety, very early. WOUVERMAN, violet-purple, large. YELLOW PRINCE, golden-yellow; fine for forcing, very sweet-scented.

Tulips.

very fine and handsome. CRAMOISI SUPERBE, crimson; fine bedder. DUKE OF YORK, deep rose, edged with white, showy and effective; late-flowering. GLORIA SOLIS, orange-crimson, deeply edged with golden-yellow. IMPERATOR RUBROURUM, crimson-scarlet, extra fine. LA CANDEUR, white, very double, fine; rather late-flowering. LEONARDO DA VINCI, crimson-edged, golden-yellow, very fine. MURILLO, rosy-white; excellent for forcing. PÆONY GOLD, golden-yellow, feathered crimson, fine; rather late. PRINCESS ALEXANDRA, crimson, edged with golden-yellow, fine. PURPLE CROWN, rich purplish-crimson, very large and effective; rather late. REX RUBROURUM, brilliant crimson-scarlet; highly effective in beds; rather late. ROSINE, rosy-pink; fine for bedding. SALVATOR ROSA, dark rose; one of the best double rose varieties. TOURNESOL, scarlet, edged with yellow, large and handsome; the best double variety for forcing. TOURNESOL YELLOW, yellow, suffused reddish-orange, large. YELLOW ROSE, bright golden-yellow; late-flowering.

Parrot Tulips. These are very effective in borders and shrubberies, but are not adapted for pot-culture. They produce large, brilliantly-coloured flowers. Amongst the best are: ADMIRAL DE CONSTANTINOPLE, red, tipped with yellow; FEU BRILLANT, crimson; LUIRO MAJOR, yellow, slightly striped crimson and green; MARK GRAAF, yellow, striped scarlet and green; MONSIEUR ROUGE, crimson, large; PERFECTA, yellow, scarlet, and green.

TULIP, AFRICAN. A common name for *Hemantus* (which see).

TULIP-BEARING MYRTLE. See *Darwinia macrostegia*.

TULIP, BUTTERFLY. A popular name for *Calochortus lilacinus* (which see).

TULIP, DROOPING. A common name for *Fritillaria Meleagris* (which see).

TULIP, GOLDEN STAR. A common name for *Calochortus pulchellus* (which see).

TULIP-TREE. See *Liriodendron tulipifera*.

TULIP-TREE, LAUREL-LEAVED. A popular name for *Magnolia* (which see).

TULIP, WILD, OF CALIFORNIA. A common name for the genus *Calochortus* (which see).

TUMBOA. A synonym of *Welwitschia* (which see).

TUMID. Swollen.

TUNGA. A synonym of *Hypolytrum* (which see).

TUNHOOF. A common name for *Nepeta Glechoma* (which see).

TUNIC. A coat; a seed cover.

TUNICA (from *tunica*, a coat; in reference to the overlapping of the floral envelopes). ORD. *Caryophyller*. A genus embracing about half-a-score species of hardy, annual or perennial herbs, natives of mostly Southern Europe and Western Asia. Flowers smaller than those of *Dianthus*, cymose-paniculate, glomerate, or capitate; calyx obtusely five-toothed; petals five, with elongated claws, and retuse or emarginately bifid blades; stamens ten. Leaves narrow. The under-mentioned species thrives in any light soil, and on old walls, ruins, &c. It is also adapted for planting on rockwork, and at the front of mixed borders. Propagated readily from seeds.

Tunica—*continued*.

T. Saxifraga (Saxifrage-like). *f.* calyx campanulate, the teeth triangular-ovate; lamina of corolla pink, short, retuse or crose. July. *l.* scabrid, narrow-linear, acute. Stems numerous, ascending or diffuse, paniculate. Central and South Europe. Perennial.

TUNICATED. Having a coat or coats.

TUPA. Included under *Lobelia* (which see).

TUPELO-TREE. See

TUPIDANTHUS (from *tupis*, *tupidos*, a mallet, and *anthos*, a flower; referring to the shape of the flower buds). ORD. *Arakaceæ*. A monotypic genus. The species is at first a small, glabrous, erect tree, afterwards a lofty

in sandy loam.

affected by cuttings, inserted in sand, under a bell glass, in heat.

T. calyptratus (calyptrate). *f.* green; buds $\frac{1}{2}$ in. in diameter, nearly globose; stamens fifty to seventy: main umbel about three-rayed, the branches $\frac{1}{2}$ in. long, very stout, with large bracts at their bases; partial umbels five to seven-cleft. *l.* digitate; leaflets seven to nine, entire, $\frac{1}{2}$ in. by $\frac{1}{4}$ in., narrow-oblong, shortly acuminate, narrowed at base; petiolules $\frac{1}{2}$ in. long. India, 1855. (B. M. 4908.)

TUPISTRA (from *tupis*, a mallet; alluding to the peculiar form of the stigma). Mallet Flower. SYN. *Platymetra*. Including *Macrostigma* (of Kunth). ORD. *Liliaceæ*. A genus embracing three or four species of stove, perennial herbs, inhabiting the Himalayas or Burmah. Flowers sessile, clustered; perianth violet or lurid, campanulate, with a broad, scarcely contracted tube, and six, rarely eight, short, spreading, sub-equal lobes; stamens six or eight; spike terminal, dense, cylindrical; scape short or elongated, erect or recurved at apex, simple. Leaves radical, long, ample, contracted into the petioles. Rhizome thick. The two species known in cultivation thrive in rich loam; they may be increased by suckers, or by division of the plants, in spring.

T. macrostigma (*Macrostigma*). *f.* perianth dark purple, $\frac{1}{2}$ in. across, campanulate; spike drooping, lax, $\frac{1}{2}$ in. to $\frac{3}{4}$ in. long; peduncle dark purple, erect, as long as the spike. December. *l.* lanceolate, acute, chartaceous, above $\frac{1}{2}$ in. long, bright green; petioles dilated at base, firm, erect, $\frac{1}{2}$ in. or more long. Rhizome creeping, much-branched. Khasta, 1876. (B. M. 6280.) SYN. *Macrostigma tupistroides* (R. G. 192).

T. nutans (nodding). A synonym of *T. squalida*.

T. squalida (squalid). *f.* perianth lurid-violet, or with the tube greenish, six to eight lines long; bracts large, scarious, deltoid; spike dense, nodding, $\frac{1}{2}$ in. to $\frac{3}{4}$ in. long; scape $\frac{1}{2}$ in. to $\frac{3}{4}$ in. long. March. *l.* oblanceolate, erect, $\frac{1}{2}$ to $\frac{3}{4}$ in. long, $\frac{1}{2}$ in. to $\frac{3}{4}$ in. broad, long-petiolate, narrowed at both ends. Rhizome fleshy. Himalaya, 1820. (B. M. 1655; B. R. 704; L. B. C. 515.) SYN. *T. nutans* (B. M. 3064; B. R. 1223).

TURBIMATE. See **Top-shaped**.

TURF. A term applied to grass sods which are laid over the surface of ground to form lawns, edgings, verges, &c. Laying or cutting out flower-beds in Turf is a familiar operation. Turf is also cut from fields, and stacked in heaps for decomposing and forming loam, which is in daily request for potting and various other purposes. When used for forming new lawns, &c., that are to be kept mowed, it is most important that the Turf should be as free as possible from weeds, such as Daisies, Plantains, and the like. Pasture land which has long been laid down, and the grass closely eaten off by sheep or deer, is generally the best, as, provided the soil is fairly good, the more grazing or cutting is practised, the more dense does the Turf become at the root, and this is, of course, most favourable to the quick formation of a new lawn. The ground should be first prepared, made thoroughly firm by treading, and raked fine, before the Turf is laid. Autumn, and any favourable weather during winter and early spring, are best suited for the work. A handy size for cutting Turfs, when they are sufficiently tough for rolling, is 3ft. long by 1ft. wide; they are best cut with a turfing-iron, or, what is worked in a similar way, a turf-plough. Small squares (about

Turf—continued.

9in.) are readily fitted together, and are often preferable to 3ft. lengths. All the interstices should be filled in with fine soil, swept with a birch broom, and then the whole surface may be rammed or beaten with a turf-beater. It is important to get newly-laid Turf consolidated, and the pieces all fitted together, while the ground is moist. If from any cause Turf should have to be laid late in spring, or during summer, it often becomes dried up, and the pieces separate from each other; the work should not, therefore, be left until those seasons, if it can be avoided. It is of little use watering from the top in summer, but new Turf may be more readily re-established at that season by watering the ground first, and then laying the sods on the top.

TURF-BEATER, or TURF-BEETLE. This is used for beating the surface of newly-laid turf, to consolidate and render it level. A Turf-beater may easily

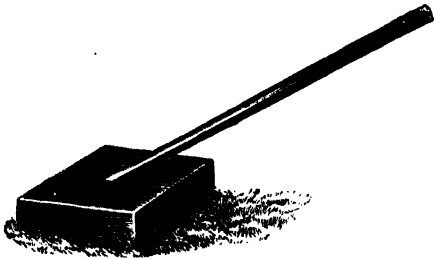


FIG. 127. TURF-BEATER.

be made from a flat, oblong piece of wood 3in. thick. A strong handle should be fixed into the centre of the upper side at an angle sufficiently acute to allow the Beater to be brought down flat on the turf when in use (see Fig. 127).



FIG. 128. TURF-SPADE.

TURF-RASER. A useful implement where a large quantity of turf has to be cut; it is employed for marking out the proper width for cutting in strips, and is used by a person who works in advance of others lifting the turf. A very simple form, but still one which answers most effectually, consists of an ordinary wooden handle with the point of an old scythe fixed into one end of it, at nearly or quite a right angle. This blade cuts into the turf at a uniform depth, and is guided along a line by the workman using it.

TURF-SCRAPER. A Scraper, made of wood or iron, similar to those used for roads, answers equally well for scraping lawns when worm-casts or ant-hillocks abound. A Turf-scraper is not, as a rule, otherwise required.

TURF-SPADE, or TURFING-IRON. An implement used for lifting turf that has previously been cut through with an edging-iron or a turf-rasor. It has a bent handle, and a heart-shaped, flat blade (see Fig. 128), and is much handier for the purpose than an ordinary spade, as, if properly used, any quantity of turf may be cut of about a uniform thickness.

TURF-WALKS. Walks formed of turf instead of gravel, stones, or other hard substances. They require in formation exactly the same preparation as lawns, with, of course, the width limited. Occasionally, but not very frequently, Turf-walks are introduced into kitchen gardens.

TURGID. Swollen; puffed up.

TURGOSEA. Included under *Crassula*.

TURIO. A scaly snooker, which afterwards becomes a stem, as in *Asparagus*.

TURKEY CORN. A popular name for *Dicentra formosa* (which see).

TURKEY OAK. See *Quercus Cerris*.

TURK'S CAP. See *Melocactus communis*.

TURK'S HERB. An old name for *Herniaria glabra* (which see).

TURMERIC. See *Curcuma*.

TURMERIC ROOT. A common name for *Hydrastis canadense* (which see).

TURNERA (dedicated by Linnæus to the memory of William Turner, author of a "New Herbal," 1551; he died in 1568). Including *Piriqueta*. ORD. *Turneraceæ*. A genus comprising about seventy species of stove herbs, sub-shrubs, or shrubs, all tropical American, with the exception of one found in South Africa. Flowers yellow, axillary, solitary, rarely racemose or fasciated; calyx five-parted; petals five, inserted in the throat of the calyx; stamens five, inserted below the petals; peduncles free or connate with the petioles. Leaves scattered, entire, serrated, or sub-pinnatifid, often biglandular at base. Most of the Turneras have a weedy aspect, but those here given are rather pretty subjects when in flower. They thrive in any light soil. Propagation may be effected by seeds, which are freely produced; the shrubby species may also be increased by cuttings, inserted under a hand glass, in heat; and the herbaceous perennials either by cuttings or by divisions.

T. trionifera (Ketmia-flowered). A synonym of *T. ulmifolia elegans*.

T. ulmifolia (Elm-leaved).* West Indian Holly or Sage Rose. A. almost sessile, about the size of those of *Reinwardtia tri-*

Turnera—*continued*.

T. u. angustifolia (narrow-leaved). *l.* oblong-lanceolate. (B. M. 281, under name of *T. angustifolia*.)

T. u. cuneiformis (wedge-shaped). *fl.*, claws of the petals brownish. *l.* obovate-cuneate, coarsely serrated. *h.* 1ft. to 3ft. Brazil, 1821.

T. u. elegans (elegant). *fl.* sessile, as large as those of the Bladder Ketmia; petals pale yellow or sulphur-coloured, with purplish-brown claws. All the year. *l.* oblong-lanceolate, coarsely serrated, cuneate at base, quite entire, pubescent. *h.* 1ft. to 2ft. Brazil, 1812. *SYN.* *T. trioniflora* (B. M. 2106).

TURNERACEÆ. A natural order of glabrous or pubescent herbs or shrubs, mostly American, a few being African, and one broadly dispersed over Asia, but not indigenous. Flowers regular, hermaphrodite, axillary, solitary or few, sessile or pedunculate, rarely racemose; calyx tubular, five-cleft, deciduous, the lobes imbricated; petals five, inserted at the throat of the calyx, clawed, membranous, twisted, deciduous, naked or with a scale at the tip of the claw; stamens five, very rarely hypogynous; filaments free, flat-subulate; anthers oblong; ovary free, one-celled; styles three, filiform; peduncles free or connate with the petioles, occasionally jointed,

Turnip—*continued*.

attempting to force Turnips too early in spring: they should not be sown under glass until the weather is favourable for admitting plenty of air. The first supply may be obtained by sowing some seed in a frame, during February or early in March. Some bottom heat from fermenting material may be allowed, but a spent hotbed or cold frame, with from 3in. to 4in. of rather fine, light soil in it, will do; an early variety should be selected—Early Munich is one of the best. The seedlings require thinning out so soon as they are large enough to handle. Plenty of air must be allowed, to insure a sturdy growth, and when the leaves get strong the frame may be removed. The season will by this time be advanced and the weather warmer than at the period of seed-sowing. Attention to watering is the principal point in after-cultivation. A valuable supply may be thus obtained in advance of any that could be grown entirely in the open air; a two-light frame at least should be allowed, as it could scarcely be more profitably utilised.

By the middle of March, the first sowing may be made on a south border, and successional sowings according to



FIG. 129. FLOWERING BRANCH OF TURNERA ULMIFOLIA.

often bibractoolate. Capsule one-celled. Leaves alternate, petiolate, simple or pinnatifid, often argutely serrated, frequently biglandular at base; stipules small or wanting. The order embraces three genera—*Erblichia*, *Turnera*, and *Wormskioldia*—and about seventy-six species.

TURNIP (*Brassica Rapa*). A hardy biennial, native of Europe (Britain), &c.; cultivated from a remote period, for the use of the fleshy roots, which are boiled and served as a vegetable in various ways. The tender growing tops are also gathered in spring, and cooked as a green vegetable; and they are sometimes blanched at the same season as a substitute for Sea-kale.

Cultivation. The Turnip is chiefly an autumn and winter crop, as it succeeds best in cool, moist weather; but early and successional supplies may be procured by commencing to sow early in spring, and keeping on at intervals until July. In summer, Turnips not unfrequently run to seed without forming roots of a useful size; and during dry weather they are, if procurable, often stringy, and of inferior quality. The destructive Turnip Flea has also to be contended against; all through early summer especially, its attacks are commenced on the seedlings so soon as they appear above ground. It is of little use

requirements will be necessary until the end of June or early in July, when the seed for the main crop should be put in. In favoured districts, any time in July will do, and sowings may even be made up till the end of August with successful results. Turnip seed usually grows very freely, and the young plants appear above ground in a very short time. Some cultivators sow broadcast, but the ground is more readily kept free from weeds and the plants thinned out when the plan of having drills is adopted: the latter is therefore recommended. Drills 1ft. apart will suffice; they should be drawn with a hoe not more than 2in. deep, and the plants may be thinned to about 9in. apart, though this distance may vary somewhat according to the strength of the variety and the season. During summer a cool situation is preferable, and in dry weather it is often necessary to keep Turnips watered. If this is not done, growth becomes checked, and either the plants run to seed or the roots lose their succulent nature and become pithy. The main crop may be left in the ground, to be pulled when required, but for the purpose of having a supply in very severe weather it is advisable to lift a portion, cut off their tops—not too closely—and store them in sand or soil ready for use. The crops at all seasons are much benefited by keeping the soil between

Turnip—continued.

head and leaves on the surface. Damp, dull weather is most favourable for Turnip cultivation; but as the crop is of much importance throughout the season, all that can be done during the summer to counteract the evil influences of drought should receive full attention. If two or three varieties are sown at the same time, sometimes one will thrive if another fails. Turnips succeed best in rich, rather light, loamy soils; ground which is stiff and retentive is not well adapted, as the roots do not attain a good flavour, and in the summer are more apt to run to seed; light, gravelly soils are also unsuitable.

Animal Pests. The animal foes of this valuable plant are both numerous and varied. A large proportion of them attack the roots. Ants are said to carry off the seed, and to endanger the crop at times; and sparrows and other seed-eating birds assist in such depredations. The germinating plants, so soon as they appear above the soil, are too often wholly destroyed by the **Turnip Flea or Fly** (which see), and by small Weevils, such as **Otiorynchus** (which see), and **Ceuthorrhynchus contractus**, which is nearly related to the Turnip-gall Weevil (see **Turnip Galls**) and **Turnip-seed Weevil** (which see). The best treatment for the destruction of these insects is mentioned under the above headings.

When the plants are somewhat larger, the leaves are often so eaten by numerous larvæ, that merely the larger veins remain, or, at least, large holes are gnawed in the leaves and other green parts, to the injury of the plants, and the consequent diminution of the root-crop. The larvæ (see **Cabbage Caterpillars**) of the White Butterflies (*Pieris brassicae*, *P. napi*, and *P. rapæ*) feed on the leaves of Turnips, as they do also on Cabbages; and they are assisted in this by the larvæ of various Night-moths, e.g., of **Mamestra** (which see), and of **Plusia gamma** (which see) and others noted under the headings **Potherb-Moths** and **Surface Caterpillars**. The larvæ of a small Moth, **Plutella cruciferarum** (which see), are very numerous in some localities, living under webs on the lower surfaces of, and eating holes in, the leaves.

Still more dangerous than the Butterflies and Moths is **Athalia spinarum**, the **Turnip Sawfly** (which see), the larvæ of which at times devastate entire fields. An allied species (*A. ancilla*) also proves destructive occasionally, though to a less extent.

Various Beetles assist in destroying the leaves of Turnips, chief among them being the **Turnip Flea** (which see); though Curtis accuses **Phaedon betule** (which see) and **Otiorynchus** of aiding in the harm done.

Besides the holes eaten through them, the leaves are often marked with white, wavy tracks, or mines, burrowed between the surface-membranes. These mines are the work of larvæ of small Flies (*Drosophila* and *Phytomyza*), and of the **Turnip Flea** (which see). The flowers inclosing the young ovaries are favourite resorts of numerous Beetles, some of which gnaw the various organs, devouring the ovaries, or rendering them unfertile. The flowers and flower-stalks, and, to a less extent, the leaves, are sometimes injured by more than one kind of plant-louse (see **Aphides**). The seeds are devoured in the seed-vessels, while soft, by larvæ of certain small Midges belonging to the group of Gall-midges (*Cecidomyiidae*), but these scarcely alter the form of the fruit. The larvæ of the **Turnip-seed Weevil** (which see) also devour the seeds in the fruit. From their concealed mode of life, little, if anything, can be done against those insects that feed on the seeds. But, while the green parts, the flowers, and the seeds, are all liable to serious injury from animals, and the roots thus suffer indirectly, the latter parts suffer from direct attacks even more seriously than do the other organs. All herbivorous quadrupeds eat them; and hares and rabbits are

Turnip—continued.

peculiarly hurtful where Turnips are grown in an insufficiently inclosed area. Books also greatly injure Turnips, by scooping out holes in them to obtain food during snowy weather. In localities near the sea-coast, a similar habit is frequently indulged in by sea-gulls. Among the most effectual protections against birds are threads stretched in zigzags near the soil, and decked with rags, or other fluttering objects, suitable to act as scarecrows.

Some account of the more destructive parasites of Turnip roots is given, along with the most successful remedies against each, under the headings **Slugs**, **Snails**, **Surface Caterpillars**, **Turnip Galls**, **Turnip Moths**, and **Wireworms**; and it would occupy unnecessary space to repeat what is contained in those articles. When the roots have begun to decay, the change is hastened by numbers of **Millipedes** (which see) and insects (chiefly larvæ of small Beetles and Midges) that feed in them, and soon reduce them to the condition of putrescent masses.

In Germany, it has been observed that Turnips and other Crucifers are liable to have the smaller side-roots more or less injured by the production of small, round galls on them, the work of a minute worm (*Heterodera schachtii*), of which an account is given, and appropriate remedies are discussed, under **Nematoid Worms**.

Fungi. Turnips are liable to serious injury from the attacks of several species of Fungi, most of which have been already discussed in this work under headings quoted below. Almost all of them also infest Cabbages and cruciferous weeds—a circumstance that must be kept in mind in the means employed for preventing or curing diseases caused by them in Turnips. Of those that have proved peculiarly injurious in Great Britain, the more hurtful are the following:

Plasmodiophora brassicæ (which see), producing "Clubroot," or "Finger-and-Toe," in the roots, of which they cause the early death and decay, so that the crop is largely, if not entirely, destroyed in severe attacks.

The leaves are frequently "mildewed." One form of "Mildew" is caused by the growth of the superficial mycelium of **Oidium balsamicum** (see **Oidium**), which is itself a young stage of an *Erysiphe* of some kind, of which the perfect condition is uncertain. The thread-like cells of the Fungus spread in a thin, whitish coat over the whole of both surfaces of the leaf, from which they draw their nourishment, without, however, traversing its tissues; and they injure it both by the nourishment they absorb from it, and by hindering free interchange of gases and fluid between the cells of its interior and the air. The leaves wither and dry up, and the plants are insufficiently nourished, with evil effects to the roots. For a remedy, see **Oidium**.

Peronospora parasitica gives rise to another form of "Mildew" on the leaves. This shows itself in whitish patches, which consist of erect stalks, much branched above, and bearing on the tips of the branches the nearly globose conidia or reproductive cells. The mycelium of the Fungus burrows among the inner cells of the leaf, and only the stalks just spoken of are seen on the surface, passing out through the stomata. The sexual reproduction of the Fungus is also provided for by the mycelium in the leaves, as described under **Peronospora**. The upper surface of the leaves is mildewed by this Fungus far less frequently than the lower; but the presence of the parasite is shown by yellowish-green or yellow patches on the surface. *P. parasitica* frequently grows in the flower-stalks and in the flowers, which, under its influence, become much distorted and swollen, and fail to produce seeds. All parts in which it grows are liable to premature death and rapid putrefactive decay in moist air. For treatment, see **Peronospora**.

White Rust is very often associated with *P. parasitica*, growing on the same spots of the plant, and

Turnip—*continued.*

actually intermingled with it; but frequently, also, they grow apart from one another. The White Rust resembles splashes of whitewash, when the conidia are matured on the diseased spots, which latter are usually swollen and distorted. It occurs on stems, leaves, and flowers. The Fungus (*Cystopus candidus*) is nearly related, in a good many points, to *Peronospora*. For an account of its structure, and of the treatment to be employed against it, see **Rust**.

The leaves frequently show spots or patches, often 1 in. or more in breadth, at first yellowish, but soon becoming withered and dry. On these spots, the microscope shows minute Fungi. On some, there may be found slender conidia (with many septa, or cross-walls), on the tips of short threads, pushed through the stomata. This form of Fungus has been named *Cercospora Bloumi* by Messrs. Berkeley and Broome. On other spots occur small dark **Pycnidia** (which see), in which are produced small, oval, pale sporidia, one-celled (*Phyllosticta Brassicæ*), or two-celled (*Ascochyta Brassicæ*). The relations between the Fungi found on such patches are still very uncertain. Turnips do not suffer very seriously from the presence of these Fungi, as the latter seldom affect the young, vigorous leaves, but prefer the lower leaves when already half-dead. It is, therefore, unnecessary to dwell upon treatment, further than to mention that it is a wise precaution to destroy—if possible, by fire—all leaves overgrown with parasites.

Two other Fungi have been described as occasionally very injurious to Turnips in Germany, and a brief notice of them will not be out of place here. *Polydesmus exitiosus* is the name given by Dr. J. Kühn to a Fungus described by him as extremely injurious to Turnips, destroying both the leaves and the unripe seed-vessels. Very dark spots appear on the diseased organs; the spots spread, and the tissues become discoloured, and dry up. If the seed-vessels are attacked while young, the seeds do not ripen; but if the disease is late in its appearance, they may ripen, but are soon destroyed, the valves of the fruit shrivelling, and bursting away prematurely. In the diseased tissues, the mycelium of a Fungus is present in abundance, absorbing the nourishment in the cells, and destroying the cell contents and cell walls. From this mycelium rise erect branches, which project through the epidermis of the leaf, and bear, on their tips, conidia that vary much in form, but that, when mature, are clavate, being fixed by the broader end, and having the other prolonged as a slender filament; or there may be a series of from five to ten such conidia, end to end, forming a chain. The conidia are dull or brown-violet, and are divided into cells, by numerous cross-walls, and a few longitudinal ones. The conidia readily fall off the erect branches, and germinate speedily, in damp, warm weather, spreading the disease if they fall on green parts of Turnip-plants, under suitable conditions. This Fungus produces brown, withered spots in the parts affected, often surrounded by a yellow or reddish border. On these spots develop **Pycnidia** (which see) of *Phyllosticta Brassicæ*, and perithecia of a *Pleospora* (which see), perhaps *P. herbarum*. The only treatment possible is to endeavour to prevent future attacks, by destroying diseased parts of plants without delay.

Peziza sclerotiorum is blamed by Dr. Frank as the cause of a peculiar disease of Turnips, which was prevalent, near Leipzig, in 1879. The plants became yellow during July. The cause of this was a diseased state of the stems, commonly near the base, which manifested itself in a pale colour, and in a separation between the epidermis and the tissues below it. On breaking the stem, the pith is found occupied by a black, oval body, the sclerotium, from which the above *Peziza* grows out in the following spring. For an account of the structure

Turnip—*continued.*

of the Fungus, and of the treatment advised against it, see **Peziza**.

Sorts. These are very numerous, but it is unnecessary to grow many varieties if attention is given to include those which are adapted for early use, and others for main crops. The shapes and outside colours vary in the different sorts; but this is of little importance, provided the inner flesh is of good quality. The flesh is either white or yellow: white-fleshed varieties are generally preferred in the southern division of the country, while yellow ones are more largely cultivated in the north.



FIG. 130. EARLY STRAP-LEAVED WHITE STONE TURNIP.

CHIRK CASTLE BLACK STONE, skin black; very fine and hardy. EARLY PARIS MARKET, white, oblong in shape; early, a much-esteemed French variety. EARLY PURPLE-TOP MUNICH, distinct and very early; one of the most valuable for frame culture and for early crops, the produce is at its best when about half or three-parts grown. EARLY RED AMERICAN STRAP-LEAVED

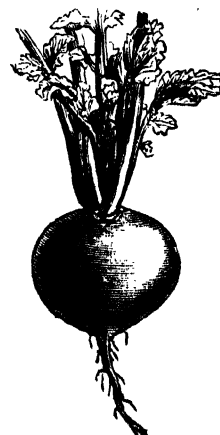


FIG. 131. ORANGE JELLY TURNIP.

Turnip—continued.

flesh white and firm; very early. **EARLY SNOWBALL**, one of the best whites, sweet and tender; early, largely grown for the London markets. **EARLY STRAP-LEAVED WHITE STONE**, fine quality; suitable for very early and for late sowing (see Fig. 130). **EARLY WHITE DUTCH**, an old and well-known sort, of excellent quality. **EXTRA EARLY MILAN**, bulb flattened, with purple top; very early, and compact in habit. **ORANGE JELLY**, or **GOLDEN BALL**, an excellent yellow variety (see Fig. 131); much favoured in the north of England and in Scotland. **VEITCH'S RED GLOBE**, of handsome shape and fine flavour;



FIG. 132. YELLOW MALTA TURNIP.

one of the best for main crop, and for use in winter. **YELLOW MALTA**, a handsome yellow variety, of good quality, but sometimes rather strong-flavoured (see Fig. 132).

TURNIP, DEVIL'S. A common name for *Bryonia dioica* (which see).

TURNIP FLEA, or TURNIP FLY. Names commonly given to two or three species of *Phyllotreta* (which see). This genus of small Beetles belongs to the large group formerly included under the generic name *Haltica*, but now, for convenience, subdivided, by minute characters, into numerous genera. All the insects in this group have the thighs of the hinder pair of legs thickened, whereby they are enabled to leap several inches. This power and their small size have gained for them the popular name of Fleas, though widely different from true Fleas in many respects. They all feed on plants, several being attached to the *Cruciferae*. Turnips are often ravaged by *P. nemorum*; and *P. concinna* is also a dangerous foe to these plants in some localities. *P. consobrina* and *P. obscurella* are mentioned by Curtis, in "Farm Insects," as not uncommon on Turnips; and *P. flexuosa* and *P. Lepidii* have been recorded as dangerous in Germany. However, the general appearance and the habits of all are much alike; as are also the remedies that should be employed against their attacks. The general form of the species in the genus is well shown in Fig. 133; but the size varies from

Turnip Flea, or Turnip Fly—continued.

$\frac{1}{16}$ in. to $\frac{1}{8}$ in. in length. All have the ground-colour very dark olive-green or metallic-green. *P. nemorum* has a broad ochre-yellow streak down each wing-case (see

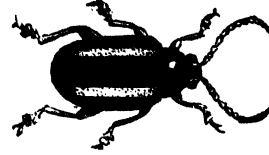
FIG. 133. TURNIP FLEA (*Phyllotreta nemorum*), magnified.

Fig. 133); and the legs are rusty-ochre, with pithy thighs. *P. concinna* is more oval and convex than the former species, and is of a uniform greenish-black, with a shining coppery or brassy lustre—the legs being black, except the rusty-red base of the tibiae. *P. consobrina*, *P. Lepidii*, and *P. obscurella*, are much like *P. concinna*, the four species differing in the pitting of the surface, in the peculiar shade of the metallic lustre, in the colour of the base of the antennae, in the proportions of the fourth and fifth joints in these organs, and in size of body, to a slight degree. *P. flexuosa* is more like *P. nemorum*, being black, with a pale clay-yellow line down each wing-cover; but the pale line is narrow and wavy, and the knees are pithy-black, not reddish; and the fourth and fifth joints of the antennae are shorter than in *P. nemorum*.

An account of the life-history of the very common species *P. nemorum* may be regarded as fairly representative of the habits of all that attack Turnips; so that the following remarks, though referring primarily to that species, will also, in great measure, be applicable to the others. The Beetles usually pass the winter concealed under rubbish on the soil, *s.g.*, stubble or other dead herbage, clods, &c., though an occasional warm day brings them out of their shelters. In spring, they begin to feed on the cruciferous weeds (Shepherd's Pursue, &c.), which are only too plentiful everywhere, alike in cultivated ground and in waste spots. When the cotyledons and first leaves of the seedling Turnips appear above the soil, they form the favourite food of the Beetles, which gnaw away the tissues till little more than the skeletons of the leaves remain, and the plants die in vast numbers. The crops are occasionally ruined; and even second and third sowings are sometimes destroyed in the same way. After the young plants have produced the rough leaves, the danger of serious injury from this cause is comparatively slight; though large holes are gnawed by the insects in the leaves. The female beetles each lay a few white eggs, here and there, on the lower surface of the leaves. In about ten days, the larvae are hatched. They are pale yellowish maggots, with three pairs of legs in front, and a sucker at the end of the body. They gnaw through the skin of the leaf; and, for about a week burrow in the tissues below it. They then are full-fed, drop to the ground, and burrow from $\frac{1}{2}$ in. to 2 in. into the soil, to become pupae. In about a fortnight, the beetles emerge. There may thus be, and usually there are, several broods in a season.

Prevention and Remedies. It is most desirable to clear away all cover that can protect the insects. The ground should be cleared of all cruciferous weeds, such as supply the insects with food before the appearance of the Turnip crop. Digging and ploughing the soil in winter destroys many of the Beetles, by burying them too deeply to allow of their return to the surface.

It should be kept in mind that the dangerous period to the crop is while the seedlings are quite young, and that the danger is very much less when the plants have formed the rough leaves; consequently, whatever strengthens

Turnip Flea, or Turnip Fly—continued.

the plants, and shortens the duration of the dangerous period, is a valuable means of preventing harm. It is, therefore, of great importance to have the soil thoroughly as well as to give

nitrogenous manures, and also to water the plants in dry weather. It has been suggested that thick sowing (up to 10lb. of seed per acre) will give a better prospect of escape from complete loss by the Turnip Flea; but this is not advisable, as overcrowding is apt to render the plants weak, and to prolong the period of danger from the Beetles, as well as to do harm in other ways.

A method sometimes employed to protect Swedish Turnips, is to mix the seed with one-third of its weight of the seed of common Turnips, the young plants of which are preferred by the insects.

Should the crops be attacked, the injury may be lessened, even though a cure should not be effected, by one or other of the following methods: A light, shallow tray may be tarred inside, and dragged over the rows of Turnips, having something at such a distance in front as to disturb the insects, so as to cause them to leap into the tray when roused. Many can thus be caught, the tar holding them fast; or a large hand-net, such as entomologists use in "sweeping" for insects, may be made use of, the plants being swept with it. Rolling the ground in the early morning has been found beneficial, as has been also the treading of a flock of sheep, kept in constant motion in the field, for an hour or two, in the early morning. The latter operations should be carried out only while the dew is still on the herbage; and the same rule should be observed in the application of dressings of all kinds, as these are found to be far more efficacious if put on while the plants are wet. Soot may be sprinkled along the drills of Turnips; but the dressing that has given the best results is said to be made up as follows: One bushel of fresh gas-lime, one of fresh lime, ten pounds of soot, and six pounds of flowers of sulphur, mixed and powdered thoroughly, and applied broadcast or along the rows while the dew is still on. The above amount is enough for two acres. Another mixture also strongly recommended is two bushels of road-scrappings, one of fresh lime, and fourteen pounds of sulphur per acre, applied as above.

TURNIP GALLS. The work of a small Weevil, which also forms somewhat similar Galls on Cabbages. A brief description of the Beetle (*Ceuthorrhynchus sulcicollis*) will be found under **Cabbage Gall Weevil** (where, however, the name is spelt *Ceutorrhynchus*). To the particulars there given, a few words may be added. The colour of the insect is black, slightly shining, sprinkled with a few grey hairs, or small scales; the head and thorax are much punctured, and the latter has a deep median furrow, and a small prominence on each side; the wing-cases bear small prominences in front of the tips, and each thigh of the hindmost legs is toothed on the inner side. The length of body is $\frac{1}{2}$ in. to $\frac{3}{4}$ in. The females lay their eggs near the top of the roots of most Crucifers. In Turnips they do so a little above, or close to, the soil. In a short time, a Gall begins to appear, and at last its form and size may resemble a large half-pea fixed to the root by the flat side; or two or more may unite in growth. The Galls are fleshy, like the roots; and in each is a cavity, tenanted by a curved, whitish, footless maggot, which, when full-fed, bores its way out, drops to earth, and pupates 1 in. or 2 in. underground. This may be done in autumn, but the more backward larvæ winter in the Galls.

Remedies. The most certain is to cut off and destroy the Galls, with their occupants in them. Applications of soot or gas-lime, or other insecticides, to the soil whence infested plants have been lately removed, have

Turnip Galls—continued.

proved valuable in lessening the prevalence of the Beetles. Other measures against injury will be found mentioned under **Cabbage Gall Weevil**.

TURNIP, LION'S. The roots of *Leontice Leontopetalum*.

TURNIP MOTHS. The larvæ of several species of Moths feed on Turnip-plants, some preferring one organ, some another; but the insect which is usually denoted by the name of "Turnip Moth" is one of the *Noctuæ* (see **Moths** and **Noctua**). Its scientific name is *Agrotis segetum*. The popular name is rather misleading, as the larvæ feed on many other plants, including most root crops and numerous weeds. Moreover, several other Moths are almost as hurtful, in the larval state, to the roots of Turnips as is *A. segetum*. The genus *Agrotis* is a large one, and in the same species there may exist great variations in markings and shade of colour; while the species show a great general similarity to one another. The fore wings are long and rather narrow, and



FIG. 134. TURNIP MOTH (*Agrotis segetum*).

the hind wings are pale grey. *A. segetum* (see Fig. 134) reaches $1\frac{1}{2}$ in. to 1 in. across the fore wings, which are grey

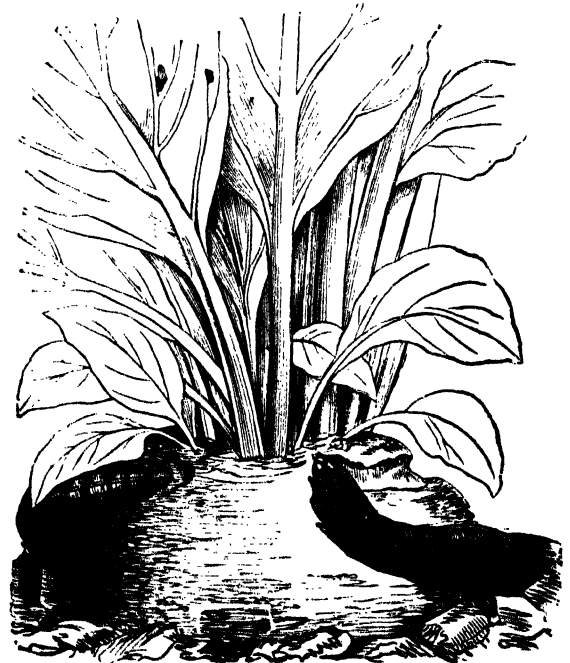


FIG. 135. LARVÆ OF TURNIP MOTH.

Turnip Moths—continued.

or brownish, sometimes with a yellowish tinge; they are usually darker towards the front margin, and bear obscure, darker marks and cross-lines; the hind wings are pearly-grey. The larvæ are of the form shown in Fig. 135; they are smoky-brown, tinged with pink or purple, with darker lines and small spots, and a paler line down the middle of the back; the head is small, and much narrower than the body. Owing to their habit of living concealed below the surface of the soil, the larvæ are seldom seen. While young, they feed, in the darkness, above ground; and they are especially disposed to gnaw through the base of the stem in young plants, or to remove the bark, if the stems are too large to be gnawed through. They are indiscriminate feeders, devouring almost all kinds of herbaceous plants. In autumn, they often resort to Turnips, boring into the tuberous roots from below, and eating out large cavities, in which they live during the winter, or till food fails. A few become pupæ, in cocoons in the soil, in October; but by far the larger number pupate in spring, and the moths emerge in June.

The Heart-and-Dart Moth (*Agrotis exclamatoris*) is very similar to, and almost as destructive as, the Turnip Moth. The larvæ of the two species are so much alike that it requires a skilled entomologist to distinguish the one from the other; but this is of little moment to gardeners and farmers, as they are as much alike in habits and in destructive powers as they are in appearance.

The larvæ of a good many more species of *Noctua* occasionally feed on the roots, leaves, or stems of Turnips, but they are so seldom the cause of perceptible injury to these plants that it is unnecessary to discuss them here.

Remedies. Such larvæ as feed on the leaves of Turnips are best combated by the means detailed under **Turnip Sawfly**. Those larvæ that frequent the roots are not easily reached when they have bored into the Turnips. The time when they can be destroyed, or kept in check, with most hope of success, is in autumn, while they are still living concealed during the day, but come out to feed at night. Hand-picking, by the light of a lantern, is too slow, except to protect choice plants. Soot and gas-lime have been found useful, applied round the top of the root of each plant; and the same is true of gas-water poured on the soil. Ploughing or digging the ground, during winter, is useful by turning up the larvæ and exposing them to rooks and to other insectivorous birds, which are, in truth, the agriculturist's best allies against foes of this sort.

TURNIP RADISH. See **Radish**.

TURNIP-ROOTED CELERY. See **Celeriac**.

TURNIP, ST. ANTHONY'S. A common name for *Ranunculus bulbosus* (which see).

TURNIP SAWFLY (*Athalia spinarum*). One of the most dangerous enemies to Turnips in many years, since the larvæ (known as "Niggers," or "Black Palmers," because of their dark colour) frequently appear in myriads in the fields, and devour the leaves of the young plants. Often a second sowing has been rendered necessary; and even a third or a fourth has been required at times. The perfect insects are Sawflies (see **Tenthredinids**), about $\frac{1}{2}$ in. or $\frac{3}{4}$ in. long, and rather heavy in form. Their ground-colour is clay-yellow, covered with dense, whitish, short hairs. The antennæ, head (except white mouth), spots on thorax, and tips of shanks and of joints of the feet, are black. The wings are transparent, with nerves (except at base) dark. The female lays about 250 eggs, often from ten to twenty on a single leaf, along the margins. The eggs hatch in from six to twelve days. The larvæ at

Turnip Sawfly—continued.

first are white, with two black dots on the head; but when nearly full-fed they are black above, paler below, with slate-coloured and black spots on the sides. There are usually several folds of skin, but no hairs, on the body. Often many occur on each leaf, and the leaves are gnawed away to the ribs by them. In about three weeks they reach their full size, and then burrow underground, and form oval cocoons. In these the summer broods lie about three weeks, when they emerge as Sawflies. There are usually three broods of Sawflies each year—in May, July and August, and September. They are partial to flowers, but also sit underneath the leaves of Turnips in dull weather, and may be caught by sweeping the plants with a net. They have been observed to proceed from district to district, beginning at one side of a field, and crossing it to the other, in regular succession. When the larvæ are very numerous, the Turnips are almost wholly eaten down, and suffer so much that the crop is rendered nearly worthless.

Besides the well-known *A. spinarum*, another Sawfly does almost as much harm to Turnips in the larval stage. This is *A. ancilla* (also called *A. glabricollis*). The insects are much like *A. spinarum*; but their ground-colour is reddish or clay-yellow, and they are not hairy. The larvæ of the two species are very much alike, and it is probable that those of *A. ancilla* are often wrongly ascribed to *A. spinarum*. The remedies recommended below are beneficial against both species.

Remedies. Disturbing the larvæ when about to pupate, prevents this latter change, and the insect dies. It is also well to disturb them when changing their skins, as this is seriously hurtful to them, and destroys many. With this object, the plants may be brushed over with a rope, or with such branches as those of Firs, &c., and the larvæ thrown to the ground may be crushed; or quicklime or gas-lime may be sprinkled on the soil round the plants. Anything that will promote the rapid growth of the Turnip-plants is valuable, as diminishing the risk of injury; hence, watering or irrigating the plants with liquid manure, or even with pure water alone, is advisable, and has the further advantage of being directly injurious to the larvæ. Thick sowing is recommended, as part of the crop usually escapes, unless the larvæ are excessively numerous; but it brings with it serious drawbacks. Ducks have been employed with advantage to reduce the numbers of larvæ, and have, at times, saved the crops; but they are apt to suffer from eating the larvæ in quantities, becoming affected with diarrhœa, and getting very thin.

TURNIP-SEED WEEVIL (*Ceuthorhynchus assimilis*). A small Weevil, closely related to, and very much like, the gall-makers of the same genus (*C. sulcicollis*), known as **Cabbage Gall** or **Turnip Gall Weevils** (which see). It differs from the latter in the grey colour due to the pale hairs or scales scattered all over its dark body, and in the hinder thighs not being toothed on the inner side; and it is also slightly smaller. Its life-history is as follows: The Beetles usually emerge from the pupæ in autumn; they pass the winter in shelter, and may be found, in spring and early summer, on flowers of Cabbages, Turnips, and other cultivated or wild *Crucifera*, feeding upon the flowers. The females lay their eggs in the immature fruits; and the larvæ feed on the seeds, and, when full-fed, bore out of the seed-vessels, fall to the ground, and burrow into it, there to become pupæ.

Remedies must be confined to the capture of the Beetles, by nets or otherwise, on the flowers, since the habits of the larvæ, and the situation of the pupæ, almost preclude other means of capturing them freely.

TURNSOLE. See **Melilotropium**.

TURPENTINE-TREE. A common name for various species of *Abies*, *Pinus*, *Pistacia*, &c.

TURPENTINE VESSELS. "Tubes formed in the interstices of tissue, into which turpentine or such secretions are naturally drained during the growth of a plant. They are common in Conifers" (Lindley).

TURPINIA (named in honour of P. Turpin, French botanical artist and naturalist, who died in 1840). **SYNS.** *Dalrymplea*, *Eyrea*, *Lacepedea*, *Ochranthe*, *Triceria*. **ORD.** *Sapinaceæ*. A genus embracing about eight species of stove or greenhouse, glabrous trees or shrubs, inhabiting India, the Indian Archipelago, China, the West Indies, and the northern provinces of South America. Flowers white, small, in spreading, axillary and terminal panicles; calyx five-cleft; petals five, orbicular, sessile, imbricated; stamens five. Fruit nearly globose, three-celled. Leaves opposite, exstipulate, imparipinnate or very rarely simple; leaflets opposite, serrulate, sometimes stipellate, coriaceous. Branchlets terete. The species known in gardens are here described. They thrive in a compost of peat, loam, and sand. Propagation may be effected by ripened cuttings, inserted in sand, under a glass, in heat.

T. arguta (sharp). *f.* Dirty white, or purplish when in bud; inner sepals and petals oblong-ovate, about equal in length, the two outer sepals rather smaller; panicle dense, terminal. March. *l.* Slightly crenate, 3in. to 6in. long, glabrous. *h.* 3ft. to 4ft. China, 1826. Greenhouse shrub. **SYN.** *Ochranthe arguta* (B. R. 1819).

T. insignis (remarkable). *f.* Sweet-scented; calyx segments unequal; petals very shortly unguiculate; panicle terminal. May. *l.* serrulate. *h.* 20ft. Mexico, 1847. A handsome, stove tree. **SYN.** *Lacepedea insignis*.

T. nepalensis (Nepaul). A synonym of *T. pomifera*.

T. occidentalis (Western). Cassava Wood. *f.*, primary divisions of the panicle racemiform, opposite, bearing small corymbs, of which the upper ones are usually alternate. May. *fr.* dark blue. *l.*, leaflets two or three pairs, elliptic-oblong, crenate or serrate, glabrous, petiolulate, stipellate. *h.* 20ft. to 30ft. West Indies, 1824. Stove tree.

T. pomifera (apple-bearing). *f.*, primary branches of the panicle opposite. May. *fr.* red, purplish, yellow, or green, 3in. to 4in. in diameter. *l.* 5in. to 20in. long; leaflets three to nine, elliptic, oblong, or ovate, acuminate, 2½in. to 8in. long. *h.* 25ft. or less. India and China, 1820. Stove shrub or tree. (B. F. S. 159, under name of *T. nepalensis*.)

TURPINIA (of Persoon). A synonym of *Poiretia* (which see).

TURRÆA (named in honour of George Turra, 1607-1688, Professor of Botany at Padua, and author of several botanical works). **ORD.** *Meliaceæ*. A genus comprising about sixteen species of stove or greenhouse trees or shrubs, inhabiting tropical and South Africa, tropical Asia, and Australia. Flowers white, elongated; calyx four or five-toothed or parted; petals four or five, elongated, free, twisted; staminal tube cylindrical, four or five-toothed; anthers four or five, included or exserted; disk absent; peduncles axillary, few-flowered, many-bracted. Leaves alternate, petiolate, entire or obtusely lobed. The best-known species are here described. A compost of loam and peat is most suitable for their culture. Propagation may be effected by cuttings of ripened wood, with the leaves intact, inserted in sand, under a glass, in heat.

T. heterophylla (variable-leaved). *f.* clustered at the ends of the branches; petals ten to fourteen lines long, shorter than the style; peduncles silky-tomentose, three to eight lines long. May. *l.* short-stalked, ovate, acute or obtusely pointed, 2in. to 3½in. long, undivided or sub-trilobed, the young ones pubescent beneath. Upper Guinea, 1843. Stove shrub. (B. R. xxx. 4, under name of *T. lobata*.)

T. obtusifolia (obtusely-leaved).* *f.* on solitary, axillary peduncles six to ten lines long; petals glabrous, ligulate, 1in. to 1½in. long. May. *l.* obovate, 1in. to 1½in. long, narrowed into short petioles, entire or obtusely three-

Turræa—continued.

lobed, with revolute margins, glabrous on both sides, paler beneath. Branches glabrous. *h.* 4ft. to 6ft. South Africa, 1872. Greenhouse shrub. (B. M. 6267.)

T. rigida (rigid). *f.* in sessile fascicles from nodes of branches or old wood; corolla ½in. to 1in. long, tubular, at first silky on the outside. April. *l.* alternate, short-stalked, entire, firm, obtuse or acute, 4in. to 6in. long, penninerved. Mauritius, 1816. A glabrous, stove bush or tree.

TURRITIS. Included under *Arabis*.

TURTLE HEAD, or TURTLE BLOOM. See *Chelone*.

TUSSACIA. A synonym of *Goodyera* (which see).

TUSSACIA (named after F. R. de Tussac, a French botanist, who wrote a Flora of the Antilles in 1809). **SYN.** *Chrysothemis*. **ORD.** *Gesneraceæ*. A small genus (four or five species) of stove herbs, with creeping, simple or branched rhizomes, natives of the West Indies, Guiana, and Columbia. Calyx often scarlet, free, ample, campanulate, five-angled or five-winged; corolla yellow, lined with purple, the tube rather broadly cylindrical, the limb oblique, erecto-patent, broadly five-lobed; stamens included; peduncles umbellately many-flowered, in the upper axils, disposed in a terminal corymb. Leaves opposite, often ample; upper floral ones reduced to bracts. The only species introduced are here described. Both are perennials. For culture, see

T. nitida (shining). A synonym of *Catopsis nitida*.

T. pulchella (pretty).* *f.*, calyx red, the lobes deltoid, serrated; corolla nearly regular, 1in. to 1½in. long, the tube erect, cylindrical, half as long again as the calyx. July. *l.* ovate or ovate-oblong, acute, 3in. to 7in. long, crenate-serrate above the narrow-cuneate base, scarcely petiolate. *h.* 1ft. West Indies, 1830. **SYN.** *Desleria pulchella* (B. M. 1146; L. B. C. 1028).

T. semi-clausa (half-closed). *f.*, calyx cinnamon-red, campanulate, truncate; corolla golden-yellow, radiately striped with crimson-purple; umbels forming short, terminal panicles. *l.* broadly ovate, pubescent, dentate-ciliate, bright green. Stems branching, fleshy, spotted with red. Brazil, 1870. A showy plant. (L. H. ser. III. 28.) In some varieties, the stems and petioles are violet-coloured.

TUSSILAGO (the old Latin name used by Pliny, and derived from *tussis*, a cough; alluding to the medicinal use of the leaves). Coltsfoot. **ORD.** *Compositæ*. A monotypic genus. The species, *T. Farfara*, is a British, scapigerous herb, with rather large, yellow flowers and cobwebby leaves. As the flower-head dies away, the scape lengthens, and finally bears a head of white, serrated pappus hairs. The leaves are used for cigar making, and are smoked in cases of asthma. The species and its variety thrive in any soil, and, if required, may be propagated by cutting up the long, creeping rhizomes. Other plants formerly included here will be found under *Homo-gyne*, *Petasites*, &c.



FIG. 136. TUSSILAGO FARFARA VARIEGATA.

Tussilage—continued.

T. Furfura variegata (variegated Colliflower). * *l.* large, broadly cordate, angled or lobed, toothed, margined or blotched with *l.* A pretty plant, but not one which should be indiscriminately introduced into gardens, as its creeping roots give much trouble at times. See Fig. 136.

TUSSOCK MOTHS. Species of *Bombycina*, nearly related to the Vapourer Moths (see *Orygia antiqua*). By some entomologists they are included in the genus *Orygia*; but most separate them from that genus because the females of the Tussocks have full-sized wings, while those of the Vapourer Moths are almost wingless. The Tussocks are placed in a genus named *Dasychira* (from *dasus*, hairy, and *cheir*, the hand, or fore limb; in allusion to the hairs on the first pair of legs). There are two British species, generally known as the Pale Tussock (*D. pudibunda*), or Hop-dog, and the Dark Tussock (*D. fascelina*). The males have the antennæ much fringed; while in the females they are nearly simple. In both sexes the body is heavy, and the wings are rather broad. The front pair of legs are hairy, especially in the male. The larvae resemble those of the Vapourer Moths in having erect, brush-like tufts of hair on the middle line of the back, from the fifth to the eighth segments, and a backward-pointing tuft on the back of the twelfth segment. When full-fed, the larvæ spin slight cocoons among their food-plants, and become hairy pupæ.

The Pale Tussock (*D. pudibunda*) is about 2in. or 2½in. in spread of the fore wings. Its general colour is grey, with three narrow, dark bands across the fore wings; or, in the male, a broad, smoke-coloured cross-bar, with darker, wavy lines. The hind wings are pale grey, with a faintly darker bar. The larvæ are pale green, with a deep black, velvety band on the back between each two segments from the fifth to the eighth; the tufts of erect hairs on the back are yellow. The larvæ live on many trees, such as Beech, Chestnut, Lime, and Oak, and they also feed on Hops, whence the name "Hop-dog," often applied to them.

The Dark Tussock (*D. fascelina*) seldom exceeds 1½in. across the front wings, which are smoky-grey, with three wavy, blackish cross-bars; two of these lie close together beyond the middle of the wing. The hind wings are smoky-grey, as are also the head and body. The larvæ are dark grey, with lemon-yellow hairs, but the tufts on the back are nearly black instead of yellow. The larvæ feed occasionally on Plum and other fruit-trees, on Hazel, Heather, Oak, and various herbs. They are, however, seldom the cause of serious injury, hardly ever being abundant.

Remedies. Hand-picking, or shaking the larvæ from the branches on to sheets of paper or cloth, will prove sufficient to prevent harm, should it be threatened at any time.

TUTSAN. See *Hypericum Androsaemum*.

TWEEDIA. A synonym of *Oxypetalum* (which see).

TWIN FLOWER. See *Bravoa geminiflora*.

TWISTED STALK. See *Streptopus*.

TYCHUS QUINQUE-MACULATUS. Larvæ of a Weevil known by this name feed in the seeds of Peas and other *Leguminosæ*. During summer, when full-fed, they fall to the soil, and become pupæ in it. The Beetles emerge from the ground in autumn, live in concealment during winter, and, in summer, the females lay eggs in the flowers, or, rather, in the ovaries of the

Tychius quinque-maculatus—continued.

flowers, of the food-plants. The Beetles are about ½in. long, and are elongate-ovate in form. The beak is long, downwards. The colour is black, with ruddy or yellow scales above, a white line down the middle of the thorax, and a white spot, and white inner border, on each wing-case; the body is pure white below. The thighs are toothed, and black; the rest of the legs, and the antennæ, are dull-red. The Beetles are not very common in England, which is fortunate, as it is difficult to apply a remedy—at least, while the larvæ are in the pods. A dressing of soot along the rows of Peas, towards the end of summer and autumn, would probably be of service against the pupæ in the soil.

TYDÆA (named after Tydeus, a son of Cæneus, King of Calydon). ORD. *Gesneraceæ*. A small group of stove herbs, natives of tropical America, now included under *Isoloma*. The species hybridise freely, and many crosses have received distinctive names in continental gardens. For culture of the plant described below, see *Gesnera*.



FIG. 157. UPPER PORTION OF PLANT OF TYDÆA AMABILIS.

T. amabilis (lovely). * *fl.* dark rose-coloured; corolla large, very villous, the limb of five unequal, rounded lobes, dotted with purple, the oblique tube paler-coloured within, but marked with larger dots and blotches; peduncles axillary, solitary, as long as, or the upper ones much longer than the leaves, erect, purple below. Spring. *l.* opposite, ovate, bluntly serrate-toothed, somewhat acuminate, dull green above, pale beneath. Stem 1ft. to 2ft. or more high, greenish-purple. New Grenada, 1866. Whole plant hairy. See Fig. 157. (B. M. 4999.)

BERRY. A common name for *Jatropha multifida* (which see).

TYLOCHILUS. A synonym of *Cyrtopodium* (which see).

TYLOGLOSSA. A synonym of *Justicia* (which see).

TYLOPHORA (from *tylos*, a swelling, and *phoros*, to bear; probably in reference to the coronal lobes). Including *Hybanthera*. ORD. *Asclepiadææ*. A genus comprising about forty species of stove, twining or rarely sub-erect sub-shrubs or herbs, inhabiting tropical and sub-tropical Africa, Asia, and Australia, New Caledonia, and Norfolk Island. Flowers rather small, sometimes minute; calyx deeply five-cleft or five-parted; corolla tube short, sub-rotate, deeply five-cleft, the lobes rather broad; coronal lobes five, fleshy; cymes umbelliform or shortly racemose. Leaves opposite. The species are not very ornamental. Only three call for description here; they are all twining sub-shrubs. For culture, see **Hoya**.

T. asthmatica (anti-asthmatic). East Indian Ipecacuanha. *f.* green, rather large, on long pedicels; corolla segments acute, peduncles shorter than the leaves, bearing two or three sessile, few-flowered umbels towards the apex. November. *l.* ovate or nearly round, acuminate, often cordate at base, glabrous above; petioles glandless, sub-terete. *h.* 5ft. India, 1814. (B. M. Pl. 177; B. M. 1929, under name of *Cynanchum viridiflorum*.)

T. barbata (bearded). *f.* dingy-purple, not numerous, in one or rarely two umbels; corolla ½ in. broad, slightly bearded inside. July. *l.* on slender petioles, ovate or ovate-lanceolate, acute, not cordate, lin. to 2 in. long. *h.* 10ft. Australia, 1822.

T. grandiflora (large-flowered). *f.* purple, one to three on a short, interpetiolar peduncle; corolla ½ in. across, the lobes obtuse. July. *l.* on slender petioles, ovate to ovate-lanceolate, shortly and acutely acuminate, more or less cordate, lin. to 2 in. long, pubescent. *h.* 10ft. Australia, 1822.

TYMPANANTHE. A synonym of *Dictyanthus* (which see).

TYPHA (the old Greek name used by Theophrastus). Bullrush; Cat's Tail; Club-rush; Reed Mace. ORD. *Typhaceæ*. A genus comprising about ten species of slender or robust, stove or hardy, marsh-loving herbs, found in tropical and temperate regions. Male and female spadices similar, superposed, nearly terminating the peduncle, caducous or remote, naked or with a very caducous, stipitate spathe; peduncle erect, terete, straight, slender or robust, undivided. Radical leaves elongated-linear, rather thick and spongy; cauline ones few, shorter. The two British species, which thrive in rivers, ditches, and ponds, are here described. They may be increased by seeds, sown in a pot plunged nearly to the level of the soil in water; or by division of the rhizomes.

T. angustifolia (narrow-leaved). Small Bullrush. *f.* brown; spikes ½ in. to ¾ in. in diameter, separated by ½ in. to 1 in., the female often interrupted. July. *l.* ¾ in. to 1 in. broad, dark green, not glaucous, convex beneath, channelled towards the base. Plant smaller in all its parts than *T. latifolia*. (Sy. En. B. 1386.)

T. latifolia (broad-leaved). Cat-o-nine-tails; Marsh Beetle; Reed Mace, &c. *f.* dark brown; spikes 6 in. to nearly 12 in. long, ½ in. in diameter, contiguous or nearly so, silky from the copious filiform perianth scales. July and August. *l.* distichous, 3ft. to 6ft. long, ¾ in. to 1 ½ in. broad, linear, obtuse, nearly flat, sub-glaucous. Stem 3ft. to 7ft. high, terete. (Sy. En. B. 1385.)

TYPHACEÆ. A small natural order of aquatic or marsh-loving herbs, with perennial rhizomes, inhabiting Europe, temperate and tropical Asia, Australia, and temperate North America. Flowers small, inserted on a monocious spadix, or by abortion diœcious, in heads or dense spikes; perianth none; stamens of the males numerous, accompanied by bristles or membranous scales; anthers two-celled; ovaries of the females accompanied by bristles or scales, sessile, or on long stalks when ripe. Fruits membranous or sub-drupaceous, one or rarely two-celled, sessile or stipitate. Leaves alternate, linear, entire, erect and emerging or floating, sheathing at base; cauline ones subtending the spadices, or forming an involucre before flowering. Stems cylindrical, not

Typhaceæ—continued.

knotty, solid, simple or branched. The pollen of *Typha* is made into bread by the natives of Scind and New Zealand. Only a couple of genera—*Sparganium* and *Typha*—and sixteen species are included in this order.

TYPHONIUM (from *Typhon*, a mythological giant; the name was given by the ancients to some Aroid). Including *Heterostalis*. ORD. *Aroidææ* (*Araceæ*). A genus embracing about thirteen species of stove, tuberous, perennial herbs, inhabiting tropical Asia, Australasia, and the Pacific Islands. Flowers monocious, the males and females remote; spathe tube convolute, accrescent, persistent, the throat constricted, the lamina ovate or lanceolate, acute or acuminate, erect or recurved, deciduous; spadix sessile or stipitate, included, the appendage variable, often stipitate; peduncle usually short. Leaves cotemporary with the flowers, sagittate or hastate, three to five-lobed or parted, or pedatisect, the petiole elongated. The species known to cultivation are described below. They thrive in light, rich soil, and during the growing season require an abundant supply of water. After the leaves have died down, water must be withheld until growth recommences. The pots containing the tubers can be stored away in any dry, warm place. Propagation is effected by division of the tubers.

T. Brownii (Brown's)* *f.*, spathe with the convolute base ovoid, the lamina 4 in. to 5 in. long, very broad, of a deep purple inside; male and female spikes about ½ in. long, lin. distant; peduncle shorter than the petiole. April. *l.* divided into three narrow or broad-lanceolate lobes or segments, the lateral ones horizontally divaricate, 4 in. to 6 in. long, the middle one usually rather longer and narrower; petioles 6 in. to 12 in. long. Australia, 1875. (B. M. 6180.)

T. cuspidatum (cusped). *f.*, spathe tube green, ovoid or oblong; lamina lanceolate, prolonged into a whip-like process, or shorter and acuminate; spadix whitish, shorter or longer than the lamina, sometimes very long, the appendix very shortly stipitate, concavo-subulate; peduncle slender, scarcely one-third the length of the petioles. *l.* sagittate or hastate, oblong and scarcely cordate at base, or three-lobed or parted; petioles three or four times longer than the blades. *h.* 1ft. Bengal, Java, &c., 1819. SYN. *Arum flagelliforme* (L. B. C. 396).

T. divaricatum (divaricate). *f.*, spathe tube oblong-ovoid, the lamina dark purple, ovate, long-acuminate; peduncle usually short. July. *l.* cordate or hastate-sagittate, somewhat three-lobed; middle lobe somewhat ovate or oblong-ovate, acute or acuminate, twice as long as the ovate or lanceolate lateral lobes; petioles slender, twice as long as the blades. *h.* 2ft. East Indies, 1759. SYNS. *T. trilobatum* (of Curtis), *Arum divaricatum*, *A. trilobatum* (B. M. 339; L. B. C. 516), *A. l. auriculatum* (B. M. 2324).

T. diversifolium (Huegelianum) (Huegel's variable-leaved). *f.*, spathe erect, 4 in. to 7 in. long; lamina rich velvety purplish-brown inside, reticulated with pale green at base and apex; spadix shorter than the spathe; appendix 2 in. to 2 ½ in. long, blackish; ovaries purple; stigmas white. *l.* one or two, very variable in form, sagittate, hastate, or five-lobed, with the basal lobes directed upwards. Himalayas, 1879. SYN. *Heterostalis Huegeliana*.

T. trilobatum (three-lobed). *f.*, spathe tube oblong; lamina greenish outside, rose-purple within, oblong-ovate, acuminate, four times as long as the tube; spadix with a terete, conical, shortly stipitate appendix; peduncle slender, one-third the length of the petioles. *l.* hastate, sub-tripartite; lobes all broadly ovate, acuminate; petioles nearly thrice as long as the blades. *h.* 1 ½ ft. East Indies, 1714. SYNS. *Arum orizense* (A. B. R. 356; B. R. 450; L. B. C. 422).

T. trilobatum (three-lobed), of Curtis. A synonym of *T. divaricatum*.

TYTONIA (named after Arthur Tyton, by whom many of the oldest inhabitants of our gardens were preserved). ORD. *Geraniaceæ*. A monotypic genus, the proper name of which, according to the authors of the "Genera Plantarum," is *Hydrocera*. The species is a beautiful, stove aquatic. It should be grown in rich, loamy soil, in large pots or pans of water, and placed in a warm part of the stove. The plant may be increased by seeds, sown in spring.

T. natans (swimming). Water Balsam. *f.* beautifully variegated with red, white, and yellow, large, irregular; sepals five, coloured; petals five, the outer front ones largest, concave; stamens five; peduncles axillary, short, one to three-flowered. July to September. *l.* alternate, narrow. Tropical Asia, 1810.

UCRIANA. A synonym of *Tocoyena* (which see).

UDORA. A synonym of *Elodea* (which see).

UGENA. Included under *Lygodium*.

UGNI. Included under *Myrtus* (which see).

ULEX (an old Latin name used by Pliny for some similar shrub). Furze; Gorse; Whin. Including *Stauracanthus*. ORD. *Leguminosæ*. A genus embracing not more than a dozen species of mostly hardy shrubs, with very spiny branchlets, found in Western Europe and North-western Africa. Flowers yellow, solitary or shortly racemose in the axils of the spines or scales towards the tips of the branchlets; calyx membranous, coloured, two-parted; petals shortly clawed; standard ovate; bracts small. Leaves spinescent or reduced to small scales. *U. europæus* and *U. nanus* are well-known, ornamental, British plants. All thrive in ordinary soil, and may be increased by cuttings, or by seeds.

U. europæus (European). Common Furze; Gorse; Thorn Broom, &c. *f.* ½ in. long, odorless; calyx hairs black, spreading; bracts ovate. February and March; August and September. *l.* small; leaflets hairy. Spines sometimes furnished with minute, one-foliolate leaves. Branches spreading. *h.* ½ ft. to 3 ft. Western Europe, &c. (Sy. En. B. 323) *flora-plena* is a beautiful, double-flowered variety. The form *strictus* (Irish Furze) has erect branches.

U. Gallii (French). A variety of *U. nanus*.

U. geniatoides (Genista-like). Portuguese Furze. *f.* axillary or terminal, solitary; standard and keel tomentose outside; wings narrow, much spreading. August. *l.* small, scale-like, spiny, glabrous. Branches rigid, decussate. *h.* ½ ft. to 3 ft. Mediterranean region, 1823. Half-hardy. (B. R. 1452.) SYN. *Stauracanthus apyllus*.

U. nanus (dwarf). Cat Whin; Tam Furze. *f.* ½ in. long, more racemose than in *U. europæus*; calyx adpressedly pubescent. July to November. *fr.* persistent till the following season. Spines ½ in. to 1½ in. long. Stems ½ ft. to 3 ft. high; branches drooping. England, Belgium, France.

U. n. Gallii (French). Primary spines rigid, longer than those of *U. nanus*. Branches ascending. (F. d. S. 441 b and Sy. En. B. 324, under name of *U. Gallii*.)

ULGINOSE. Inhabiting swampy places.

ULLOA. A synonym of *Juanulloa* (which see).

ULLUCUS (from *Ulluco*, the Quitan name). SYN. *Mellica*. ORD. *Chenopodiaceæ*. A monotypic genus. The species is a half-hardy, fleshy, decumbent and twining herb, its creeping rhizome and angular stem emitting tuber-bearing roots. It is extensively grown in the mountains of Peru and Bolivia for the sake of its small tubers. As a substitute for the Potato, the plant has been unsuccessfully tried in this country. It thrives in any light soil, and may be increased by its tubers.

U. tuberosus (tuberous-rooted). *f.* golden, in ample, axillary, loose-flowered racemes; perianth rotate, five-parted, with a very short tube; bracts at the bases of the pedicels lanceolate, persistent; bracteoles below the flowers very conspicuous. June. *l.* alternate, on thick petioles, rounded-cordate, acute, entire. *h.* ½ ft. Andes of South America, 1846. (B. M. 4617; G. C. n. s., xxiii., p. 216; L. J. F. 221.)

ULMEÆ. A tribe of *Urticaceæ*.

ULMUS (the old Latin name used by Virgil, &c.). Elm. ORD. *Urticaceæ*. A genus comprising about sixteen species of hardy, unarmed trees, broadly dispersed over north temperate regions, extending in Asia to tropical mountains. Flowers polygamous, mostly hermaphrodite, fasciated; perianth loosely campanulate, four to nine (often five) cleft, the lobes imbricated; stamens four to eight (often five); filaments erect, at length exserted. Fruit a one-seeded samara. Leaves alternate, distichous, serrated, penninerved, deciduous or sub-perennial; stipules lateral, scarious, very caducous. Elm wood is rather hard, and reddish; it is used specially for wheelwrights' work, shafts, axletrees, screws for presses, &c. Exotoses or wens are often developed on Elm trunks, which acquire great hardness, and are much sought for by cabinet-makers, from the different patterns exhibited by the twisted arrangement of their wood fibres. Elm-trees arrive at perfection

Ulmus—continued.

in 150 years, but they will live for more than four times that period. They were held in high estimation by the ancients, not only on account of their leaves, which were dried and used as fodder, but also on account of their being used as props for Vines. The common Elm (*U. campestris*) grows very rapidly in light, rich land; but its wood is proportionately light and porous, and of little value compared with that grown on strong land, which is of a closer and stronger texture, and at the heart will have the colour, and almost the hardness and weight, of iron. Propagation is effected by layers, suckers, grafting, and budding. Layers are usually made in autumn, or in the course of the winter, and become rooted, or fit for removal, in the course of a year. Suckers are produced in abundance by some of the species and varieties, and afford a ready means of increase. Whip or splice-grafting is best performed, close to the root, in spring; the plants thus treated make shoots of 3 ft. or 4 ft. in the same year, and never throw up suckers, unless the graft is buried in the soil. The Scotch Elm (*U. montana*) luxuriates in a deep, rich loam; but it becomes most valuable in a sandy loam lying on rubble-stone or on dry rock. It is most readily propagated by seeds; these may be sown as soon as ripe (about the middle of June), in which case many plants will be obtained in the same season; or they may be dried in the shade, and stored in bags or boxes, in a dry place, until the following March or April. *U. americana* delights in a low, humid situation. Its wood is inferior to that of the common Elm. The species best-known to cultivation are here described; all have brownish flowers, appearing from March to May.

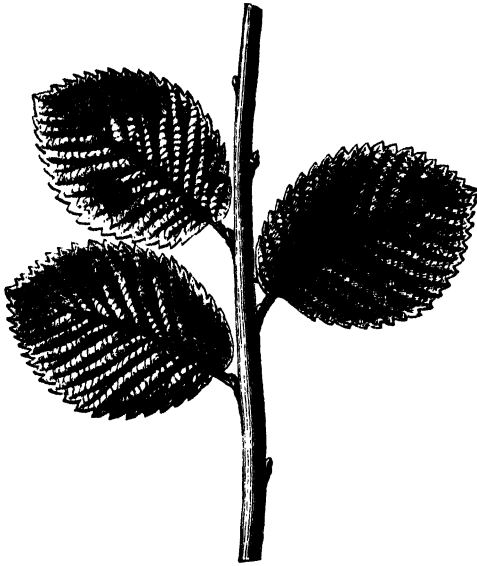


FIG. 133. LEAF AND FRUIT-BEARING TWIGS OF *ULMUS CAMPESTRIS*.

U. alata (winged). Wahoo or Winged Elm. *f.* on slender, drooping, jointed pedicels or peduncles; perianth segments obovate. *fr.* ovate or oval, downy on the face, at least when young, fringed-ciliated. *l.* ovate-oblong and oblong-lanceolate, acute, rather thick, ½ in. to 2½ in. long, smooth or nearly so above, downy beneath. Branches (at least some of them) corky-winged, branchlets and bud-scales nearly glabrous. *h.* 30 ft. to 40 ft. North America, 1820.

Ulmus—*continued.*

U. americana (American).* American or White Elm. *f.* in close fascicles, on slender, drooping peduncles or pedicels, which are jointed above the middle; perianth seven to nine-lobed; fascicles close. *fr.* oval or ovate, glabrous, except on the margins, $\frac{1}{2}$ in. long. *l.* obovate-oblong or oval, abruptly acute, sharply and often doubly serrated, 2 in. to 4 in. long, smooth or nearly so above, softly pubescent or soon glabrous beneath. Branches not corky; branchlets and buds glabrous. *h.* 80 ft. to 100 ft. North America, 1752. An ornamental tree. (T. S. M. p. 322.)

FIG. 139. YOUNG SHOOT OF *ULMUS CAMPESTRIS ROTUNDFOLIA*.

U. campestris (field-loving).* Alme; Aumie-tree; common Elm. *f.*, perianth smaller than in *U. montana*; stamens often four. *fr.* usually obovate. *l.* 2 in. to 3 in. long, less cuspidate than in *U. montana*, often narrow at base, scabrid above and pubescent beneath, or nearly glabrous. Trunk attaining 20 ft. in girth, with rugged bark; root sending up abundant suckers. *h.* 125 ft. Europe (Britain). See Fig. 139. (B. M. Pl. 232.) SYN. *U. carpinifolia*. *U. glabra* and *U. suberosa* are regarded by Hooker, as mere varieties of this species; but for gardening purposes they are kept distinct in this work.

U. c. acutifolia (acute-leaved). *l.*, in old specimens, more tapering, and branches more pendulous, than in *U. c. alba*, which this variety otherwise resembles.

U. c. antarctica (Antarctic). A graceful, small-leaved form, somewhat resembling *U. c. viminalis*. The name of this form is very inappropriate, as there are no Elms in the Southern hemisphere.

U. c. aurea (golden). This is one of the most distinct and desirable of all the ornamental Elms; it has foliage like that of *U. c. antarctica*, but of a uniform golden-bronze colour. (B. H. 1866, 19; I. H. 513.) SYN. *U. Roselati*.

U. c. Berardi (Bernard's). A distinct and pretty form, of somewhat erect habit, with small, rather rigid leaves. This originated as a seedling in the nurseries of Simon-Louis Bros., near Metz.

U. c. betulifolia (Birch-leaved). *l.* somewhat resembling those of the common Birch.

U. c. chinensis (Chinese). A low and rather tender bush. China.

U. c. concavifolia (concave-leaved). This is scarcely distinct from *U. c. cucullata*.

U. c. cornubiensis. Cornish Elm. *l.* small, strongly veined, coriaceous. Branches bright brown, smooth and somewhat flexuous when young, and very compact, becoming upright with age. "This variety, in the climate of London, is a week or a fortnight later in coming into leaf than the common Elm, from which, and from all other varieties, it is readily distinguished by the bark of old trees, which never scales off, but tears asunder, exhibiting its fibrous construction, in the manner of the bark of the Sweet Chestnut. There are many fine trees of this variety in Kensington Gardens." (London.)

U. c. cucullata (hooded). *l.* curiously curved, something like a hood.

Ulmus—*continued.*

U. c. foliis-variegatis (variegated-leaved). *l.* striped with white, very ornamental in spring.

U. c. latifolia (broad-leaved). *l.* broader than in the species, and expanding very early in spring.

U. c. nana (dwarf). This very distinct variety is said not to grow above 2 ft. high in ten or twelve years.

U. c. parvifolia (small-leaved). A very common variety in all the woods of the South of Russia, and varying in height from that of a medium-sized tree to that of a diminutive shrub, according to soil and climate.

U. c. planifolia (flat-leaved). A handsome, small tree, closely resembling *U. c. parvifolia*.

U. c. rotundifolia (round-leaved). This form is characterised by its roundish-oval or sub-orbicular leaves. See Fig. 139.

U. c. sarniensis. Jersey Elm. A free-growing variety, differing very little from the type.

U. c. stricta (upright). Red English Elm. One of the most valuable timber-trees of the small-leaved kinds; growth very rigid. The timber is of excellent quality, and the tree forms poles of equal diameter throughout.

U. c. tortuosa. Twisted Elm. This is the only Elm that grows freely from cuttings. The wood of the tortuous parts of the trunk is valuable for the naves of wheels.

U. c. umbraculifera (umbrella-bearing). A compact-growing form, with a dense, umbrella-like head.

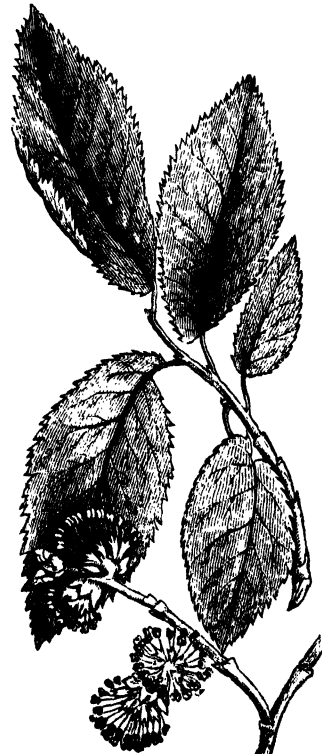
U. c. viminalis (twiggy). *l.* small. Branches numerous, slender, twig-like. A very distinct and elegant variety.

U. c. virens (green). Kidbrook Elm. "Almost evergreen in a mild winter; and, as such, is the most ornamental tree of the genus. It must not, however, be depended upon as a timber-tree, because, in some autumns, the frost kills the shoots. The bark is red, and the tree of spreading habit. This, like *U. c. stricta*, grows well upon chalk." (London.)

U. carpinifolia (Hornbeam-leaved). A synonym of *U. campestris*.

U. effusa (effuse). A synonym of *U. pedunculata*.

U. fulva (fulvous). Slippery or Red Elm. *f.* nearly sessile; perianth segments and stamens seven to nine. *fr.* orbicular, eight to nine lines wide, not ciliated, the cell pubescent. *l.* ovate-oblong, acuminate, doubly serrated, 4 in. to 8 in. long,

FIG. 140. LEAFY AND FLOWER-BEARING TWIGS OF *ULMUS GLABRA*.

Ulmus—continued.

very rough above, softly downy beneath, and slightly rough downwards, sweet-scented in drying. Branchlets downy; buds before expansion, softly downy with rusty hairs. North America. A small or medium-sized tree, with tough, reddish wood, and a very mucilaginous inner bark. (B. M. Pl. 233; T. S. M. p. 334.)

U. glabra (smooth). Wych Elm. *fl.* nearly sessile, five-cleft. *fr.*, samaras obovate, naked, deeply cloven, smaller than those of most other kinds. *l.* elliptic-oblong, doubly serrated, smooth, very unequal at base, not elongated at the extremity. *h.* 60ft. to 80ft. Europe (Britain). See Fig. 140. (Sy. En. B. 1286, under name of *U. siberica glabra*.) Hooker regards this as merely a form of *U. campestris*.

U. g. glandulosa (glandular). *l.* very glandular beneath.

U. g. latifolia (broad-leaved). *l.* oblong, acute, very broad.

U. g. major (greater). Canterbury Seedling. Of more vigorous growth than the type.

U. g. microphylla (small-leaved). *l.* small.

U. g. pendula (pendulous). Downton Elm. A "weeping" variety.

U. g. variegata (variegated). *l.* variegated.

U. g. vegota (vigorous)* Chichester or Huntington Elm. The most vigorous kind of Elm propagated in British nurseries, often making shoots from 6ft. to 10ft. in length in one season. The tree attains a height of 30ft. in ten years from the graft.

U. major (greater). A form of *U. montana*.

U. montana (mountain-loving)* Scotch or Wych Elm. *fl.* shortly pedicellate, five to seven-parted. *fr.*, samaras oblong or nearly round, glabrous, slightly cloven. *l.* 3in. to 6in. long, often 3in. in diameter, doubly and trebly serrated, cuspidate, unequally rounded or cordate at base, rough above, pubescent or nearly glabrous beneath. Branches long, spreading. *h.* 80ft. to 120ft. Europe (Britain), Siberia. (Sy. En. B. 1287.) Most of the following varieties are distinct and handsome trees, and are well worth cultivating, either for use or for ornament:

U. m. cebennensis (Cevennes). A variety of spreading habit, but of much less vigorous growth than the normal form.

U. m. crispata (curled). *l.* crisped, thickly plicates-rugose, irregularly incised-pinnatifid. Habit slender and stunted. SYN. *U. urticifolia*.

U. m. fastigiata (pyramidal). Exeter or Ford's Elm. *l.* peculiarly twisted, very harsh, feather-nerved, enfolding one side of the shoots, retaining their deep green until they fall off. A very remarkable, pyramidal form.

U. m. major (greater). *l.* falling almost a month sooner than those of *U. m. minor*. This tree is of upright and rapid growth, with few branches; in some stages, it approaches the habit of the type, but is of a more tapering form.

U. m. minor (lesser). Compared with *U. m. major*, this is of a more branching and spreading habit, of lower growth, with more twiggy shoots, which are more densely clothed with leaves.

U. m. nigra (black). Black Irish Elm. A spreading tree, with the habit of the normal form, but with more spreading leaves.

U. m. pendula (pendulous). "A beautiful and highly characteristic tree, generally growing to one side, spreading its branches in a fan-like manner, and stretching them out sometimes horizontally, and at other times almost perpendicularly downwards, so that the head of the tree exhibits great variety of shape." (London.)

U. m. rugosa (wrinkled). Bark reddish-brown, cracking into short, regular pieces, very like that of *Acer campestre*.

U. parvifolia (small-leaved). *fl.* shortly pedicellate; perianth four or five-cleft. *fr.* small, ciliated. *l.* small, narrow-lanceolate, oblique at base, slightly acute or scarcely acuminate at apex, simply serrated; adults coriaceous, highly glabrous, or the middle nerve and under side sparsely puberulous. Branches twiggy, often arcuate-deflexed. China and Japan. A medium-sized or diminutive shrub, according to the soil in which it grows.

U. pedunculata (pedunculate). *fl.*, perianth oblique; stamens six to nine, often eight, shortly exserted; pedicels slender, elongated, jointed; inflorescence pendulous. *fr.* glabrous, except the densely-ciliated margin. *l.* ovate or obovate, acuminate, deeply and doubly serrated, slenderly membranous, softly pubescent beneath. *h.* 50ft. to 60ft. Europe, 1800. SYN. *U. cfusa*.

U. Roseae (Roseels'). A synonym of *U. campestris aurea*.

U. suberosa (slightly erose). Cork-barked Elm. *fl.* stalked, four or five-cleft. *fr.*, samaras almost orbicular, deeply cloven, glabrous. *l.* pointed, rough, doubly and sharply serrated. Branches spreading, their bark corky. *h.* 60ft. to 100ft. Europe (Britain). According to Hooker, this is merely a form of *U. campestris*. (Sy. En. B. 1285.)

U. s. erecta (erect). This tree has a tall, narrow head, resembling that of the Cornish Elm (*U. campestris cornubiensis*); but it differs from that variety in having much broader leaves and a corky bark.

U. s. foliis-variegatis (variegated-leaved). This is only distinguished from the type by its variegated leaves.

U. urticifolia (Nettle-leaved). A synonym of *U. montana crispata*.

ULNA. The average length of a man's arm—about 2ft.

ULOSTOMA. A synonym of *Gentiana* (which see).

ULUXIA. A synonym of *Umbelliferae*.

UMBEL. An inflorescence in which the flowers expand centripetally, and their stalks radiate from a



FIG. 141. SIMPLE UMBEL OF *ASTRANTIA HELLEDORIPOLIA*.

common centre. A simple Umbel is shown in Fig. 141.

UMBELLATE. Disposed in or resembling umbels.

UMBELLET, UMBELLULA. A secondary partial umbel; an umbel formed at the end of one of the rays of a general umbel.

UMBELLIFERÆ. A large natural order of herbaceous or rarely woody plants, principally inhabiting the Northern hemisphere. Flowers hermaphrodite or often polygamo-monoëcious, rarely dioecious, umbellate or rarely capitate or whorled; calyx five-lobed, or almost wanting; petals five, valvate or sub-imbriate in bud, inserted outside an epigynous disk, free, caducous, the points generally inflexed, sometimes two-cleft or two-parted, the outer often largest; stamens five, alternate with, and inserted like, the petals; filaments inflexed in bud; anthers two-celled, introrse; umbels simple, or often duplicate-compound, terminal, solitary or many in a panicle. Fruit dry, two-celled, dividing into two mericarps, the surface marked with ten more or less prominent ridges. Leaves usually alternate, entire or variously toothed, cut, lobed, or pinnate; petioles usually dilated at base. Stem usually furrowed or channelled, knotty, fistular or full of pith. Among the useful Umbelliferae, the following (indigenous to Britain) may be noted: Carrot (*Daucus Carota*), Chervil (*Anthriscus Cerefolium*), Parsley (*Carum Petroselinum*), and Parsnip (*Peucedanum sativum*). The order embraces upwards of 150 genera and about 1300 species, few of which are remarkable for horticultural beauty. Illustrative genera are: *Apium*, *Daucus*, *Myrrhis*, *Narthex*, *Peucedanum*, *Sium*, *Smyrnium*.

UMBELLIFEROUS. Umbel-bearing.

UMBELLULARIA (a diminutive from *umbella*, a sunshade, an umbel; in allusion to the form of inflorescence). SYN. *Drimophyllum*, *Oreodaphne*. ORD. *Laurineæ*. A monotypic genus. The species is a half-hardy, tall, evergreen tree or (on mountains) shrub, emitting a strong odour of camphor. For culture, see *Laurus*.

U. californica (Californian). Californian *Sassafras*. *fl.* greenish-yellow, shortly pedicellate, in solitary, cano-pubescent or glabrous umbels; perianth tube very short, the limb of six segments; involucre pedunculate, solitary in the upper axils, or clustered at the tips of the branches, very caducous. June. *l.* alternate, highly odoriferous, lanceolate-oblong, slightly narrowed at both ends, 2in. to 4½in. long, penniveined and singularly reticulated. Branchlets twiggy, slender, mostly glabrous. *h.* sometimes as much as 100ft. California, 1862. SYN. *Ocotea californica*, *Oreodaphne californica* (B. M. 5320).

UMBER MOTHS. Under this name are included two species of Geometer Moths, belonging to the genus *Hybernia* (which see), viz., *H. defoliaria*, or the Mottled

Umber Moths—continued.

Umber (see Fig. 142), and *H. aurantiaria*, or the Scarce Umber. The latter species, despite its popular name, is by no means rare, while the former is abundant; though neither species is often seen, owing to the perfect insects appearing towards the end of autumn, and being nocturnal in their habits. The females have only stumps of wings, and, being totally unable to fly, they have to crawl up the tree trunks to lay their eggs on the buds. The males have large, conspicuous wings, and fly in search of the females. The two species of Umber Moths are nearly alike in size and form, but differ in colours and markings.



FIG. 142. MOTTLED UMBER MOTH (*HYBERNIA DEFOLIARIA*), showing Male, Female, and Larva.

The Mottled Umber has the body brown, with two rows of dark spots on the back of the abdomen. The fore wings of the male are usually pale brown, with two dark brown, rather irregular cross-bands, and a dark central spot, and the hind wings are paler, with a brown central spot. In some males, the wings are reddish-brown, closely sprinkled with darker dots, and other variations are not rare. The larva feeds on almost all kinds of trees. It is cylindrical, and rather slender, with six true legs in front, and four prolegs or claspers behind. The back is brown, bordered on each side by a narrow, wavy, black band, and crossed by grey markings. The sides are bright yellow; but the spiracles are white, and are surrounded by brown spots.

The Scarce Umber Moth has the body orange-brown, with darker spots, as in the other species. The fore wings of the male are dull orange, with three darker narrow cross-bars, two near the base, and the other beyond the middle. Beyond the latter, near the margin, is a row of brownish spots. The hind wings are paler, and all the wings have a dark central dot. The larva feeds on White-thorn, and occasionally on Oak and Birch. It is at first deep yellow, but when full fed it is dark dusky-green, with a pale brown stripe down the middle of the back.

The pupæ of both species are protected in slight cocoons on the surface of the ground.

Remedies. The females are unable to fly on to the trees; and they may be prevented from crawling up if a ring of tar and cart-grease, mixed in equal parts, is painted on the trunk near the ground, or on a belt of cloth or paper, or on a straw rope, fastened around the tree. The larvae

Umber Moths—continued.

may be shaken off by jarring the branches, and should be collected on sheets of cloth or paper and destroyed. All surface rubbish that could shelter the pupæ should be cleared off.

UMBILICATE. Navel-like; depressed in the centre.

UMBILICUS. Included under *Cotyledon* (which see).

UMBONATE. Round, with a projecting point in the centre, like the boss or *umbo* of an ancient shield; e.g., the pileus of many *Agarics*.

UMBRACULIFORM. Umbrella-shaped.

UMBRELLA LEAF. See *Diphyllia cymosa*.

UMBRELLA PINE, or PARASOL FIE. See *Sciadopitys verticillata*.

UMBRELLA PLANT. See *Saxifraga peltata*.

UMBRELLA TREE. See *Magnolia Umbrella* and *Thespesia populnea*.

UMBRELLAWORT. See *Oxybaphus*.

UNANUEA. A synonym of *Stemodia* (which see).

UNARMED. Destitute of prickles, spines, or other hard projections; pointless.

UNCARIA (from *uncus*, a hook; the old petioles are converted into hooked spines). **SYNS.** *Agylophora*, *Ourouparia*. **ORD.** *Rubiaceæ*. A genus comprising about thirty species of stove, climbing shrubs, all tropical Asiatic, except one African and one American. Flowers yellowish, in globose, axillary, pedunculate, solitary or paniculate heads; calyx tube spindle-shaped, the limb five-lobed or parted; corolla tube long, funnel-shaped, the limb of five valvate lobes; stamens five, on the glabrous throat of the corolla; peduncles often headless, converted into hooked tendrils. Leaves opposite, shortly petiolate; stipules entire or bifid. *U. Gambier*, the only species calling for description here, thrives in a compost of loam, sand, and peat. Propagation may be effected by cuttings, inserted in sand, under a glass, in heat.

U. Gambier (Gambier). Gambier Catechu. *f.* pedicellate; calyx tomentose; corolla 4in. long; peduncles all axillary, bracteate in the middle, rarely more than 1in. long. *May.* *l.* ovate or ovate-lanceolate, obtusely sub-caudate or acuminate, 4in. to 5in. long, coriaceous, glabrous. *h.* 10ft. India, 1825. The gambier of commerce is obtained from this species. (*B. M. Pl.* 139.)

UNCARIA (of Burchell). A synonym of *Harpagophyllum* (which see).

UNCATE, UNCIFORM, UNCINATE. Bent or curved at the tip like a hook.

UNCIFERA (from *uncus*, a hook, and *fero*, to bear; alluding to the curved process to which the pollen masses are attached). **ORD.** *Orchidææ*. A small genus (three species) of stove, epiphytal Orchids, natives of Khasya. Flowers rather small or mediocre, very shortly pedicellate, in lateral, dense, spike-like racemes; sepals sub-equal, free; petals similar or rather smaller; lip affixed to the base of the column, the base produced in a rather long, curved spur; lateral lobes small, the middle one entire or slightly three-lobed; pollen masses two. Leaves distichous; sheaths persistent, clothing the stem. *U. heteroglossa*, the only species introduced, is mainly of botanical interest. It thrives on a block or in a basket.

Uncifera—*continued*.

U. heteroglossa (variable-lipped). *f.* white (?); sepals and petals oblong, blunt; lip hollowed out, the front border thickened; spur ascending, hooked; racemes rather short, pale, closely speckled with red. 1878.

UNCINATE. See *Uncate*.

UNDER-SHRUB. A small, woody plant, the ends of its branches perishing annually.

UNEDO. A synonym of *Arbutus* (which see).

UNEQUALLY PINNATE. Pinnate, with an odd, terminal leaflet.

UNGNADIA (named after Baron von Ungnad, the introducer of the Horse Chestnut). ORD. *Sapindaceæ*. A monotypic genus. The species is a half-hardy shrub or small tree, allied to *Pavia*. It is best grown in the open air in summer, and removed to a cool conservatory for winter. It will thrive in almost any soil, and may be propagated by layering, or by imported seeds.

U. speciosa (showy). *f.* pink, polygamous, in lateral, aggregated corymbs or fascicles; calyx sub-equal, four or five-partite; petals four or five, sub-equal, the claws connate-crested at apex; stamens seven to ten. June. *l.* alternate, exstipulate, impari-pinnate; leaflets six or seven pairs, 4in. long, very shortly petiolulate, ovate-lanceolate, obtuse and acuminate, the terminal one long-petiolulate. Texas, 1850. (F. d. S. 1853.)

UNGUACHA. A synonym of *Strychnos* (which see).

UNGUICULATE. A term applied to petals which have an unguis or stalk.

UNI. This term, used in Latin compounds, signifies one; e.g., Uniflorous, one-flowered; Unijugate, of one pair; Unilateral, one-sided; Unisexual, of one sex, having stamens only or pistils only.

UNICORN BEETLE (*Copris lunaris*). This can scarcely be included among Garden Insects, strictly so called; yet a brief notice of it will not be out of place, as it may at times be found in gardens in the South-east of England, especially around London, and is sure to attract notice on account of the curious horn on the head. The

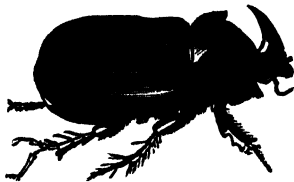


FIG. 143. MALE UNICORN BEETLE (*COPRIS LUNARIS*), about twice the natural size.

general form is shown in Fig. 143, which is, however, about twice the natural size. The colour is glossy black, with a fringe of chestnut hairs round the edge of the body. The head and thorax of the males bear outgrowths or horns, as shown in the figure. The wing-cases are grooved lengthwise. The horns of the females are much less conspicuous. These Beetles are beneficial, rather than otherwise, in gardens, inasmuch as the females make burrows in the soil, and carry dung into them for the nourishment of the larvæ, which are hatched from eggs deposited among it.

UNICORN PLANT. A common name for *Martynia lutea* and *M. proboscidea*.

UNINTERRUPTED. Consisting of regularly increasing or diminishing parts, or of parts of the same size.

UNIOLA (from *unus*, one; so-called by Linnæus owing to the union of the glumes). Spike Grass. SYNS. *Chasmanthium*, *Trisiola*. ORD. *Gramineæ*. A small genus (four species) of hardy and half-hardy, perennial Grasses, natives of North America. Spikelets closely many-flowered, very flat and two-angled; glumes lanceolate, compressed-keeled; stamens three; panicles sometimes elongated, sometimes ample, loose or dense. Leaves flat or convolute. Perhaps the most ornamental species are described below. Seeds should be sown, in early spring, in the open border.

U. latifolia (broad-leaved). *f.* acute, ciliated on the keel, all but the lowest perfect and unantherous; spikelets at length oblong, 1½ in. to 2 in. long, hanging on long pedicels; panicle loose. August. *l.* nearly 1½ in. broad, flat. Culm 2ft. to 4ft. high. (B. H. vil., p. 192.)

U. paniculata (prominent-panicked). *f.* glabrous, bluntish, several of the lower ones sterile, the fertile ones with three stamens; spikelets ovate, 1½ in. to 2 in. long, on short pedicels; panicle open, elongated. *l.* narrow, convolute when dry. Culm elongated. *h.* 4ft. to 5ft.

UNISEMA. A synonym of *Pontederia* (which see).

UNONA (probably a variation from *Anona*, an allied genus). ORD. *Anonaceæ*. A genus embracing eighteen species of stove trees or climbing shrubs; four or five are found in Africa and the rest in tropical Asia. Flowers mostly solitary, axillary or extra-axillary, rather large; sepals three, valvate; petals six, valvate or open in æstivation, biseriata; stamens numerous, tetragonal-cuneate. Leaves alternate, entire, exstipulate. Several species have been introduced, but are probably lost to cultivation.

UPAS-TREE. See *Antiaris toxicaria*.

UPLAND WILLOW OAK. See *Quercus cinerea*.

UPRIGHT PORTUGAL LAUREL. A common name for *Cerasus lusitanica myrtifolia* (which see).

URALEPIS. A synonym of *Triodia* (which see).

URALEPSIS. See *Triodia*.

URANANTHUS. A synonym of *Eustoma* (which see).

URANIA. A synonym of *Ravenala* (which see).

URARIA (from *oura*, a tail; alluding to the bracts). SYN. *Doodia* (of Roxburgh). ORD. *Leguminosæ*. A genus embracing eight species of stove, suffruticose perennials, inhabiting tropical Asia, Africa, and Australia. Flowers very numerous, minute, racemose; calyx tube very short, the two upper teeth short, the three lower ones usually elongated; standard broad; wings adhering to the obtuse keel; stamens diadelphous. Leaves stipellate; leaflets one to nine. Several species have been introduced; but it is doubtful whether any are in cultivation. Those described below thrive in a compost of sand, loam, and peat. Propagation may be effected by cuttings, inserted in sand, under a glass, in heat.

U. crinita (hairy). *f.* purplish, 1½ in. long; racemes dense, above 1ft. long. July. *l.*, upper ones three to seven-foliate; leaflets oblong, sub-coriaceous, green and smooth above, paler and reticulate-veined beneath, 4in. to 6in. long, 1½ in. to 2 in. broad, rounded at base. *h.* 3ft. to 6ft. India.

U. picta (painted). *f.* purple; corolla slightly exserted; racemes dense, cylindrical, 6in. to 12in. long. July. *l.*, leaflets four to six, rarely nine, linear, rigidly sub-coriaceous, glabrous above, minutely pubescent beneath. Stems robust, finely downy. *h.* 3ft. to 6ft. Himalayas, Philippines, &c., 1788.

URCEOLARIA (of Cothenius). A synonym of *Schradera* (which see).

URCEOLARIA (of Herbert). A synonym of *Urceolina* (which see).

URCEOLATE. Hollow and contracted at or below the mouth, like a pitcher.

(from *urceolus*, a small cup or pitcher; alluding to the shape of the perianth). **SYNS.** *Collaria*, *Urceolaria* (of Herbert). Including *Leperezia* (in part), *Pentlandia*, and *Sphaerolele* (of Link). **ORD.** *Amaryllidaceae*. A small genus (three species) of greenhouse, bulbous plants, inhabiting the Andes of South America. Flowers many in an umbel, rather long-pedicellate; perianth erect, at length recurved or pendulous, contracted above the ovary, and then enlarged into an oblong-tubular or urceolate throat or limb, the lobes sub-equal, connivent or connate, shortly spreading at apex; stamens equally affixed to the throat, often exceeding the perianth; filaments straight; involucre bracts two, scarious; scape solid. Leaves flat, ovate, oblong, or narrow, contracted into the petioles. For culture, see **Amaryllis**.

U. aurea (golden). A garden synonym of *U. pendula*.

U. latifolia (broad-leaved). *f.*, perianth segments yellowish-red, greenish at apex, ovate, minutely acuminate, connivent, equal; scape erect, 1ft. or more high, solitary, terete. April. *l.* petiole, oblong, acute, 1ft. long, 2in. to 3in. broad, striated above, shining, nerved beneath, glabrous. **SYN.** *Leperezia latifolia* (B. M. 4952).

U. miniata (scarlet). *f.*, nodding; perianth cinnabar-red or scarlet, 1½in. long, glabrous, the segments broadly ovate, acute; scape erect, slightly twisted above, 8in. to 14in. long. September. *l.* one or two, lanceolate, acute, narrowed and sub-petiolate, 6in. to 8in. long, striated above, the margins reflexed. Bulb as large as a walnut. 1836. **SYN.** *Pentlandia latifolia* (B. R. 1839, 68).

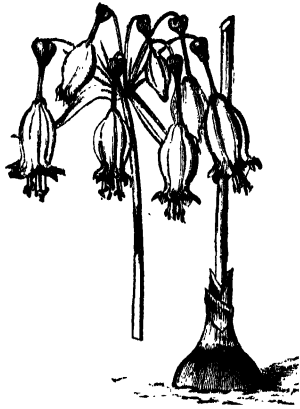


FIG. 144. URCEOLINA PENDULA.

U. pendula (pendulous). Drooping Urn Flower. *f.*, pendent; perianth yellow in the basal half, green above, margined with white, 2in. long; segments lanceolate, concave, the three outer ones longer. June. *l.* solitary or twin, long-petiolate, erect, many-nerved, glabrous; petioles terete, compressed above. See Fig. 144 (for which we are indebted to Messrs. Veitch and Sons). (B. M. 5464.) **SYNS.** *U. aurea* (of gardens), *Collaria urceolata*.

URECHITES (from *oura*, a tail, and *Echites*, an allied genus; in allusion to the twisted appendages of the corolla). **ORD.** *Apocynaceae*. A small genus (four species ?) of prostrate or twining, glabrous or puberulous, stove under-shrubs, natives of the West Indies and Mexico. Flowers usually ample; calyx five-parted, glandular inside at base; corolla funnel-shaped, with a short, cylindrical tube, a long tubular-campanulate throat, and five broad, twisted lobes; stamens affixed at the top of the tube; racemes simple, often few-flowered, or reduced to two flowers. Leaves opposite, penniveined. Only one species calls for mention here. For culture, see **Dipladenia**.

U. sub-erecta (nearly erect). *f.*, full-yellow, large, on short pedicels; peduncle terminal, hairy, bearing a loose, four to six-flowered cyme. May. *l.* shortly petiolate, ovate or oval, nearly

Urechites—continued.

elliptical, but rather acute at each end; young ones (and branches) loosely silky. Stem shrubby in the older portions. New Grenada, 1845. **SYNS.** *Dipladenia fava* (B. M. 4702), *Echites sub-erecta* (B. M. 1064).

URENA (from *Uren*, the Malabar name). Indian Mallow. **ORD.** *Malvaceae*. A small genus (four or five species) of stove herbs or under-shrubs, inhabiting the tropical regions of both hemispheres. Flowers small, sessile or shortly pedunculate, usually clustered; bracteoles five, adnate to the five-cleft or five-toothed calyx; petals five; staminal tube truncate or minutely toothed. Leaves often angular or lobed. The species are mostly uninteresting. *U. lobata*, the only one calling for mention, thrives in any light, rich soil. Propagation may be effected by seeds.

U. lobata (lobed-leaved). *f.*, pink; bracteoles oblong-lanceolate, equalling the calyx. Summer. *l.* cordate, five to seven-lobed, the lobes acute or obtuse; petioles usually shorter than the blades. India. A very variable, more or less hairy, annual herb. (B. M. 5343.)

(from the name of an Arab tribe, Ben Urgan, in Algeria). Including *Squilla*. **ORD.** *Liliaceae*. A genus comprising about two dozen species of stove, greenhouse, or hardy, bulbous plants, natives of Europe, the Mediterranean region, the East Indies, and tropical and South Africa. Flowers usually numerous, in a terminal raceme, rather small or mediocre, on articulated pedicels; perianth whitish or rarely pale yellowish or pink, at length deciduous; segments six, distinct, nearly equal, campanulate-connivent or spreading; stamens six; scape simple, leafless; bracts small, scarious. Leaves radical, sometimes very narrow-linear, sometimes broadly loriform or nearly oblong. The bulbs of *U. maritima* are well-known in medicine as Squills. The species best known in gardens are here described. With the exception of *U. maritima*, all are natives of South Africa, and require greenhouse heat. For culture, see **Scilla**.

U. altissima (very tall). *f.*, perianth nearly campanulate, three to four lines long, the segments whitish, with a purplish-green keel, ligulate; pedicels slightly spreading or ascending, the lower ones six to nine lines long; raceme cylindrical, dense, 1ft. to 2ft. long, ½in. to 2in. broad; scape 2ft. to 3ft. long, ½in. or more thick. May. *l.* five or six, lance-lanceolate, glabrous, 1ft. to 1½ft. long, ½in. to 2in. broad at base, acute at apex. Bulb globose, 4in. to 6in. thick. 1789. **SYN.** *Drinia altissima* (B. M. 1074).

U. exuviata (stripped). *f.*, perianth five to six lines long, the segments whitish, purple-keeled; pedicels ascending, the lower ones four to six lines long; raceme rather dense, ten to twenty-flowered, 2in. to 4in. long. June. *l.* two to four, hard, semi-terete, glabrous, flexuous, 1in. to 1½in. long, half to three-quarters of a line broad. Bulb globose, ½in. to 1½in. thick, the outer scales long-produced, transversely striped. 1785. "Jacquin applied the specific name of *exuviata* from some resemblance in the membranous tunics of the bulb to the sloughs annually cast by snakes." **SYN.** *Albuca exuviata* (B. M. 871).

U. filifolia (thread-leaved). *f.*, perianth three to four lines long, the segments whitish, purple-keeled, oblong; pedicels three to six lines long; raceme rather dense, six to twenty-flowered; scape erect, slender, 6in. to 15in. long. June. *l.* three to six, filiform, hard, glabrous, flexuous, 8in. to 12in. long, a quarter to half a line thick. Bulb globose, ½in. thick, fuscous-tubercled. 1820. **SYN.** *Albuca filifolia* (B. R. 557).

U. fragrans (fragrant). *f.*, odoriferous; perianth five to six lines long, the segments whitish, purple-keeled, oblong; pedicels four to six lines long; raceme rather loose, twelve to twenty-flowered, 4in. to 6in. long; scape slender, terete, glaucous, 1ft. long. July. *l.* twelve to twenty, semi-terete, glabrous, persistent, 6in. to 8in. long, half a line broad. Bulb globose, ½in. to 2in. thick. 1781. **SYN.** *Albuca fragrans* (B. R. 311).

U. maritima (sea-loving). * Sea Onion; Squills. *f.*, perianth three to four lines long, the segments whitish, with a greenish-purple keel; pedicels six to nine lines long; raceme dense, 1ft. or more long; scape 1ft. to 3ft. long, terete, reddish. Autumn. *l.* appearing in spring, ten to twenty, lanceolate, fleshy-herbaceous, glaucous-green, glabrous, 1ft. to 1½ft. long, 2in. to 4in. broad above the middle. Bulb ovoid, 4in. to 6in. thick. Mediterranean region, 1829. Half-hardy. **SYNS.** *U. Scilla* (B. M. Pl. 281), *Ornithogalum Squilla* (B. M. 918).

U. physodes (bladder-like). *f.*, perianth ½in. long, the segments whitish, purple-keeled; pedicels eight to ten lines long; raceme rather dense, thirty to sixty-flowered, 3in. to 5in. long, cylindrical;

Urginea—continued.

scape slender, 6in. long. June. 1. five or six, lanceolate, fleshy-herbaceous, glabrous, 6in. to 9in. long, 1in. to 1½in. broad. Bulb purplish, 1½in. to 1½in. thick. 1804. SYN. *Albuca physodes* (B. M. 1046).

U. Scilla (Scilla). A synonym of *U. maritima*.

URINE. An excellent manure, because of the substances contained in it. Of these, one of the most important is Ammonia, either uncombined, or united with various acids to form compounds. From these substanceous plants are able to obtain the Nitrogen required for the production of protoplasm. There are also various mineral compounds in solution in Urine, in a form available for plants; in fact, the Urine of most animals is of more value as a manure than their solid excrement. Analysis of various Urines gives the following results: Urine of cattle contains 8 per cent. of solid matters; of horses, 11 per cent.; of sheep, 13 per cent.; of pigs, 25 per cent.; and of man, from 3 to 6 per cent. Amongst the substances in Urine are Carbonates, Phosphates, Chlorides, and Sulphates of Ammonia, and of other alkalies, along with a good deal of Urea and of Uric Acid. The two last substances readily undergo chemical changes into Ammonia and its compounds. The addition to the Urine of Gypsum, or of coarse Sulphuric Acid, forms Sulphate of Ammonia, and thus prevents the loss of the Ammonia by evaporation into the atmosphere. Urine should be evaporated to become stale or to putrefy before being applied to the soil. It is a very valuable manure for almost all kinds of garden produce and fruit-trees; and, when diluted with three or four times its bulk of water, may be employed in the fluid state. It may also be mixed up as a compost with soil and vegetable refuse. The mass should be allowed to ferment for some time, and may then be applied like ordinary farm-yard manure. Owing to its very strong and unpleasant smell when stale, Urine should not be freely used close to houses. Instead of being allowed to run to waste, as it so often is, arrangements should be made for collecting the farm-yard Urine into a tank, and for storing it up for use as described above.

URN FLOWER, DROOPING. See *Urceolina pendula*.

UROCYSTIS (from *oura*, a tail or stalk, and *kystis*, a vessel or bladder; in allusion to the stalked, vesicular spores). This is one of the genera included in the group of Fungi known to botanists as the *Ustilaginei*, and in popular language as Smuts, from their loose, dark spores giving a dirty appearance to the plants in which they grow. The Fungi in this genus are parasites; they grow for a while inclosed in the tissues of living plants; then, when the spores ripen, they form dark swellings, whose growth bursts the outer tissues of the host-plant, and discloses the powdery mass of spores. The parts in which these are formed are usually much swollen and distorted. The spores of *Urocystis* vary a good deal in size and form, but usually consist of a layer of rather small cells, surrounding a larger central cell, which is the one actively concerned in the development of new mycelium when the spore is kept in a warm, moist atmosphere. The spores are fixed on the tips of branches till ripe, when they fall from the stalks. The species of *Urocystis* are hurtful to cultivated plants, and the following occur in Britain: *U. Viola* grows in petioles and other organs of the Sweet Violet (*Viola odorata*); *U. Anemones* is very common on various kinds of *Anemones*, and on allied plants; and *U. sorosporioides* occurs on leaves and flowers of *Thalictrum*.

For remedies, see *Ustilago*.

UROPEDIUM. Included under *Selenipedium* (which see).

UROPETALUM. A synonym of *Dipcadi* (which see).

UROSKINNERA (named after G. Ure Skinner, a merchant and collector of Central American plants). ORD. *Scrophularineæ*. A genus consisting of a couple of species of softly villous, stove herbs, natives of Central America and Mexico. Flowers rosy-violet, rather large, declinate, shortly pedicellate, with two bristly bracts at base; calyx tubular-campanulate, with four or five short, bristly teeth; corolla tube elongated, enlarged above, the limb of five scarcely unequal, spreading lobes; stamens four, included; style elongated, very shortly bifid; spike or raceme terminal, dense, secund. Leaves opposite, petiolate, soft, crenate. *S. spectabilis*, the only species introduced, thrives in sandy loam. It may be increased by cuttings, inserted in sand, under a bell glass, in heat.

U. spectabilis (showy). *f.* in sessile, terminal, very close spikes about 3in. long; calyx small, hairy, four-toothed; corolla smooth, 1½in. long, funnel-shaped. July. *l.* oblong, toothed, 2in. to 4in. long. A. 1ft. to 1½ft. Mexico, 1856. Plant grey with close hairs. (B. M. 5009; F. d. S. 1433.)

UROSPATHA (from *oura*, a tail, and *spatha*, a spathe; referring to the long-pointed spathe in most of the species). ORD. *Aroidæ* (*Araceæ*). A genus comprising about ten species of stove, marsh-loving herbs, with thick rhizomes, natives of tropical America. Flowers hermaphrodite, the lower ones sterile; spathe erect, closed at base, at length opening, long-narrowed above, straight, decurved, or twisted, persistent; spadix sessile or nearly so, inapperculate, much shorter than the spathe; perianth segments and stamens four to six; peduncle elongated. Leaves few, hastate-sagittate, with diverging nerves or nearly parallel ribs; petioles elongated, sheathing at base. The two introduced species thrive in light, loamy soil, and require an abundance of water when growing. They may be propagated by division of the rootstock.

U. decussens (degenerate). *f.*, spathe brown and claret-coloured, convolute below, gaping above, long-acuminate, incurved or arcuate; spadix sessile, cylindrical, obtuse, shorter than the spathe tube; peduncle equalling the petioles. *l.* broadly lobed, the anterior one triangular, acuminate, the posterior rather longer, oblong, acuminate, very inequilateral; petioles smooth, nearly twice the length of the blades. A. 3ft. Brazil, 1860.

U. sagittifolia (sagittate-leaved). *f.*, spathe yellowish-green or deep green, mottled or blotched with grey or rosy-red, lanceolate, long-acuminate; spadix green, cylindrical, a quarter to one-fifth the length of the spathe. *l.* broadly lobed, hastate-sagittate, the anterior lobe lanceolate-triangular, acuminate; basal lobes rather longer, oblong-lanceolate; petioles slightly scabrous or scabrid, warted. Para, 1866. "*U. elegans*, *U. grandis*, *U. picturata*, *U. spectabilis*, and *U. splendens*, all from Para, are garden names for what are probably varieties of this species" (N. E. Brown).

UROSPERMUM (from *ouros*, a tail, and *spermum*, a seed; alluding to the beaked achenes). Sheep's Beard. SYN. *Arnopogon*. ORD. *Compositæ*. A small genus (two species) of hardy, annual or biennial, slightly-branched herbs, natives of the Mediterranean region. Flower-heads yellow, long-pedunculate at the tips of the branches; involucre campanulate, with seven or eight bracts in one series, spiny outside; receptacle conical, naked; ray florets ligulate, truncate five-toothed at apex; achenes beaked. Leaves radical or alternate, deeply toothed or lyrate-pinnatifid; cauline ones amplexicaul. Only one species calls for mention here. It is a biennial, of easy culture in common soil.

U. Dalechampii (Dalechamp's). *f.* heads on naked peduncles; involucre velvety-pubescent. June. *l.* variously runcinate, toothed. A. 1½ft. South Europe, 1739. SYN. *Arnopogon Dalechampii* (B. M. 1623; S. F. G. 780).

URSINIA (named after John Ursinus, of Regensburg, 1608-1666, who wrote an "Arboretum Biblicum"). Including *Sphenogyne*. ORD. *Compositæ*. A genus comprising fifty-four species of greenhouse or half-hardy, annual or perennial herbs or shrubs, natives of South Africa, one also extending to Abyssinia. Flower-heads solitary or loosely paniculate, heterogamous; involucre

Ursinia—*continued*.

hemispherical or broadly campanulate, with several series of imbricated bracts; receptacle paleaceous; ray florets wholly yellow or purplish outside; disk yellow; achenes glabrous or pubescent. Leaves alternate, serrated, pinnatifid, or often pinnately dissected. A selection of the best-known species is here given. They are very elegant plants, and succeed in a compost of loam and peat. *U. anthemoides* and *U. pulchra* may be increased by seeds. The rest are greenhouse shrubs, cuttings of which will root readily in sand, under a glass.

U. abrotanifolia (Southernwood-leaved). *f.* heads solitary on lentose peduncles 6in. to 10in. long; ray florets wholly yellow. July. *l.* bi-tripinnatifid, 1½in. long; segments narrow-linear, divergent, acute, the lowest short and nearly simple. Branches erect, curved, leafy, clothed with pale, woolly hairs. *h.* 1ft. to 2ft. 1789. *SYN. Sphenogyne abrotanifolia.*

U. anthemoides (Chamomile-like). *f.* heads on long, naked, drooping peduncles; ray florets purplish outside. August. *l.* either pinnatifid or sub-pinnatifid; lobes linear-filiform, acute or mucronate, the lower shorter or very small, the upper trifid or spinulose, spreading. *h.* 3in. to 12in. 1774 Half-hardy annual. *SYN. Arctotis anthemoides* (B. M. 644), *Sphenogyne anthemoides.*

U. crithmifolia (Samphire-leaved).* *f.* heads 1in. to 1½in. in diameter, on peduncles 3in. to 10in. long; ray florets wholly bright yellow. July. *l.* pinnatifid or trifid, 1½in. to 2in. long; lobes linear-filiform, semi-terete, acute, the lower ones short or obsolete, the rest elongated. *h.* 1ft. to 2ft. 1768. Erect and densely leafy. *SYN. Sphenogyne crithmifolia* (B. M. 3042).

U. dentata (toothed). *f.* heads rather small; ray florets coppery beneath; peduncles 6in. to 9in. long, one-headed. June. *l.* pinnatifid, 6in. to 8in. long; lobes short, entire or trifid, the teeth tipped with a bristle. Branches curved, closely leafy. *h.* 1ft. to 2ft. 1787. *SYN. Sphenogyne dentata.*

U. pilifera (bristle-bearing). *f.* heads on long, sub-hispid pedicels; ray florets purplish outside. December. *l.* pinnatifid, fleshy, spreading, shortly hispid; lobes linear, tipped with a bristle. 1821. Shrub diffuse. *SYN. Sphenogyne pilifera* (B. R. 604).

U. pulchra (pretty).* *f.* heads bright orange; ray florets somewhat lanceolate, bitten at the extremities. June and July. *l.* twice pinnate, sessile; leaflets linear, acute, somewhat recurved. Stems roundish, slightly declinate at the base, ascending, branched, smooth. *h.* 1ft. Native place unknown. 1836. Hardy annual. *SYN. Sphenogyne speciosa* (P. M. B. vi., p. 71).

URTICA (the old Latin name used by Horace and Pliny, from *uro*, to burn; referring to the stinging properties of most species). Nettle. *ORD. Urticaceæ.* A genus comprising about thirty species of greenhouse or hardy, annual or perennial herbs, rarely shrubby at base, armed with stinging hairs; they are broadly dispersed over temperate and sub-temperate regions. Flowers monœcious or dioecious; clusters cymulose, spicate, racemose, or paniculate; inflorescence unisexual or androgynous. Leaves opposite, petiolate, toothed or incised-lobed. The British Flora includes *U. dioica* (the young leaves of which are a good pot-herb), *U. pilulifera* (the most virulent native Nettle), and *U. urens*. The stinging effects of *U. urentissima* (Devil's Leaf), a native of Timor, are said to be so violent as to last for twelve months, and sometimes to cause death. Many species produce excellent fibre, and several are considered to possess medicinal properties. None are of any horticultural value.

U. involucreta (involucred). A synonym of *Pilea pubescens*.

U. reticulata (reticulated). A synonym of *Pilea reticulata*.

URTICACEÆ. A natural order of trees, shrubs, or herbs, broadly dispersed over the temperate and warmer regions of the globe. Flowers unisexual or rarely polygamous, regular or by reduction irregular; perianth simple, calycine; stamens of the male flowers as many as the perianth segments, very rarely fewer or rather more, the anthers ovate or oblong; staminodes of the females rare, the ovary superior, or in a few genera more or less inferior; primary inflorescence centripetal, axillary or at the nodes, never terminal; ultimate inflorescence normally centrifugal, cymulose; bracts often small or wanting; bracteoles minute or wanting, sometimes conspicuous. Fruit indehiscent, one-seeded. Leaves alter-

Urticaceæ—*continued*.

nate or rarely opposite, entire, toothed, lobed, or palmately parted, not pinnate, very rarely pinnatifid. Among the more important members of this order the following may be enumerated: Breadfruit-tree (*Artocarpus incisa*), Elm (*Ulmus*), Fig (*Ficus Carica*), Hemp (*Cannabis sativa*), Hop (*Humulus Lupulus*), Indiarubber-plant (*Ficus elastica*), Mulberry (*Morus alba* and *M. nigra*). Several of the species are valuable timber trees. The order is divided into eight tribes: *Artocarpeæ*, *Cannabineæ*, *Celtideæ*, *Conocephaleæ*, *Moraceæ*, *Thelygoneæ*, *Ulmææ*, and *Urticeæ*. It embraces nearly 110 genera and 1500 species. Examples: *Artocarpus*, *Cannabis*, *Ficus*, *Humulus*, *Morus*, *Ulmus*, *Urtica*.

URVILLEA (named after Capt. Dumont D'Urville, of the French navy, an acute botanist, who was sent out to ascertain the fate of La Peyrouse). *ORD. Sapindaceæ.* A genus comprising about half a score species of climbing or twining, stove shrubs, inhabiting tropical America. Flowers whitish, in axillary racemes; peduncles bearing two tendrils at the apex. Leaves alternate, stipulate; leaflets entire or deeply toothed, sometimes pellucid-dotted. One or two species have been introduced, but they are unworthy of cultivation. *U. ferruginea* is now and then met with in botanic gardens, and is interesting on account of the peculiar structure of its triquetrous stems.

USTERIA (of Cavanilles). Included under *Maurandya* (which see).

USTILAGINEI (named from *Ustilago*, the largest genus in the group). This is the scientific name of the Fungi included under the popular name of *Smut*, under which name is given a short account of them, and of the characters by which the more important genera are distinguished from one another. The mycelium seems to enter, usually, into seedling plants, and to make its way among the cells of all parts; but while the reproductive organs (spores) of some species may be formed in masses in almost any part of the host-plant, those of certain others are produced only in the reproductive organs (stamens or ovaries), or in the leaves. Several examples are mentioned under *Smut*. See also *Ustilago*.

USTILAGO (from *ustus*, burnt; in allusion to the scorched appearance of the organs of the host-plants in which the spores are developed). A genus of Fungi, belonging to the group *Ustilaginei* (see *Smut*). It is distinguished from the other genera in the group by the spores, each being a single, isolated, roundish or angular cell, which germinates by a mycelium filament pushed out at one side. The spores are usually brown, dark purple, or nearly black, when in mass. *Ustilago* may be regarded as nearly typical of the *Ustilaginei*. About forty European species are known; many of these occur in the British Islands. A number of them live in the leaves or flowers of Grasses; e.g., *U. longissima* forms black streaks in leaves of *Glyceria fluitans* and other swamp-loving Grasses; *U. hypodytes* grows below the leaf-sheaths of several Grasses, including among others the ornamental species, *Stipa pennata* and *S. capillaris*; *U. segetum* (see Fig. 145) destroys the ovaries of Oats, Barley, and many other Grasses; *U. Caricis* (*U. urceolorum*) is very common on many of the species of *Carex*, infesting the ovaries, and reducing them to the state of balls of sooty-looking powder; *U. utriculosa* and some allied forms destroy the ovaries of various kinds of *Polygonum*; *U. violacea* (*U. antherarum*) is exceedingly common in the flowers of *Lychnis*, *Silene*, *Stellaria graminea*, and other Caryophyllaceous plants, filling the stamens with its reddish-violet spores, and thus destroying the flowers; *U. flosculorum* acts similarly in the flowers of *Scabiosa arvensis*, *S. Columbaria*, and *S. succisa*; *U. Tragopogi-pratensis* (*U. receptaculorum*) destroys all the florets in the heads of *Tragopogon pratensis* and *T. porri-*

Ustilago—continued.

folius, replacing them by a mass of sooty spores. In addition to the above, which are all British species, may be mentioned: *U. Ornithogali*, which, in Germany, forms swellings, about $\frac{1}{2}$ in. long, in the leaves of species of *Ornithogalum* and *Gagea*; and *U. Tulipe*, which forms similar swellings on Tulips. When the spores are ripe, the epiderm above the swellings bursts, and exposes the brown spores to view.

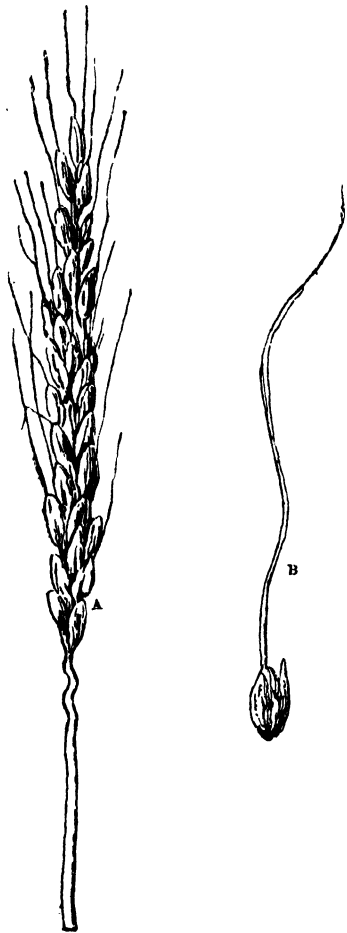


FIG. 145. *USTILAGO SEGETUM* ON BARLEY, showing (A) Diseased Inflorescence, natural size, and (B) Diseased Spikelet, enlarged.

Treatment. Plants attacked by these Fungi cannot be freed from them, as the mycelium is in the tissues; but frequently only some of the stems on a plant show their presence, and the other parts seem healthy. Such parts as do show the Fungi should be removed and burned, before the spores ripen, in order to prevent their dispersion. To check the ravages of *U. segetum*, the Smut of corn, the seed, before sowing, is sometimes sprinkled with stale urine, and then raked in quicklime till it becomes white; or it is steeped in a solution of one pound of sulphate of copper in five quarts of water, this quantity of solution being sufficient for four bushels of wheat. The object aimed at is to kill any spores of the Fungi adhering to the seeds, without destroying the vitality of the latter; and the above methods are found

Ustilago—continued.

to give good results. Perhaps they might prove successful with garden seeds also, and might be employed with advantage against *Urocystis* and the other genera of *Ustilaginae*.

UTANIA. A synonym of *Fagraea* (which see).

UTRICLE. A small, bladdery pericarp; any thin, bottle-like body.

UTRICULAE, UTRICULATE, UTRICULIFORM, UTRICULOSE. Having, or consisting of, utricles; bladder-like.

UTRICULARIA (from *utriculus*, a little bottle; alluding to the minute, pitcher-like bodies developed on the leaves and roots). Bladderwort; Hooded Water Milfoil. ORD. *Lentibulariæ*. A large genus (nearly 150 species) of cosmopolitan, stove, greenhouse, or hardy, floating, epiphytal (e.g. *montana*), or terrestrial herbs. Calyx two-parted or deeply two-lobed; corolla spur often incurved; upper lip erect, entire, emarginate, or bifid; lower one often large and spreading, three to six-lobed; scape simple or slightly branched, one-flowered or bearing a many-flowered raceme. Leaves of the floating species many-partite, with capillary segments, furnished with minute pitchers, which entrap animalcules; those of the erect species entire. *U. intermedia*, *U. minor*, *U. neglecta*, and *U. vulgaris*, are worthy of being grown as curiosities. The first thrives in shallow pans of water in which sphagnum has been established, and the other three in deeper vessels; towards winter, all four form compact, round winter buds—at the ends of the branches—which fall to the bottom of the water and remain there until the following spring. *U. Endresii* and *U. montana* do best in baskets of fibry peat and sphagnum, suspended near the glass. *U. Humboldtii* and *U. reniformis* will grow in large pots of peat and sphagnum, partially plunged in water. *U. bifida* thrives in a pot of ordinary soil, placed a few inches below the surface of a warm tank.

U. bifida (bifid).* *f.*, corolla bright yellow, with a very large and prominent, hemispheric, orange-yellow palate, the upper lip reflexed, the lower very short and two-lobed; scapes numerous, erect, two to five times as long as the leaves. September. *l.* erect, 1 in. to 2 in. long, filiform or slightly thickened upwards, bright green. Hong Kong, 1882. Plant densely tufted. Greenhouse. (B. M. 6689.)

U. Endresii (Endres).* *f.* drooping, on very slender pedicels; sepals pale greenish or reddish, $\frac{1}{2}$ in. to $\frac{3}{4}$ in. long; corolla pale lilac, with a yellow palate, $\frac{1}{2}$ in. to 2 in. in diameter, beautifully ciliate all round; scape twice as long as the leaves, erect, about five-flowered. Spring. *l.* solitary, 1 in. to 3 in. long, narrowly elliptic-lanceolate, narrowed into stiff petioles of the same length. Rhizomes slender, creeping, bearing ovoid tubercles $\frac{1}{2}$ in. long. Costa Rica, 1874. Stove. (B. M. 6656.) SYN. *U. montana rosea* (of gardens).

U. Humboldtii (Humboldt's).* *f.* bluish-purple, large, terminal, racemose, on short pedicels; sepals dark fuscous, leafy, convex, ovate, acute; upper lip of the corolla small, entire, slightly inflexed at apex, the lower one dilated, truncate, yellow and excavated at base; spur subulate, ascending-decurved; scape very long, glabrous, sparsely bracteate. *l.* usually solitary, orbiculate, attenuated into a long petiole. Root fibrous. Guiana, 1886. Stove. (F. d. S. 1390.)

U. intermedia (intermediate). *f.* pale yellow; upper lip of the corolla far exceeding the palate; scape rather stout, three or four-flowered. July to September. *l.* distichous, closely set, $\frac{1}{2}$ in. to $\frac{3}{4}$ in. broad, orbicular, dichotomously multifid; segments subulate, distinctly ciliated; pitchers on leafless branches, $\frac{1}{2}$ in. to $\frac{3}{4}$ in. long. Stems slender, $\frac{1}{4}$ in. to $\frac{3}{8}$ in. long. Europe, &c. (Sy. En. B. 1127.)

U. minor (lesser). *f.* pale yellow; corolla $\frac{1}{2}$ in. long, with a minute, obtuse spur; scapes $\frac{1}{2}$ in. to $\frac{3}{4}$ in. long, bearing two to six flowers. June to September. *l.* lax, $\frac{1}{2}$ in. to $\frac{3}{4}$ in. broad, orbicular, dichotomously multifid; segments subulate, quite entire; pitchers on the leaf axils, one line long. Stems capillary, $\frac{1}{2}$ in. to 1 in. long. Europe, &c. (Sy. En. B. 1126.)

U. montana (mountain-loving).* *f.* one to four, $\frac{1}{4}$ in. in diameter; calyx lobes pale green, ovate-cordate, obtuse; corolla white, with a yellow palate and disk to the lower lip; upper lip with recurved edges, the lower one twice as large; spur a stout, incurved horn; scape much longer than the leaves, erect. July. *l.* $\frac{1}{2}$ in. to $\frac{3}{4}$ in. long, erect, elliptic-lanceolate, narrowed into slender

Utricularia—*continued*.

petioles. Roots of ovoid, stalked, hollow, green tubers, $\frac{1}{2}$ in. to $\frac{1}{4}$ in. long. West Indies, 1871. Stove epiphyte. (B. M. 5923; F. d. S. 1942; F. M. n. s. 83; G. C. 1871, 1039; I. H. n. s. 64.)

U. m. rosea (pink). A garden synonym of *U. Endreii*.

U. neglecta (neglected). *f.* pale yellow; upper lip of corolla exceeding the palate; scape very slender. June to August. *l.* smaller than those of *U. vulgaris*, rather remote, nearly orbicular; segments entire. Stems capillary, 6 in. to 8 in. long. Europe (Britain). (Sy. En. B. 1125 bis.)

U. reniformis (kidney-shaped). *f.* rose-coloured, with two darker-coloured lines, 1 in. to $1\frac{1}{2}$ in. across; scape 1 ft. to 2 ft. long, many-flowered. *l.* reniform, sometimes 3 in. across; petioles 6 in. to 12 in. long. Brazil, &c., 1836. A gigantic species.

U. vulgaris (common). *f.* yellow; corolla $\frac{1}{2}$ in. to $\frac{3}{4}$ in. long, with a conical spur; scape 4 in. to 8 in. long, two to eight-flowered. July and August. *l.* spreading, $\frac{3}{4}$ in. to 1 in. long, broadly ovate, pinnately multifid; segments remotely toothed; pitchers at the bases of and upon the leaf segments, $\frac{1}{2}$ in. to $\frac{1}{4}$ in. long, shortly stalked. Stems 6 in. to 18 in. long, leafy. Europe (Britain), &c. (Sy. En. B. 1125.)

UTRICULARIÆE. Included under *Lentibulariæe*.

UVARIA (from *uva*, a cluster of grapes; alluding to the fruits of some of the species). ORD. *Anonaceæ*. A genus embracing about thirty-five species of stove, climbing or sarmentose shrubs or under-shrubs, found in tropical Africa and Asia. Flowers yellow, purple, or brown, hermaphrodite, terminal or leaf-opposed, rarely axillary; sepals three, often connate below, broad, valvate; petals six, imbricated in two rows, sometimes connate at base; stamens indefinite. Leaves alternate, entire, ex-stipulate. Several species formerly included here are now referred to other genera. *U. Kirkii* is a medium-sized under-shrub, and *U. zeylanica* a large, woody climber. Both thrive in a compost of sandy loam and peat. Cuttings of the ripened wood will root in sand, under a glass, in heat.

U. Kirkii (Kirk's). *f.* 3 in. in diameter, solitary, axillary and sub-terminal; petals pale, dirty straw-colour, suffused with verdigris-green. October. *l.* $1\frac{1}{2}$ in. to 6 in. long, the young ones elliptic-oblong, and very rusty beneath, the old ones oblong, obtuse or acute, glabrous beneath or with scattered hairs on the midrib; petioles very short. Branchlets ferruginously hairy. *h.* 3 ft. to 4 ft. Zanzibar, 1868. (B. M. 6006.)

U. zeylanica (Cingalese). *f.* dull red, solitary or twin, 1 in. in diameter; peduncles $\frac{1}{2}$ in. long, tomentose. May. *l.* lanceolate or oblong-lanceolate, acute or acuminate, 2 in. to 3 in. long, dark shining green on the upper side, red or pale beneath. *h.* 20 ft. Ceylon, &c., 1794.

UVULARIA (from *uvula*, a diminutive of *uva*, a grape, or bunch of grapes; in allusion to the form of the fruit). Bellwort. Including *Oakesia* (of Watson). ORD. *Liliacæe*. A small genus (four or five species) of hardy, bulbous plants, natives of North America. Flowers solitary or twin at the tips of the branchlets, on rather long, pendulous pedicels; perianth usually pale yellow, campanulate, deciduous; the segments distinct, erect, or spreading above, the outer ones foveolate within at the base; stamens six. Leaves alternate, sessile or perfoliate, ovate or lanceolate. The species thrive in a light, sandy soil, and may be increased by divisions. All flower in spring.

U. flava (yellow). A variety of *U. perfoliata*.

U. grandiflora (large-flowered).* *f.* one to three, on pedicels $\frac{1}{2}$ in. to $\frac{3}{4}$ in. long; perianth $1\frac{1}{2}$ in. to 1 in. long, the segments lanceolate, acute, three to four lines broad; anthers six to eight lines long. *l.* oblong, membranous, perfoliate, glabrous, 2 in. to 4 in. long. 1802. Habit that of *U. perfoliata*, but rather more robust. (B. M. 1112; S. E. B. i. 51.)

U. lanceolata (lanceolate-leaved). A form of *U. perfoliata*.

U. perfoliata (perfoliate). *f.* one or few, drooping, terminal; perianth $\frac{1}{2}$ in. to $1\frac{1}{2}$ in. long, the segments lanceolate, acute, papillose within. *l.* six to twelve, perfoliate, oblong, sub-acute, membranous, $1\frac{1}{2}$ in. to 3 in. long, green above, paler beneath. Stems forked above. *h.* nearly 1 ft. 1710. (B. M. 955; S. E. B. i. 49.) *U. flava* (S. E. B. i. 50) is a variety with larger and deeper-coloured flowers. *U. lanceolata* is merely a narrow-leaved form.

U. puberula (puberulous). *f.* few, terminal or axillary, on pedicels $\frac{1}{2}$ in. to $\frac{3}{4}$ in. long; perianth nearly 1 in. long. *l.* six to

continued.

fifteen, oblong, sessile, $1\frac{1}{2}$ in. to 2 in. long, acute or cuspidate, firmer than in the other species, green on both sides, the margins ciliated. Stem nearly 1 ft. high, with two to four branches. 1824. (S. B. F. G. ser. ii. 21.)

U. rosea (rosy). A synonym of *Streptopus roseus*.

U. sessilifolia (sessile-leaved).* *f.* one to three, axillary or terminal, on pedicels $\frac{1}{2}$ in. to $\frac{3}{4}$ in. long; perianth $\frac{1}{2}$ in. to 1 in. long, the segments lanceolate. *l.* six to fifteen, oblong, sessile, membranous, acute, $1\frac{1}{2}$ in. to 3 in. long, narrowed at base, slightly glaucous below. Stem glabrous, nearly or quite 1 ft. high; branches two to four. 1790. (B. M. 14.2; L. B. C. 1262; S. E. B. i. 52.)

VACCARIA. Included under *Saponaria* (which see).

VACCINIACEÆ. A natural order of erect or prostrate shrubs or small trees, often epiphytal, usually inhabiting North temperate regions, but many are South American and Indian; they also occur in Asia, Africa, Madagascar, and Australia. Flowers hermaphrodite, variously disposed; calyx tube adnate to the ovary, the limb five, rarely four to seven, parted; corolla gamopetalous, globose, campanulate, tubular, or inflated, five, rarely four to seven, lobed, or very rarely four or five-parted, the lobes imbricated, rarely valvate; stamens twice as many as, or rarely equalling in number, the corolla lobes, epigynous or adhering towards the base of the corolla; filaments free or connate; anthers two-celled. Fruit baccate, rarely drupaceous, or dry, often very fleshy. Leaves alternate or scattered, occasionally dichotomous, sessile or petiolate, usually evergreen, entire, crenated, or serrated, the teeth sometimes glanduliferous. The berries of *Vaccinium* and *Oryzococcus* are acid, sweet, and slightly astringent; preserves are made of them, and in some countries they are used as anti-scorbutics. The order embraces twenty-six genera, and about 320 species. Examples: *Cavendishia*, *Psummisia*, *Themistoclesia*, *Thibaudia*, and *Vaccinium*.

VACCINIUM (the old Latin name, used by Virgil and Pliny). Bilberry; Blueberry; Cranberry; Huckleberry. Including *Epigynum* (in part). ORD. *Vacciniacæe*. A large genus (about 100 species) of mostly hardy, branched shrubs, rarely trees, very rarely epiphytal, inhabiting North temperate regions and tropical mountains. Flowers white, pink, or red, disposed in axillary or terminal racemes or axillary fascicles, rarely solitary, often bracteate and bibracteolate; calyx tube terete, globose, hemispherical, or turbinate, the limb of four or five short, very rarely unequal lobes; corolla urceolate, campanulate, or rarely nearly tubular or conical, terete, very rarely ribbed or angled, the limb of four or five short, rarely elongated and revolute lobes or teeth; stamens eight or ten, free, or shortly adhering at the base of the corolla tube; filaments short or elongated, often hairy; anthers awned on the back or awnless; bracts sometimes foliaceous. Berry globose, four or five (or apparently eight or ten) celled, the cells few or many-seeded. Leaves persistent, rarely membranous or deciduous, often thickly coriaceous, entire or serrated. All the *Vacciniums* require peat; the hardy ones thriving in any fairly damp, peat border. They may be propagated most readily from seeds, sown under glass, in spring, and the seedlings gradually hardened off when large enough. The greenhouse species should be placed in the open air during the summer months, in order to get their wood well ripened. The best-known species are here described. Except where otherwise indicated, they are hardy, deciduous shrubs, from North America; the flowers appear in spring, and the berries, which are sweetish or sometimes acid, and mostly edible, ripen in summer or autumn.

V. albiflorum (white-flowered). A synonym of *V. corymbosum*

V. amœnum (pleasing). A variety of *V. corymbosum*.

Vaccinium—continued.

V. angustifolium (narrow-leaved). A form of *V. pennsylvanicum*.

V. arboreum (tree-like). Farkleberry. *fl.* profuse, axillary along the branches and leafy-racemose; corolla white, moderately five-lobed. *fr.* black, small, globose. *l.* obovate or round-oval to oblong, thinish-coriaceous, very smooth and shining above, reticulate-veined, obscurely glandular-denticulate or entire. Branches spreading, glabrous or somewhat pubescent. *h.* 6ft. to 25ft. 1765. (L. B. C. 1885.) *SYN.* *V. difusum* (B. M. 1607)

V. Arctostaphylos (Arctostaphylos). A synonym of *V. madroense*.

Vaccinium—continued.

V. caracasense (Caracas).* *fl.* secund, with eight to ten anthers; corolla reddish-white, campanulate; racemes axillary, twice as long as the leaves; bracts lanceolate, nearly equalling the pedicels. July. *l.* elliptic, acute, crenulate, coriaceous, glabrous, shining above. Stem shrubby, erect. *h.* 4ft. Caracas. 1825. Greenhouse.

V. corymbosum (corymbosum).* *fl.* more often racemose than corymbosely disposed on the naked twigs; corolla white or obscurely rose-coloured, turgid-ovate to cylindraceous-campanulate, three to four lines long. *fr.* usually blue-black, with a copious bloom. *l.* ovate or oblong to elliptic-lanceolate. Branchlets yellowish-green, turning brownish. *h.* 5ft. to 10ft. 1765.



FIG. 146. FRUITING BRANCH OF VACCINIUM LEUCOBOTRYA.

V. coccipitosum (tufted). *fl.* solitary in the earliest axils, usually five-parted; corolla rose-coloured or nearly white, ovate or ovoid-oblong. *fr.* blue, with a bloom, proportionately large, sweet. *l.* obovate to cuneate-oblong, obtuse or rarely somewhat acute, thickly serrulated, bright green on both sides, reticulate-veined. *h.* 3in. to 6in. 1823. (B. M. 3429; H. F. B. A. II. 126.)

V. canadense (Canadian). *fl.* few in the clusters; corolla greenish-white, shorter, and more open-campanulate. *l.* elliptic or oblong-lanceolate, entire, and, as well as the branchlets, downy with soft, spreading pubescence. Otherwise resembling *V. pennsylvanicum*. 1825. (B. M. 3446.)

V. c. amœnum (pleasing). *l.* ciliate-serrulated or bristly-ciliated, rather bright green, slightly or sparsely pubescent. *SYNS.* *V. amœnum* (A. B. II. 138; B. II. 400), ? *V. c. fuscatum* (B. M. 3433).

V. c. pallidum (pale). A pale and very glaucous or glaucescent form, with or without some pubescence, generally low; otherwise nearly as in the preceding variety. *SYN.* *V. albiflorum* (B. M. 3428).

V. crassifolium (thick-leaved). *fl.* few and almost sessile, in small, axillary clusters; corolla nearly white, globose, campanulate. *fr.* black. *l.* 3in. to 3in. long, oval to narrow-oblong.

Vaccinium—continued.

sparsely mucronate-aerulate or entire, shining. Stems slender, trailing, 2ft. to 3ft. long. 1787. Evergreen. (A. B. R. 105; B. M. 1152.)

V. diffusum (diffuse). A synonym of *V. arboreum*.

V. dumosum (bushy). A synonym of *Gaylussacia dumosa*.

V. erythrinum (red-twigged). * *f.* numerous, moderately large, secund, drooping; corolla deep coral-red, urceolate, the limb of five small, reflexed segments; pedicels red; racemes clustered, terminal, 2½ in. to 3 in. long, sessile or nearly so. October. *l.* alternate, coriaceous, glossy, 1½ in. to 2 in. long, ovate, rather obtuse, quite entire; young ones stained with red. Young branches red. *h.* 1½ ft. Java, 1852. A handsome, warm greenhouse, evergreen shrub. (B. M. 4668; F. d. S. 1115; L. J. F. iv. 364.)

V. formosum (beautiful). * *f.* in loose clusters; calyx and tardily deciduous bracts red or reddish; corolla rose-red, four to five lines long, cylindrical. *fr.* blue, sweet. *l.* ovate or oblong, entire, 1 in. to 2 in. long, smooth and bright green above, glabrous or pubescent beneath, rather firm in texture. *h.* 2ft. to 3ft. (A. B. R. 97.)

V. frondosum (leafy). A synonym of *Gaylussacia frondosa*.

V. fuscatum (fuscous). A form of *V. virgatum*.

V. Imrayi (Dr. Imray's). *f.* large; corolla yellow-green, rather thick; corymbs many-flowered, axillary or terminal, leafy, compact. *l.* shortly petiolate, ovate, acuminate, entire or obsolete serrated, punnerved, glossy, coriaceous. *h.* 2½ ft. to 3ft. Dominica, 1850. A handsome, stove, evergreen shrub. (B. M. 5279.) The correct name of this plant is now *Hornemannia martinicensis*.

V. leucobotrya (white-clustered). * *f.* glabrous; corolla white, waxy, sub-diaphanous, conico-urceolate; racemes copious from among the leaves, and longer than them, drooping, secund, many-flowered. Summer. *fr.* pure white, with five dark spots in a circle below the apex, copious, about the size of peas. *l.* oblong-lanceolate, deeply serrated, very shortly petiolate. Branches whorled. *h.* 4ft. to 7ft. Bengal, 1859. Greenhouse, evergreen shrub. See Fig. 146. (L. M. 5103, under name of *Epigynium leucobotrya*.)

V. leucostomum (white-mouthed). *f.* three or four in a short, erect, fascicled raceme; corolla scarlet, tipped with white, urceolate-campanulate, with a short limb; bracts small, subulate. *l.* oblong, nearly sessile, thick, slightly crenate, obsolete nerved, ½ in. to 1 in. long. Branches erect, angled. Peruvian Andes, 1848. A glabrous, evergreen shrub. (G. C. 1848, p. 7.)

V. macrocarpum (large-fruited). A synonym of *Oxycoccus macrocarpus*.

V. madrense (Madeira). *f.* on axillary, drooping pedicels; corolla greenish-white, campanulate, sub-cylindrical; racemes leafy. *l.* oblong, attenuated at both ends, serrated, pubescent beneath. Stem arborescent. *h.* 6ft. Madeira, 1777. Syn. *V. Arctostaphylos* (A. B. R. 30; B. M. 974).

V. Mortinia (native name). * *f.* in very short, drooping racemes, crowded, shortly pedicellate; corolla rose-pink, ½ in. long, with five small, recurved teeth. *l.* rather crowded, ½ in. to ¾ in. long, spreading and reflexed, ovate- or lanceolate-oblong or ovate, acute, thickly coriaceous, slightly serrated; petioles very short. Branches pubescent or nearly glabrous. *h.* 2ft. to 3ft. Andes, 1884. Half-hardy shrub. (B. M. 6872.)

V. Myrsinites (Myrsinites). *f.* in fascicles or very short racemes, shortly pedicellate; corolla white or rose-coloured, five-toothed, at length cylindrical, two to three lines long; bracts reddish, tardily deciduous. *fr.* blue, globose. *l.* obovate and obtuse to oblong-lanceolate and acute or spatulate, often cuspidate, ½ in. to 1 in. long, sometimes denticulate, mostly shining above, dull or paler and sometimes glaucous beneath. Branchlets puberulent when young. *h.* 9in. to 2ft. 1794. Evergreen. (B. M. 1550, under name of *V. nitidum decumbens*.) Syn. *V. Sprengelii* (of gardens).

V. myrtilloides (Myrtillus-like). *f.* solitary in the earliest axils, usually five-parted; corolla yellowish- or greenish-white, tinged with purple, globose-urceolate, nearly two lines long. *fr.* purplish-black, rather acid. *l.* ovate or oval and oblong, sharply serrated, membranous, green on both sides but not shining, 1 in. or more long, the larger or later ones mostly acute or acuminate. Branchlets slightly angled. *h.* 1ft. to 5ft. (B. M. 3447.)

V. Myrtillus (Myrtillus). Bilberry; Bleberry; Blueberry; Common Whortleberry, &c. *f.* solitary, on naked peduncles, ½ in. long; corolla rosy, tinged with green globose, ½ in. in diameter. *fr.* dark blue, ½ in. in diameter, glaucous. *l.* ovate, ½ in. to 1 in. long, serrated, reticulate-nerved, rosy when young. Stems many, erect, 6in. to 2ft. high. Europe (Britain), Asia, and America. (F. D. 974; Sy. Kn. B. 879.)

V. nitidum (shining). *f.* in fascicles or very short racemes; calyx teeth and almost persistent bracts very obtuse; corolla rose-red or turning white, rather broad, two lines long. *fr.* black, somewhat pear-shaped. *l.* obovate to oblanceolate-oblong, ½ in. to ¾ in. long, thick-coriaceous, shining, at least above, obscurely denticulate and glandular. *h.* 1ft. to 2ft. 1794. A diffuse, much-branched, very leafy, evergreen shrub. (A. B. R. 450.)

Vaccinium—continued.

V. ovatum (ovate-leaved). *f.* in short and close, axillary clusters; corolla rose or flesh-coloured, campanulate, two lines long, five-parted. *fr.* reddish, turning black, small, rather sweet. *l.* thick and firm, very numerous, oblong-ovate to oblong-lanceolate, acute, minutely and acutely serrated, glabrous or nearly so, 1 in. or so long, bright green on both sides. Branchlets pubescent. *h.* 3ft. to 5ft. 1826. An erect, rigid, evergreen shrub. (B. R. 1354; L. B. C. 1605; L. J. F. iv. 424.)

V. Oxycoccus (Oxycoccus). A synonym of *Oxycoccus palustris*.

V. pennsylvanicum (Pennsylvanian). * *f.* on very short pedicels, in fascicles or short racemes; corolla white or obscurely rose-coloured, campanulate with the orifice slightly contracted, barely ½ in. long. *fr.* bluish-black and glaucous, large and sweet, ripening early. *l.* oblong-lanceolate or oblong, green and somewhat shining on both sides, glabrous or sometimes hairy on the midrib beneath, distinctly serrated with bristle-pointed teeth. Stems green and warty, mostly glabrous. *h.* 9in. to 12 in. or more. 1772. (B. M. 3434.)

V. p. angustifolium (narrow-leaved). Bluets. A dwarf form (9in. or less in height), with lanceolate leaves. Syn. *V. angustifolium*.

V. reflexum (reflexed-leaved). *f.*, corolla red, coriaceous, rather acutely five-angled; corymbs small, short, few-flowered, or many-flowered and then sub-globose, sub-terminal and axillary. January. *l.* small, reflexed or horizontally spreading, ½ in. to ¾ in. long, almost sessile, oblong-lanceolate, acute, sharply serrated except at the base; young ones bright pale red. Stem branched from the base; branches 1ft. to 2ft. long, sparingly divided, leafy, pendulous. Bolivia, 1869. Greenhouse evergreen. (B. M. 5781.)

V. resinosum (resinous). A synonym of *Gaylussacia resinosa*.

V. Rollisoni (Rollison's). *f.* on spreading pedicels, drooping; corolla rich scarlet, the limb of five acute lobes; racemes always terminal, nearly sessile, four to six-flowered. *l.* about ½ in. long, obovate, sub-cuneate, coriaceous, glossy, entire, sometimes retuse. Branchlets angled. *h.* 2ft. or more. Java, 1851. An erect, much-branched, slightly hairy, leafy, stove, evergreen shrub. (B. M. 4612.)

V. rugosum (wrinkled). A synonym of *Pentapterygium rugosum*.

V. Sprengelii (Sprengel's). A garden synonym of *V. Myrsinites*.

V. stamineum (thready). * Deerberry; Squaw Huckleberry. *f.* nearly all axillary; corolla dull purplish or yellowish-green, deeply five-cleft; awns of the anthers very much shorter than the elongated tubes. *fr.* greenish or yellowish, large, pear-shaped or globular, mawkish. *l.* pale and dull or glaucous, especially beneath, oval to lanceolate-oblong. Branches diverging, minutely pubescent or at length glabrous. *h.* 2ft. to 3ft. 1772. (A. B. R. 263.)

V. tenellum (tender). A variety of *V. virgatum*.

V. uliginosum (swamp-loving). *f.*, corolla pale pink, ½ in. long sub-globose; peduncles one to three together, ½ in. long, one-flowered. *fr.* smaller than in *V. Myrtillus*. *l.* oblong or obovate, ½ in. to 1 in. long, obtuse or acute, quite entire, coriaceous, glaucous beneath. Stems ½ in. to 10 in. long, naked below, procumbent; branches ascending. Arctic regions of Northern hemisphere. (F. D. 231; Sy. Kn. B. 878.)



FIG. 14° BERRING BERRY OR VACCINIUM VITIS-IDEA.

Vaccinium—continued.

V. virgatum (twigg). *fl.* on short pedicels; corolla rose-coloured, three to four lines long; clusters sometimes twigg on naked branches. *fr.* black, sometimes with a bloom. *l.* obovate-oblong to cuneate-lanceolate, or oblong-lanceolate, usually acute or pointed and minutely serrulated, rather thin, lin. or so long. *h.* 3ft. Shrub more or less pubescent. (A. B. R. 181; B. M. 3522; W. D. B. l. 33, 34.) **V. fuscatum** (B. R. 302) is a form of this species, having deep rose-coloured flowers and red pedicels and bracts, approaching **V. formosum**.

V. v. tenellum (tender). *fl.* nearly white, in shorter or closer clusters; corolla barely ½ in. long. *l.* mostly small. A low form.

V. Vitis-Idæa (Vine of Mount Ida)* Brawlings; Cowberry; Flowering Box, &c. *fl.* crowded in short, terminal, drooping racemes; corolla pink, campanulate. *fr.* red, globose, ½ in. in diameter, acid. *l.* obovate, ½ in. to 1½ in. long, green above (like Box), dotted beneath, very coriaceous, bifarious, the margins revolute, thickened, entire or minutely serrulated. Stems wiry, tortuous, procumbent; branches 6 in. to 18 in. long, trailing or ascending. Europe (Britain). Evergreen. See Fig. 147. (F. D. 40; Sy. En. B. 877.)

VACUOUS. Empty; a term applied to cases when an organ does not contain what usually belongs to it. Bracts which usually support flowers are said to be Vacuous when they have no flowers in their axils.

VAGIFORM. Having no certain figure.

VAGINA. A sheath; e.g., a petiole rolled round a stem.

VAGINATE. Sheathed.

VAGINULARIA. Included under *Monogramme*.

VAILLANTIA (named in honour of Sebastian Vaillant, 1669-1722, an eminent French botanist, author of "Botanicon Parisiense"). SYN. *Valantia*. ORD. *Rubiaceæ*. A genus including two or three species of small, branched, annual herbs, natives of South Europe, the Mediterranean region, and Western Asia. Flowers white or yellow, small, ternate. Leaves in whorls of four, lanceolate or obovate. The species are of no interest from a horticultural standpoint.

VALANTIA. A synonym of **Vaillantia** (which . . .)

VALDESIA. A synonym of **Blakea** (which *sec.*)

VALDIVIA (so called from the town of Valdivia, in Chili, in the neighbourhood of which the genus is found). ORD. *Saxifragææ*. A monotypic genus. The species is a singular and ornamental, small, half-hardy, evergreen shrub, with short, terete stems, probably now lost to cultivation.

V. Gayana (Gay's). *fl.* red, pedicellate, few in a short, axillary, hairy raceme; calyx five-lobed, the tube adnate with the ovary; petals five to seven, perigynous, linear, acuminate, bearded within at the base; stamens five to seven. *l.* ample, alternate and sub-opposite, obovate-lanceolate, acute, argutely glandular-erose or toothed, membranous; stipules wanting. *h.* 6 in. Chili to Valdivia, 1863.

VALERIAN. See **Valeriana**.

VALERIANA (a mediæval name, said to be derived from *valere*, to be healthy; in allusion to its powerful medicinal qualities). Valerian. ORD. *Valerianææ*. A large genus (nearly 150 species) of mostly hardy, perennial herbs, sub-shrubs, or shrubs, mostly inhabiting North temperate regions and extra-tropical South America; a few are natives of Brazil or the East Indies. Flowers white or pink; calyx at first entire, but forming a feathery crown at fruiting time; corolla with a short or rarely elongated tube and a five-cleft, spreading limb; stamens three, rarely one or two by abortion. Fruit compressed. Leaves, especially the radical ones, entire or toothed, or the cauline ones (or all) pinnatifid, or once, twice, or thrice pinnatisect. Few of the species have any horticultural merit. The medicinal qualities of *V. officinalis* are, however, extensive. Those described below are hardy perennials; they thrive in common soil, and may be readily increased by divisions.

V. angustifolia (narrow-leaved). A synonym of *Centranthus angustifolia*.

Valeriana—continued.

V. Calcitrapa (Calcitrapa). A synonym of *Centranthus Calcitrapa*.

V. Cornucopia (Cornucopia). A synonym of *Fedia Cornucopia*.

V. dioica (dieceons). Marsh Valerian. *fl.* pale rose-coloured, mostly unisexual, in terminal corymbs; corolla tube short. Early summer. *l.* radical ones and those of the runners long-stalked, ovate, entire, ½ in. to lin. long; cauline ones few, mostly pinnate, with one terminal segment and several pairs of smaller ones, all entire. Flowering stems 6 in. to 8 in. high. Europe (Britain). (Sy. En. B. 668.)

V. montana (mountain-loving). *fl.* pink; corymbs at length paniculate. July. *l.* lower ones oblong or obovate, obtuse, slightly toothed; upper ones lanceolate, acute. *h.* 9 in. Mountains of Europe, 1738. Plant glabrous or slightly pilose, erect. (J. F. A. 269; L. B. C. 317.)

V. m. rotundifolia (round-leaved). *l.* lower ones nearly round. Stems dwarfer than in the type. (B. M. 1825.)

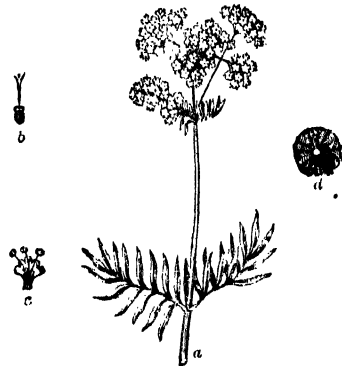


FIG. 148. VALERIANA OFFICINALIS, showing (a) Upper Portion of Plant; (b) Flower, with Corolla removed; (c) Corolla, cut open; (d) Plumose Crown of Fruit.

V. officinalis (official). All-heal; Common Valerian; St. George's Herb, &c. *fl.* pink; corymbs contracted or loose, at length sub-paniculate. June. *l.* all, or nearly all, pinnatisect; segments seven or eight pairs, lanceolate, serrated. Stems sulcate. *h.* 3ft. Europe. A very variable species. See Fig. 148. (B. M. PL. 146; F. D. 570; Sy. En. B. 666.)

V. Phu. *fl.* white, in a paniculate corymb. August. *l.* radical ones oblong or elliptic, undivided; cauline ones pinnately lobed, the lobes oblong. Stem terete, smooth. *h.* 2ft. Caucasus (an escape from cultivation in Europe). Plant glabrous, erect.

V. P. aurea (golden)* This only differs from the type in the bright golden-yellow colour of the young growths in spring.

V. ruthenica (Russian). A synonym of *Patrinia sibirica*.

V. sibirica (Siberian). A synonym of *Patrinia sibirica*.

VALERIANEÆ. A natural order of annual or perennial herbs, sub-shrubs, or rarely shrubs, mostly found in temperate and frigid regions of the Northern hemisphere, copious in Western America and the Andes, rarely found in tropical Asia, Brazil, Guiana, and the West Indies. Flowers cymose or solitary; calyx tube adnate to the ovary, often small, sometimes obsolete; corolla white, pale blue, red, or (in *Patrinia*) yellow, superior, gamopetalous, the base of the tube often attenuated, gibbous or spurred, the limb spreading, three to five-cleft or bilabiate; stamens one to four, inserted below or above the middle of the tube, often exserted; filaments free; anthers two-celled; cymes terminal or axillary, clustered, or loosely corymbose or paniculate. Fruit dry, indehiscent. Leaves opposite, exstipulate, often mostly radical or clustered at the base of the stem, entire or toothed; cauline ones sometimes few, small, or wanting, sometimes many, entire, or often as large as the radical ones, and toothed, pinnatifid, or once, twice, or thrice pinnatisect. The medicinal qualities of *Valerianææ* have been known from ancient times; the plants now take rank at the head of the vegetable anti-

Valerianæ—*continued*.

spasmodics. The order includes nine genera, and about 300 species. Examples: *Centranthus*, *Nardostachys*, *Patrinia*, *Valeriana*.

VALERIANELLA (a diminutive of *Valeriana*). **SYNS.** *Fedia* (of Gartner), *Odontocarpa*, *Polypremum* (of Adanson). **ORD.** *Valerianæ*. A genus comprising about fifty species of small, hardy, dichotomously-branched, annual herbs, natives of Europe, North Africa, West Asia, and North America. Flowers whitish, pale bluish, or pink; calyx limb toothed, lobed, or wanting; corolla tube short or rarely elongated, the limb spreading, five-cleft; stamens three; cymes sometimes fastigiately corymbose-paniculate, sometimes densely globose at the tips of the branches; bracts free. Radical leaves rosulate, entire; cauline ones entire, toothed, or rarely incised-pinnatifid. *V. carinata* and *V. olitoria* are the only species calling for description in this work. For cultural directions, &c., see **CORN SALAD**.

V. carinata (keeled). Corn Salad. *fr.* oblong, boat-shaped; fertile cell not corky; calyx limb indistinct. Europe (Britain). Sir J. D. Hooker regards this as "probably a variety of *Fedia olitoria*, which it resembles in all characters save those of the fruit."

V. olitoria (culinary). Common Corn Salad; Lamb's Lettuce; White Potherb. *fl.* pale lilac, minute, in capitate cymes. April to June. *fr.* minute, glabrous or hairy; fertile cell corky on the back, the empty ones contiguous or confluent; calyx limb wanting. *l.* 1in. to 3in. long, linear-oblong or oblong-lanceolate, quite entire or toothed; cauline ones half-amplexicaul. *h.* 6in. to 12in. Europe (Britain), &c. An excellent salad. See also **Corn Salad**.

VALERIAN, GREEK. A common name for **Polemonium cæruleum** (which see).

VALERIAN, LONG-SPURRED. A common name for **Centranthus macrosiphon** (which see).

VALERIAN, RED OR SPUR. See **Centranthus ruber**.

VALERIANWORTS. The plants of the natural order *Valeriana*.

VALLARIS (perhaps from *vallo*, to inclose; the plants are said to be used in Java for fences). **SYNS.** *Emericia*, *Pellanthera*. **ORD.** *Apocynaceæ*. A small genus (five or six species) of tropical Asiatic and Malayan, stove, twining shrubs. Flowers white, cymose or fascicled; calyx five-parted, glandular or not within; corolla salver-shaped, with a short tube, a naked throat, and broad lobes; stamens at the top of the tube, the filaments very short, clavate. Leaves opposite, minutely dotted. For culture of *V. Pergularia*, the only species introduced, see **Vallesia**.

V. Pergularia (*Pergularia*). *fl.* with a disagreeable, goat-like smell; cymes glabrous or puberulous. *l.* broadly elliptic or obovate, or rounded abruptly, shortly acute, membranous, 4in. to 7in. long, 5in. to 4in. broad, glabrous or puberulous beneath; petioles 1in. to 1½in. long. Bark pale. India, 1818.

VALLEZIA (name commemorative of Francisco Valles, physician to Philip II. of Spain; he died in 1592). **ORD.** *Apocynaceæ*. A small genus (two species) of American, much-branched, glabrous, stove shrubs or small trees. Flowers small, cymose; calyx five-parted, without glands; corolla salver-shaped, annulate or pilose within the throat, the lobes five, ovate or lanceolate, twisted; stamens included below the apex of the tube. Leaves alternate, lanceolate, or oblong. It is doubtful whether *V. dichotoma* is still in cultivation. A compost of sandy loam and peat suits it. Propagation may be effected by means of cuttings, inserted in sand, under a glass, in heat.

V. dichotoma (dichotomous). *fl.* white, ½in. long, numerous; cymes dichotomous, half the length of the leaves. May. *l.* ovate-oblong, acute, obtuse at base, 2in. to 2½in. long, rugose-tubercled and pellucid-dotted; young ones pubescent. Branches dichotomous, terete. A. 3t. Peru, 1822.

VALLISNERIA (named after Antonio Vallisneri, 1661-1730, an Italian botanist, Professor at Padua). **ORD.** *Hydrocharidææ*. A monotypic genus. The species is a half-hardy, aquatic, submerged herb, found in fresh-water lakes, ditches, &c. It is largely grown in aquaria in this country, and requires to be planted deeply in the water.

V. spiralis (spiral). Eel Grass; Tape Grass. *fl.* white, minute, apparently forming an ovoid or globular head not quite so long as the dioecious, shortly bi- or trifid spathes. July. *l.* very long and narrow when the water is deep, short in shallow water, obtuse or acute and more or less minutely toothed at the ends, or sometimes perhaps quite entire. Stems very short, sometimes stoloniferous. Warm and temperate regions, 1818. The male flowers are borne on a very short peduncle, and are sessile on a conical axis. At the flowering period, the female peduncle gradually lengthens, so that the flower finally floats on the surface of the water. Then the male submerged flowers detach themselves spontaneously from their peduncle and rise to the surface. After fertilisation, the peduncle of the female flower contracts spirally, and the ovary descends to the bottom of the water to ripen its seeds.

VALLONEA OAK. See **Quercus Ægilops**.

VALLOTA (named after Pierre Valot, a French botanist, who wrote a description of the Royal Gardens in 1623). **ORD.** *Amaryllidææ*. A monotypic genus. The species is a beautiful, greenhouse, bulbous plant. It requires a soil composed of good, fibrous loam, leaf mould, and sand, in equal parts. The bulbs should be placed from 6in. to 8in. below the level of the surface of the soil, and surrounded with sand, after which they may be covered with the compost, which should be pressed firmly around them. They should not be disturbed for years, and will ultimately establish themselves and produce grand masses of blossom. The best season for planting a fresh stock is June and July, when they commence root action before the flower-stems are sent up. If the surface of the soil in which the bulbs are planted be covered with green Saxifrage or Sedum, it will give a very neat and pleasing appearance when the plants are in flower. During their growing season, and in dry weather, an occasional soaking of water or liquid manure will prove very beneficial to Vallotas.

V. purpurea (purple).* Scarborough Lily. *fl.* 3in. to 4in. long, several in an umbel, sessile or shortly pedicellate; perianth red, funnel-shaped, straight, erect, the tube short, the throat enlarged, the lobes oblong-ovate, connected at base by a small callus; stamens erect, equal; involucre bracts two or three, membranous; scape robust, fistular. 2ft. to 3ft. high. May. *l.* equalling the scape, lanceolate-linear, entire, obscurely reticulate-veined. South Africa, 1774. (R. H. 1870, 50.)

V. p. eximia (choice).* *fl.* of the same shade of colour as in the type, 4in. across, chiefly distinguishable for the white throat, with crimson feather, not unlike what is seen in some varieties of Gladioli. (F. M. ser. i. 225.)

V. p. magnifica (magnificent). This is hardly distinct from *V. p. eximia*, though its raisers consider it larger, brighter in colour, and a more robust grower than any other. It was exhibited with flowers 5in. across. (Gn. xxx., p. 245.)

V. p. major (greater). *fl.*, perianth reddish-scarlet, the throat hyaline-fenestrate; anthers longer. **SYN.** *Amaryllis purpurea* (G. M. 1430).

V. p. minor (lesser). *fl.*, perianth cherry-red, the throat opaque-fenestrate; anthers shorter. (B. R. 552.)

VALONIA. A commercial name for the acorn-cups of *Quercus Ægilops*.

VALVATE, VALVULAR. United by the margins only; opening as if by doors or valves, as do most indehiscent fruits and some anthers.

VALVES. The doors by which various bodies open; the term is also applied to the pieces into which a capsule splits.

VALVES. In all heating arrangements by hot water, Valves are requisite for regulating the passage of heat to different houses and pits, and for shutting it off altogether from any part when not required. The ordinary kind, which can easily be opened or closed with one

Valves—continued.

hand, answers very well for the mere purpose of regulating heat. A high-pressure Valve, the aperture in which is opened and closed by means of a screw and thread, is sometimes put in near the boiler when there is more than one main, or when two boilers are connected for working both together and separately. When these Valves are screwed down, the water cannot circulate or pass, and this is of great advantage in case of repairs being necessary to one of the boilers, as the other can meanwhile be kept at full work. High-pressure Valves are not required on all boilers, but sufficient of the ordinary kind should be introduced where necessary to insure the apparatus being worked readily and the regulation of heat kept under easy control.

VANDA (the Indian name of the original species). Ord. *Orchidæ*. A genus embracing about thirty species of very beautiful, stove, epiphytal Orchids, natives of the East Indies and the Malayan Archipelago, one being also found in tropical Australia. Flowers showy or rarely mediocre, shortly pedicellate, usually fragrant; sepals and petals free, sub-equal, much spreading, often narrowed or nearly clawed at base; lip continuous with the column, spreading, saccate or obtusely spurred at base, the lateral lobes erect, rounded or reduced to auricles, the middle one spreading; column short, thick, wingless; pollen masses two; bracts short; racemes simple, loose; poduncles lateral. Capsules often on rather long pedicels. Leaves distichous, spreading, coriaceous or slightly fleshy, often emarginate or shortly bilobed at apex, flat or (in *V. Hookeriana* and *V. teres*) terete. Stem leafy, not pseudo-bulbous. The Vandas require more light than most other Orchids; indeed, many successful growers do not use shading for them at all. During the period of growth, say from March or April until about October, a high temperature and abundance of moisture are essential; the thermometer should not fall below 70deg. or 75deg. during the day, and may be allowed to rise to 85deg. or even higher in sunny weather. The night temperature during the growing season should not fall more than about 10deg. below that maintained during the day. In the winter months, 60deg. or 65deg. at night will be sufficient, and less water will be required—none being allowed to lodge in the axils of the leaves. The most rational method of growing the plants is to fix them in baskets, filled three-fourths of their depth with broken potsherds, and the rest with clean, fresh sphagnum. If rafts or blocks of wood are employed, more care is necessary in watering, for, if an insufficient supply is given, the leaves are apt to shrivel and the lower ones to fall off. As pots are more readily moved, they are frequently employed by exhibitors; the directions as to cultivation in baskets should be followed if pots are used. *V. cœrulea* requires less heat than the other kinds; indeed, it succeeds sometimes better under almost cool treatment. *V. teres* should be placed close to the glass, in a warm, sunny house, and supplied with abundance of water when growing; when at rest, less will suffice. Should the plants of any of the tall-growing species become too high, the tops may be cut off and potted in potsherds and sphagnum. New growths often spring from the base of the old plants, and from the stems of those which have been cut back; these allow the species to be readily propagated.

V. alpina (alpine). *f.* pale green, small; sepals and petals oblong; lip yellowish, streaked with dull purple, gibbous below the apex, emarginate; basal hollow deep purple; raceme subsessile, erect, two or three-flowered. *l.* channelled, recurved, obliquely (sometimes acutely) bilobed. Khasya, 1857. SYN. *Luina alpina*.

V. Batemanni (Bateman's). A synonym of *Stauropsis Batemanni*.

V. Bensoni (Benson's). *f.* white outside, about 2in. in diameter; sepals and petals yellowish-green, dotted with reddish-brown on the inside, obovate, obtuse; lip pink, with a violet, reniform apex, ovate in front, convex, trilocellate on the disk, the small

Vanda—continued.

basal auricles and conical spur white; scapes rigid, 1½ft. high. *l.* coriaceous, lorate, channelled, toothed at apex. Kangoon, 1866. (B. M. 5611; F. d. S. 2329; G. C. 1867, 180.)

V. bicolor (two-coloured). *f.* white externally, yellowish-brown inside, with obscure, rigid tessellations, less than 2in. across; sepals and petals falcate; lip lilac, with large, white auricles, giving the base a broad, cordate appearance, dotted with lilac and tinged with yellow; raceme erect, rigid, few-flowered, longer than the leaves. *l.* lorate, coriaceous, half-twisted in the middle, very oblique and somewhat three-toothed at apex. Bhotan, 1875.

V. cœrulea (blue).* *f.* sometimes as much as 5in. across; sepals and petals pale blue, membranous, oblong, obtuse, shortly stalked; lip deep blue, small, coriaceous, oblong-linear, the point obtuse, with two diverging lobes; racemes ten or more-flowered; scapes erect, much longer than the leaves. Autumn. *l.* loriform, channelled, coriaceous, unequally truncate, with acute lateral lobes. Stem erect, 2ft. to 3ft. high. Khasya, 1849. A very handsome plant. (F. d. S. 609; I. H. 246; L. J. F. 102; L. & P. F. G. 1. 36; R. X. O. 1. 5; W. S. O. 18.) *V. c. grandiflora* is a fine, large-flowered variety. (R. H. 1881, p. 290.)

V. cœruleoalba (bluish). *f.* ten to twenty on a slender, erect, axillary scape; sepals and petals pale mauve-blue, cuneate-ovate, twisted at the clawed base; lip violet, obtusely, dilated, emarginate, with lilac-purple auricles, the spur tipped with green. Spring. *l.* coriaceous, ligulate, dark green, 5in. to 7in. long, truncately bilobed. Stems elongated. Burmah, 1869. A pretty little species. See Fig. 149 (for which we are indebted to Messrs. Veitch and Sons). (B. M. 6834; F. M. ser. ii. 256; G. C. 1870, p. 529; W. O. A. 1. 48.)

V. c. Boxallii (Boxall's).* *f.* sepals and petals white, tinged with lilac; front lobe of the lip dilated, deep violet, bordered with white; disk dark blue-striped; raceme rather close, on a short scape. *l.* obliquely erose at apex. 1877. (B. M. 6323.)

V. c. Lowiana (Low's). Similar to *Boxallii*, but having an amethyst-coloured middle lobe of lip and a dot of amethyst at each end of the sepals. 1877.

V. Cathcarti (Cathcart's).* *f.* 3in. across; sepals and petals white outside, yellow with reddish-brown bands internally sessile, concave, roundish-oblong; lip three-lobed, the lateral lobes white, red-streaked at base, small, the middle lobe whitish, with a yellow, crenate, incurved border; disk with two erect calli; scape erect, leaf-opposed, four or five-flowered. *l.* 6in. to 7in. long, linear-oblong, unequally bilobed, pale green. Sikkim Himalayas, 1864. A tall, scrambling species. (B. M. 5845; C. H. P. 25; F. d. S. 1212; F. M. ser. ii. 66; G. C. 1870, 1409; I. H. 187; W. O. A. iv. 168.) *Arachnanthe Cathcarti* is now the correct name of this species.

V. concolor (one-coloured). *f.* rather distant, numerous, in elongated, lateral racemes; sepals and petals white outside, cinnamon-brown within, oblong-obovate, wavy; lip three-lobed, downy at base, the side lobes white with rosy dots, the middle one cinnamon-brown, cuneate and bilobed at apex; spur attenuated. *l.* membranous, evergreen, lax, obliquely three-toothed at apex. Stems erect, 5ft. to 6ft. high. China, 1850. (B. M. 3416, under name of *V. Roxburghii unicolor*.)

V. cristata (crested). *f.* sepals and petals yellow-green, oblong, obtuse, the petals incurved; lip buff, striped with rich purple, divided at the end into two or three narrow, acute, diverging, unequal lobes; racemes erect, three to six-flowered, shorter than the leaves. March to July. *l.* channelled, recurved, truncate and three-toothed at apex. Stems erect. Nepal, 1818. (B. M. 4304; B. R. 1842, 48; R. G. 680.)

V. Denisoniana (Denison's). *f.* thick and fleshy, medium-sized; sepals and petals white, slightly tinged with green, the dorsal sepal and petals spathulate; lip white, pandurate; the apex two-lobed, the bases with two nearly quadrate auricles; spur short, conical; racemes axillary, five or six-flowered, on stout, ascending peduncles. April. *l.* lorate, rigid, recurved, sharply bilobed at apex, dark green. Stems erect. Arracan Mountains, 1869. (B. M. 5611; F. & P. 1869, p. 250; G. C. n. s., xxiv., p. 105; I. H. ser. iii. 105.)

V. D. hebraica (Hebrew-marked). *f.* sepals and petals sulphur-coloured on both sides, but darker within and with spots and bars resembling Hebrew letters; anterior part of the blade of the lip olive-green; spur orange inside. July. Burmah, 1885. (W. O. A. 246.)

V. D. punctata (dotted). *f.* sulphur-coloured, with some brown spots on the petals and odd sepal, the middle and base of the lip white.

V. densiflora (dense-flowered). A synonym of *Saccolabium giganteum*.

V. fuscoviridis (fuscous-green). *f.* about 1½in. across, having a slightly fishy smell; sepals and petals dull brown, with a little greenish-yellow at the edge, the petals clawed, falcate, broader than the sepals; lip pure greenish-yellow, tomentose at base, five-furrowed, bilobed; spur cylindrical; racemes short, few-flowered. Spring. *f.* 1ft. Java, 1848. (G. C. 1848, p. 351; L. & P. F. G. ii. p. 20.)

V. gigantea (gigantic). A synonym of *Stauropsis gigantea*.

Vanda—continued.

- V. Gowers** (Gower's). A garden name for *V. undulata*.
- V. Griffithii** (Griffith's). *fl.* yellow, brown, and lilac, much smaller than those of *V. cristata* (which this species resembles); sepals linear-oblong, recurved; petals acuminate; lip ovate, elongated, furrowed, concave at base. *l.* channelled, recurved, sharply and unequally three-lobed. Bhotan.
- V. hastifera** (Halbert-bearing). *fl.* many in a loose raceme; sepals and petals light yellow, blotched with red inside; lip white, marked with brown and mauve, the lateral lobes semi-oblong,

Vanda—continued.

- V. Hookeriana** (Hooker's).* *fl.* 2½ in. across, membranous; sepals white, tinted with rose; petals larger, white, spotted with magenta, undulated, spathulate-oblong; lip cuneate at base, three-lobed, 1½ in. broad, white, lined and spotted with magenta-purple; a large, deep purple auricle on each side of the column; raceme two to five-flowered; peduncle leaf-opposed. September. *l.* erect, 2 in. to 5 in. long, terete, pale green, subulate-pointed. Stems rooting, elongated, terete. Borneo. (L. H. ser. iii. 484; W. O. A. ii. 75.)



FIG. 149. VANDA

triangular, the front lobe halbert-shaped, covered with hairs at its base. *l.* linear-ligulate, erose at apex. Sondaic Archipelago, 1884. A rare, tall-growing Orchid.

- V. helvola** (pale red). *fl.* wine-red, shading into pale purple; lateral sepals connivent under the lip; lateral lobes of the lip bright purple, short, the middle lobe triangular-hastate, tumid inside and a little furrowed, concave beneath, the little sac having a pair of small callosities on the side opposite the column; raceme erect, shorter than the leaves, about three-flowered. March and April. *l.* rigid, slightly undulated, carinate at base, oblique and obtuse at apex. Java, 1850.

- V. insignis** (remarkable).* *fl.* 2 in. across; sepals and petals light brown, spotted with chocolate-brown internally, yellowish-white outside, obovate-spathulate; lip large, almost fiddle-shaped, the side lobes white, short, the front one white, suddenly expanding into a concave, semi-lunar limb of light purplish-rose racemes about as long as the leaves, five to seven-flowered. May and June. *l.* channelled, rigid, linear-ligulate, curving, unequally cut or denticulate at apex. Stems sub-erect. Moluccas, 1846. (B. M. 5759; L. & P. F. G. ii., p. 19; W. O. A. iv. 172; W. S. O. 3.)

- V. l. Schröderiana** (Baron Schröder's). *fl.*, sepals and petals light yellow; lip pure white, with a large, concave, anterior limb

Vanda—continued.

Autumn. Malay Islands, 1883. A very chaste and distinct novelty.

V. lamellata (plated). *f.* pale yellow, streaked with dull, paler red, in long, loose, erect racemes; sepals and petals obovate, undulated, the lower ones larger and slightly incurved; lip with two diverging, elevated lines, acute, obtusate, retuse; auricles small, rounded; spur short, cylindrical-conical, hairy within. August. *l.* coriaceous, obliquely and acutely bidentate. Philippines, 1837.

V. l. Boxallii (Boxall's)* *f.*, dorsal sepal creamy-white, the inner part of the lateral ones reddish-brown tinged with purple; petals white; limb of the lip rich magenta-rose towards the front, the disk with six reddish-purple stripes running back to the mouth of the tube; racemes fourteen to twenty-flowered. November and December. *l.* much recurved. Stems erect. 1880. (G. C. n. s., xv., p. 87; (Gn. xix. 287.)

V. limbata (bordered). *f.* 2in. across; sepals and petals cinnamon-brown, blotched and tessellated with darker reddish-brown, evenly bordered with yellow, tinged with lilac outside; lip rosy-lilac, margined with white, quadrate, slightly paurulate, the disk tumid, with five to seven parallel furrows; racemes loose, erect, about twelve-flowered. June. *l.* 8in. to 10in. long, channelled, coriaceous, obliquely setuse at apex. Stems stout, with long, thick roots. Java, 1875. (B. M. 6173; W. S. O. ser. iii. 9.)

V. Lindeni (Linden's). *f.* disposed in a handsome raceme sepals and petals light yellow, with red dots on the disk, cuneate-oblong, wavy; lip whitish-yellow, with nearly square side lobes and a triangular, two-edged middle lobe produced into a sharp angle under two tumours at the apex, sulcate beneath, with a linear, velvety, ascending auricle on each side at the base, and three furrows over the disk, the tumours and side lobes purple-spotted, the disk marked with four purple lines, the tip under the tumours brownish; spur conical, hairy inside. Sunda Isles, 1886.

V. Parishii (Parish's)* *f.* large; sepals and petals greenish-yellow, dotted with reddish-brown, cuneate-oblong, acute; lip strongly and peculiarly scented, the front lobe pale magenta, narrowly margined with white, rhomboid, gibbous below the apex, with a median keel and a violet, conical callus at base; spur short, gibbous; auricles white, orange-striped; scape erect, several-flowered. Summer. *l.* broadly ligulate, obtuse, unequally bilobed, fleshy, bright green. Moulmein, 1870. A handsome, dwarf species. (W. O. A. i. 15.)

V. P. Marriottiana (Sir W. H. S. Marriott's). *f.* not scented; sepals and petals bronzy-brown, suffused with magenta; lip having a rich magenta, rhomboid front lobe and white basal auricles; raceme about six-flowered. *l.* slightly emarginate. Stems closely leafy. 1880. (W. O. A. ii. 61.)



FIG. 150. PORTION OF INFLORESCENCE OF VANDA PARVIFLORA.

V. parviflora (small-flowered). *f.*, sepals and petals pale yellow, oval; lip funnel-shaped, the broadly oblong, rounded front lobe white, with purple crests on the fleshy disk, and dotted with lilac; spur short, conical; racemes short, erect, many-flowered. Summer. *l.* lorate, obliquely and obtusely bilobed at apex, with an intermediate cusp. India. A beautiful little plant. See Fig. 150. SYNS. *V. testacea*, *Aerides testaceum*, *A. Wightianum* (B. M. 6138; F. d. S. 1452.)

V. Roxburghii (Roxburgh's)* *f.*, sepals and petals pale green, with chequered lines of olive-brown, oblong-obovate, the outer surface white; lip violet-purple and convex in the front part, deeper purple towards the apex, the lateral lobes white, lanceolate; spur pinkish, short; racemes six to twelve-flowered, on erect peduncles. Summer. *l.* ligulate, recurved, channelled,

Vanda—continued.

coriaceous, obliquely three-toothed at apex. Stems erect, dwarfish, stout. Bengal, 1850. (B. M. 2245; B. R. 506; F. d. S. Feb. 1846, 641, f. 2; L. & P. F. G. ii. 42, f. 2; W. O. A. 59.) Of this species there are several varieties, one having a dark blue lip, and another, *V. tessellata* (P. M. B. vii. 265; J. H. n. s. 579, *f. R. rubra*) a pink lip.

V. Sanderiana (Sander's)* *f.* flat, about 4in. across; dorsal sepal and the smaller petals pink, slightly stained with buff-yellow, the lateral sepals 2in. across, pale unken outside, within greenish-yellow, reticulated with dull crimson; lip small, concave, pale purplish-red at base, the tip chocolate-purple, strongly recurved, three prominent keels extending from base to apex; racemes axillary, many-flowered. September and October. *l.* broadly ligulate, coriaceous, recurved, 9in. to 12in. long, deeply channelled. Philippine Islands, 1881. (G. C. n. s., xx., pp. 440-1; J. H. ser. iii. 532; W. O. A. iii. 124.)

V. S. Labello-viride (green-lipped). A distinct variety, having a green lip. Mindanao, 1886.

V. Stangeana (Stange's). *f.* four or five in a raceme; sepals and petals internally at first greenish, afterwards ochre, tessellated with dark purple-brown; auricles of the lip blunt, white with yellow and some mauve-blue spots, the middle lobe white with mauve-blue or wholly mauve-blue, cordate-triangular. Assam, 1885. (R. X. O. ii. 102.)

V. suavis (sweet)* *f.* large and handsome, freely produced, fragrant; sepals and petals pure white outside, spotted and barred with blood-purple within, the dorsal sepal and two petals sub-lobate; lip convex, three-lobed, the front lobe pale rosy-purple, narrow, deeply bifid, the lateral ones deeper rosy-purple, ovate, flat; racemes bold, elongated, on axillary peduncles. *l.* lorate, flaccid, recurved, dark green, obliquely toothed at apex. Java, 1847. A noble plant for exhibition purposes. (B. M. 5174; F. d. S. 641, f. 3, (*Hrublyana*) 1604-5; G. C. n. s. xxii., p. 237, Wingate's var.; L. & P. F. G. ii. 42, f. 3; R. X. O. i. 12; W. O. A. iv. 180.)

V. s. flava (yellow). *f.* yellow, with broad, oblong, rich brown spots. (B. M. 4432, under name of *V. tricolor*.)

V. s. Gottschalkei (Gottschalke's). *f.* deliciously scented, larger and stouter than in the type; sepals and petals more densely spotted; lip bright rosy-purple, tipped with white; pedicels deeply tinged with rose. *l.* (and stem) stouter than in the type. 1869.

V. s. Lindeni (Linden's). *f.*, sepals, petals, and base of lip white, spotted with purple, the rest of the lip purple. 1886.

V. teres (terete)* *f.* large; sepals oblong, the dorsal one white, slightly tinged with rose, the lateral ones creamy white, twisted, parallel with the lip; petals rose-magenta, lighter towards the margins, larger, sub-orbicular, undulated; lip bright rose-magenta, cucullate, large, strongly veined, the throat orange, striped and spotted with crimson, the apex dilated and emarginate; spur conical; racemes leaf-opposed, mostly two-flowered. June to August. *l.* (and stems) terete, dark green. Burmah, &c., 1828. A handsome, straggling or climbing species, several feet long. (B. M. 4114; B. R. 1809; P. M. B. v. 193; R. H. 1856, 22.)

V. t. Andersoni (Anderson's). *f.* richer and deeper in colour, freely produced; racemes 10in. long, five or six-flowered. (W. S. O. ser. iii. 2.)

V. t. aurea (rosy). *f.*, sepals white; petals white, slightly rose-tinted; throat light ochre, with rosy lobes, which are furnished with two rows of small, purple dots; column light rose-purple. 1884.

V. t. candida (white). *f.* white. A distinct and beautiful form.

V. teretifolia (terete-leaved). A synonym of *Sarranhus teretifolius*.

V. tessellata (tessellated). A form of *V. Roxburghii*.

V. testacea (tile-coloured). A synonym of *V. parviflora*.

V. tricolor (three-coloured)* *f.* white outside, handsome, fragrant; sepals and petals pale yellow spotted with brownish-red within, oblong-obovate, obtuse; lip convex, cuneate, deeply emarginate, the disk marked with five white lines, the basal lobes white, erect, rounded; spur white, short, compressed; column white, short, thick; racemes short, dense, on axillary peduncles. *l.* lorate, channelled, recurved, obliquely bilobed and somewhat crose at apex. Stems erect, tall. Java, 1846. (F. d. S. 641; L. J. F. 136; L. & P. F. G. ii. 42; W. O. A. ii. 77.) The following varieties of this superb species are enumerated by B. S. Williams, in the sixth edition of the "Orchid Grower's Manual": DALKETHI, a very highly-coloured form; DOWNSIDE, flowers large, and very rich in colour and markings.

V. t. Corningii (Corning's). *f.*, sepals and petals rich yellow, spotted and streaked with deep crimson, margined on both surfaces with rosy-purple; lip dark plum-colour, softened off to pale rose towards the base. *l.* very broad, dark green, stout.

V. t. Dodgsoni (Dodgson's). *f.* very highly scented, borne in great numbers on the racemes; sepals and petals light amber, streaked and blotched with reddish-brown, and margined with violet; lip rich violet-purple, with a few white blotches near the base.

Vanda—continued.

V. t. insignis (remarkable). *f.*, sepals and petals light yellow, spotted with crimson; lip pale lilac. Generally spring and autumn. This handsome variety was formerly known in gardens as *V. insignis*.

V. t. Patersoni (Paterson's). *f.* about 2 in. in diameter, appearing on very small plants; sepals and petals creamy-white, densely spotted with cinnamon-brown, broad; lip bright magenta. (*G. C. n. s.*, xxii., p. 236.)

V. t. planilabris (flat-lipped). *f.* larger and brighter-coloured than in the type; sepals and petals citron-yellow, thickly spotted with rich brown, very broad, clawed or narrowed to the base; lip rose-coloured, margined with purplish-mauve, and striped with chocolate-purple on the disk, large and flat. (*W. O. A.* ii. 87.)

V. t. Russelliana (Russell's). *f.* very bright-coloured, in long racemes. A beautiful variety, having a peculiar, pendulous style of growth; it is very robust.

V. t. Warneri (Warner's). *f.*, sepals and petals distinctly margined with deep rose; lip deep rosy-purple. *l.* linear, lorate, peculiarly ribbed. (*W. S. O.* ser. ii. 39.)

V. undulata (waved). *f.* white, very freely produced in racemes; sepals and petals lanceolate, much undulated; lip having the lateral lobes greenish, and marked with orange lines on the disk. *l.* coriaceous, ligulate, unequally bilobed. India, 1875. This has been sold under the name of *V. Goweri*.

V. violacea (violet). A synonym of *Saccolabium violaceum*.

V. Vipan (Vipan's). *f.*, sepals and petals blunt, rhomboid, white externally, within pale at the base, marked with short, brownish-purple lines, the rest of the sepals brownish-olive, and of the petals inclining to ochre, all striped with dark brown-purple; middle lobe of the lip olive-green, the side auricles yellow. *l.* very long and narrow. Burmah, 1882.

VANDELLIA (named in honour of Dominico Vandelli, Professor of Botany at Lisbon, who wrote a work on Portuguese plants in 1623). Including *Tiltmannia* (of Reichenbach). ORD. *Scrophularineæ*. A genus embracing about thirty species of stove, greenhouse, or hardy, often annual, branched herbs, inhabiting warm regions. Flowers rather small, solitary in the axils, sessile or pedicellate, or in terminal racemes; calyx five-parted or five-toothed; corolla bilabiate, the upper lip emarginate or shortly bifid, the lower one large, three-lobed; stamens five, perfect. Leaves opposite, often toothed. The few species introduced are now probably lost to cultivation.

VANDESIA. A synonym of *Bomarea* (which see).

VANESSA. A genus of Butterflies, conspicuous by their size (varying from 2½ in. to 2½ in. in spread of wings), their bright colours, and the bold markings on the upper surface of the wings; the lower surface is dull-coloured for concealment. The front wings have a distinct tooth above the middle of the hind margin, and the inner margin is nearly straight. The hind wings usually have a short

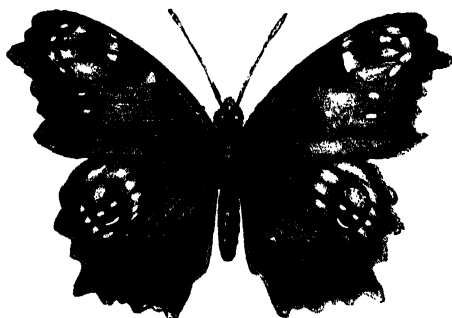


FIG. 151. VANESSA IO.

tooth in the hind margin (see Fig. 151). In the middle of the hind wing is a space bounded on all sides by the wing veins; the sixth and seventh veins are not united, but arise directly from the vein bounding the space. The

Vanessa—continued.

antennæ have the terminal club rather long. The front legs are small and useless for walking. The larvæ are long and worm-like, but covered with stiff spines on all but the first ring. The pupæ are angular; they hang by the tip of the body, and frequently bear golden or silvery-metallic spots here and there, or over most of their surface. The Butterflies are single-brooded each year, except the Small Tortoiseshell, which has a succession of broods. Most of the species hibernate as Butterflies, appearing on warm days during winter. There are five British species of the genus, viz., *V. Antiopa* (Camberwell Boanty), *V. Atalanta* (Red Admiral), *V. Io* (Peacock, see Fig. 151), *V. polychloros* (Great Tortoiseshell), and *V. Urticæ* (Small Tortoiseshell). Of these *V. Antiopa* feeds on various Willows, and *V. polychloros* on Elm; but both are local or scarce in Britain. The other *Vanessæ* feed on Nettles. The Butterflies may be distinguished from one another by the colour of the upper surface of the wings.

V. Antiopa (rarely seen in England) has a span of about 3 in. across the wings; the latter are purplish-brown, with broad, yellow or yellowish-white borders, margined on the inner side with a broad, black band, in which are six or seven blue spots.

V. Atalanta has the wings nearly black, with a broad, the middle of the front wings, and round the hind margin of the hind wings; the band on the hind wings has four black spots in it. Each front wing bears six white spots near the tip, and there is a blue and black spot at the hind angle of each hind wing.

V. Io is of ground-colour is dull red, the margins are brown, the eye-like spots on the wing are variously shaded with black, lilac, red, yellow, and white; those on the hind wings are bordered with grey-brown.

V. polychloros and *V. Urticæ* are very like one another, both having tawny-orange wings, with a dark border inclosing blue spots; and in both there are three large, black spots, separated by yellow spots, on the front border, and two small, black spots near the middle, of the front wings; and the basal part of the hind wings is dark. The two species differ as follows: *V. polychloros* is usually over, and *V. Urticæ* is under, 2½ in. in spread of wings. The latter species has a white spot on the front margin of the front wings, near the tip, where the former species has a yellow spot, and in *V. polychloros* there is a black spot near the inner border of the front wings, and the blue spots in the dark borders of the front wings are faint or absent. *V. Urticæ* is one of the earliest of British Butterflies, and is conspicuous in almost all parts of the country.

Those species of *Vanessa* that feed on Nettles are beneficial; while the others are never numerous enough in Britain to call for a special remedy.

VANGUERIA (*Voa* - *Vanguer* is the Madagascar name of *V. edulis*). SYNS. *Meynia*, *Rytigynia*, *Vanguiera*, *Vavanga*. ORD. *Rubiaceæ*. A genus comprising about thirty species of stove shrubs and small trees, sometimes spiny, inhabiting tropical and sub-tropical regions (except in Australia). Flowers white or greenish, small, cymose or fasciated; calyx tube short, the limb five, rarely four, toothed or lobed, or irregularly five to ten-toothed; corolla tube short or mediocre, the limb of five, rarely four or six, ovate, acute, acuminate, or appendiculate, at length reflexed lobes; stamens five. Fruit a dry or fleshy drupe, sometimes edible and rather large. Leaves opposite, coriaceous or membranous; stipules interpetiolar, frequently connate in a persistent ring. *V. edulis* and *V. velutina* are the only species calling for description in this work. They thrive in a compost of loam and peat. Propagation may be effected by cuttings, inserted in similar soil, under a glass, in heat.

Vangueria—continued.

V. edulis (edible-fruited). *f.* green; cymes springing from below the leaves. June. *fr.* resembling an apple, but not crowned, succulent, edible, containing five stones. *l.* ovate, membranous, glabrous. A. 12ft. Madagascar, 1809. A small, unarmed tree.

V. velutina (velvety). *f.* pale yellowish-green, axillary in the lower leaves, in short, dense cymes. May. *l.* large, opposite, nerved, shortly petiolate, cordate-ovate, rather acute, entire, much waved, mostly downy beneath. A. 3ft. Madagascar, 1829. A softly-tomentose shrub. (B. M. 3014.)

VANGUIERA. A synonym of *Vangueria* (which see).

VANHOUTTEA. A synonym of *Houttea* (which see).

VANILLA (from the Spanish *vainilla*, a little sheath; in allusion to the shape of the fruit). *SRN.* *Myrobroma.* *ORD.* *Orchidæ.* A genus embracing about a score species of stove, tall-climbing, branched Oroboids, scattered over tropical regions. Flowers large, but usually dull-coloured and uninteresting, in axillary, often short racemes or spikes; sepals and petals sub-equal, free, spreading; claw of the lip adnate with the elongated, wingless column, the limb broad, concave, its base rolled around the column; bracts ovate. Capsule often elongated, fleshy, not (or at length scarcely) dehiscent. Leaves coriaceous or fleshy, nerved, sessile or shortly petiolate. *Vanilla* is remarkable in being the only genus of the order which possesses any economic value. The fruit of several species is largely employed, under its botanical name, for flavouring chocolate, liqueurs, ices, &c. *V. planifolia* produces the best Vanilla. Only four species call for description in this work. They should be potted or planted out in a narrow bed, in peat and sphagnum, and trained up a wall or on a thick piece of wood. A strong heat is favourable to their well-being. Propagation may be effected by cuttings; the climbing stems produce roots, and may be cut into lengths for the purpose.

V. bicolor (two-coloured). *f.* very fragrant, 3in. long; sepals and petals dull red, acute, spreading; lip cream-coloured, half-free, convolute, apiculate, undulated; column bearded. *l.* ovate-oblong, sub-sessile, acute, striated, reddish on the margins. Demerara.

V. intescens (yellowish). *f.* 6in. across, showy, two or more together from the axilla of the leaves, somewhat resembling in general appearance those of *Cattleya citrina*; sepals and petals greenish-yellow; lip very bright yellow. La Guayra, 1859. (F. d. S. 2218.)

V. Phalaenopsis (Phalaenopsis-like). *f.* 3in. across, six or seven in an umbel; sepals faint bluish-white, keeled behind, acute, the two lateral ones divided to the base on the lower side; petals the same colour, but less acute, channelled; lip pale rose-blush outside, tawny-orange within, over 1in. long, broadly funnel-shaped. Stems long, rooting, leafless. Madagascar, 1869. An interesting species. (F. d. S. 1769.)

V. planifolia (flat-leaved). *f.* wholly green, or white within, or with a white lip, 2in. across; sepals and petals lanceolate-oblong; lip callous below the serrulated, repand surmit, and crested at the middle with minute, recurved scales. *fr.* 6in. long, sub-cylindrical. *l.* fleshy, 5in. to 7in. long, oblong or ovate-oblong, acute, contracted at base. Stem cylindrical. West Indies, 1800. (A. B. E. 538; B. M. Pl. 272; L. B. C. 733.)

VANILLA PLANT. See *Trilisa odoratissima*.

VAPOUR. Moisture which, in heated plant-structures especially, arises from the soil, walls, paths, &c., when watered, and from evaporating-troughs filled with water and placed on the hot-water pipes. Vapour in an invisible state is continually ascending from damp, heated substances; hence the feeling of moisture in the air of the interior of plant-houses, &c., and sometimes outside after rain.

VAPOUREE MOTH. See *Orgyia antiqua*.

VARGASIA. A synonym of *Thouinia* (which see).

VARIEGATED. Irregularly coloured.

VARIETY. A sort or modification subordinate to a species. A Variety can only be propagated with cer-

Variety—continued.

tainty by grafts, cuttings, bulbs, tubers, or any other method which produces a new plant by the development of one or more buds taken from the old one. If the Variety generally comes true from seed, it is often called a Race.

VARIOLATE. Marked as if by the pustules or pittings of small-pox.

VARNISH-TREE. A common name for *Atlantus glandulosus*, *Melanorrhæa usitatissima*, *Rhus vernicifera*, &c.

VARBONIA. A synonym of *Cordia* (which see).

VASCOA. Included under *Rafnia*.

VASCONCELLEA. Included under *Carica*.

VASCULAR. Furnished with, or relating to, vessels or ducts.

VASCULAR SYSTEM. Under this name are included all those parts of plants in which true Vessels (which see) occur. As the latter are found only in flowering plants, and in Vascular Cryptogams (Ferns, Horsetails, Club-mosses, and their allies), there is no Vascular System in the remaining groups of Cryptogams, i.e., in the True Mosses, Liverworts, Algae, Lichens, and Fungi. It is often represented, or rather foreshadowed, among the Mosses and some of the species in the other groups, by bundles or strings of long, tapering cells, which, to some extent, do the same work. The Vascular System is present in the roots, stems, branches, and leaves of the Vascular Plants. It remains when continued steeping in water, or exposure to the weather, has caused the decay of all the softer cells in these plants, so that it forms the skeleton or framework on which the plants are built up. It is best seen in those parts in which the bundles or strings of which it consists are always separated by cellular tissue from one another, e.g., in leaves, and in the stems of Monocotyledons and Ferns, and in young stems of herbaceous Dicotyledons. In the stems and roots of woody Dicotyledons it becomes more difficult to recognise the true nature of the Vascular System, owing to the formation of annual rings of wood and of bast by the cambium layer just below the bark.

The chief uses of the Vascular System are twofold, viz.: (1) It gives strength and mechanical support to all parts of the plant, serving as the framework for the cellular tissues, in which the work of preparing the food goes on; (2) the wood, in the Vascular System, is the channel of communication for conveying the crude sap upwards from the soil to the leaves, and the soft bast in each bundle is believed to be the chief channel by which the protoplasmic food-substances are conveyed from the leaves, in which they are prepared, to the growing points, where they are used up in forming new structures, or to the parts (tubers, seeds, &c.) where they are stored up for future use. See *Sap*.

VASCULUM. A botanist's collecting-box. The term is also applied to a pitcher-shaped leaf.

VASES. There are various kinds of Vases in use, both for growing plants in, and also for arranging cut flowers. Vases for terrace walls and other positions in formal flower-gardening, and also for conservatory embellishment, are made in various sizes, and in great variety of design. Terra-cotta is largely employed in their manufacture, as it withstands all weathers, and is well adapted for the purpose. Vases are also made of stone and cast iron, amongst other substances. For the arrangement of cut flowers for table and room decorations, glass Vases are best—flowers do not look so well in anything else—but sometimes silver, old china, or other valuables, are used for the purpose of exhibiting them, in addition to making them receptacles for flowers. China and glass

Vases—continued.

Vases may be produced in the greatest range of variety, and in shapes and sizes which suit all individual requirements. It is unnecessary to describe the various kinds, but those known as Trumpet Vases or Glasses are amongst the best for cut flowers. In dinner-table decoration the Vases should be low in stature, or, if one or more Trumpet Glasses are used down the centre, so lightly arranged with flowers that nothing shall be caused in the way of an obstruction to the view from one side of the table to the other.

VAUANTHES. A synonym of *Grammanthes* (which see).

VAVANGA. A synonym of *Vangueria* (which see).

VEGETABLE BUTTER. See *Bassia butyracea*.

VEGETABLE EARTH, or **VEGETABLE MOULD.** Soil largely mixed with humus or decayed remains of plants (see *Humus*). It is usually very dark, but the colour varies with the proportion of humus, and of the other constituents of the soil. Good Vegetable Mould may contain from 3 to 25 per cent. of humus, and is usually very fertile. A higher percentage of plant-remains is unfavourable, as organic acids are apt to be formed and to accumulate in the soil, to the detriment of most plants, though some species of wild plants prefer such a soil, e.g., several prefer peat, which consists of little but humus. To render such soils as contain excess of humus fertile, it is necessary to add certain manures or other substances to them in order to hasten the decay of the vegetable remains, and to bring them into a condition fit for the nutrition of the plants for which the ground is to be prepared. See also *Humus*.

VEGETABLE FIRE-CRACKER. A common name for *Brodiaea coccinea* (which see).

VEGETABLE HAIR. A common name for *Tillandsia usneoides* (which see).

VEGETABLE HORSEHAIR. The fibre of *Chamaerops humilis*.

VEGETABLE IVORY. The nuts of *Phytelephas macrocarpa*.

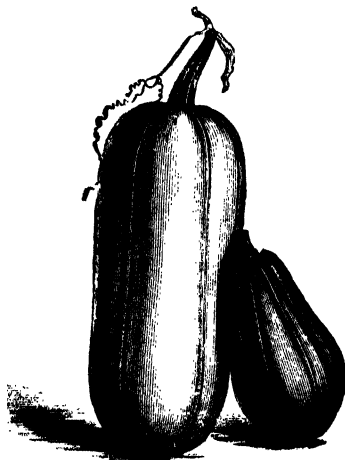


FIG. 152. FRUITS OF VEGETABLE MARROW.

VEGETABLE MARROW (*Cucurbita Pepo ovifera*). A half-hardy, trailing annual, of very easy culture, grown

Vegetable Marrow—continued.

in nearly every garden during summer for the fruits, which are chiefly used when about half-grown, or even in a younger state (see Fig. 152), for cooking in various ways. At these stages the flesh is exceedingly tender, but as the fruits get old it becomes drier. Cultivators sometimes allow a portion of their crop to ripen, for the purpose of converting the fleshy portion into jam, or the fruits may be kept in a dry place when ripe until midwinter for cooking. Seeds of Vegetable Marrows should be sown singly, or two in a 3in. pot, towards the end of April, and placed in a gentle heat. So soon as the plants have two rough leaves, they should be hardened by being placed in a situation where air can be admitted. Early in June, they may be planted out where they are intended to remain, and covered for a few days with hand-glasses until re-established, when the glasses may be removed. Old manure heaps are the best positions for the plants, as on these they grow and fruit abundantly. Plenty of water should be supplied throughout the summer whenever the weather is dry, and the fruit should be cut when large enough for cooking, unless required for ripening to produce seed or for using in one of the ways above mentioned. The growths need an occasional thinning during summer when they get too much crowded.

SORTS. The following are amongst the best sorts of cultivated Vegetable Marrows:

BUSH MARROW, of compact, bushy habit, not a trailer; free **CUSTARD,** free-bearing and of good flavour. **HIBBERD'S PROLIFIC,** fruit small, egg-shaped. **LONG WHITE,** fine cropper; the best for general use, and when only one variety is grown. **MOORE'S VEGETABLE CREAM,** free-bearing, and of fine flavour. **MUIR'S PROLIFIC HYBRID,** an oval-shaped, cream-coloured variety; prolific. **PINK-Y-BIRD,** fruit delicate creamy-white, nearly globular, with firm flesh; plant short-jointed and prolific; very distinct.

VEGETABLE OYSTER. See *Tragopogon porri-folius*.

VEGETABLE REFUSE. After being made up into a compost, and allowed to ferment for some time, Vegetable Refuse of all kinds can be most advantageously employed as manure. This treatment is especially advisable when the Refuse contains a fair proportion of woody substance, as the latter can scarcely serve as manure for plants until it has undergone chemical decomposition to some extent. When the proportion of woody substance is large, it is well to burn the Refuse slowly, in a covered heap, in which the fire is kept smouldering, but is never allowed to burst into flame. Other kinds of Refuse should be made up with layers of earth and quicklime. The latter destroys the weeds, and hastens their decay. Another good method of forming a compost is to mix the Refuse with earth, and occasionally drench the heap with liquid manure. This promotes the formation of Ammonia; and gypsum should be mixed with the earth to form Sulphate of Ammonium, which prevents the loss of the alkali, and adds much to the value of the compost. Quicklime must not be mixed with the earth, as it sets free Ammonia, which escapes as a gas into the atmosphere, and is lost. Both of these composts are excellent garden manures.

VEGETABLE SCULPTURE. See *Topiary Work*.

VEGETABLE TALLOW PLANT. A common name for *Stillingia sebifera* (which see).

VEINLET. One of the ultimate or smaller ramifications of a vein or rib.

VEINS. In general, any ramifications or threads of fibro-vascular tissue in a leaf or any flat organ (especially those which divide or branch) through which sap is carried into the parenchyma.

VEITCHIA (named in honour of the late James Veitch, of Chelsea, the leading nurseryman of his day). **ORD. Palmæ.** An imperfectly-known genus (four species have been indicated) of stove Palms, inhabiting the Fiji Islands and the New Hebrides. Male flowers much smaller than the females; spathes three (?), deciduous; spadix shortly and thickly pedunculate, the branches elongated, fastigate, thickened at base. Fruit about 2ft. long, ellipsoid or fusiform-ovoid and slightly beaked, or sub-globose. Leaves terminal, equally pinnatisect; pinnae linear or acuminate, unequally truncate, the margins thickened. Only two species are at present grown in gardens. For culture, see *Kentia*.

V. Canterburyana (Canterbury's) A synonym of *Hedyosme Canterburyana*.

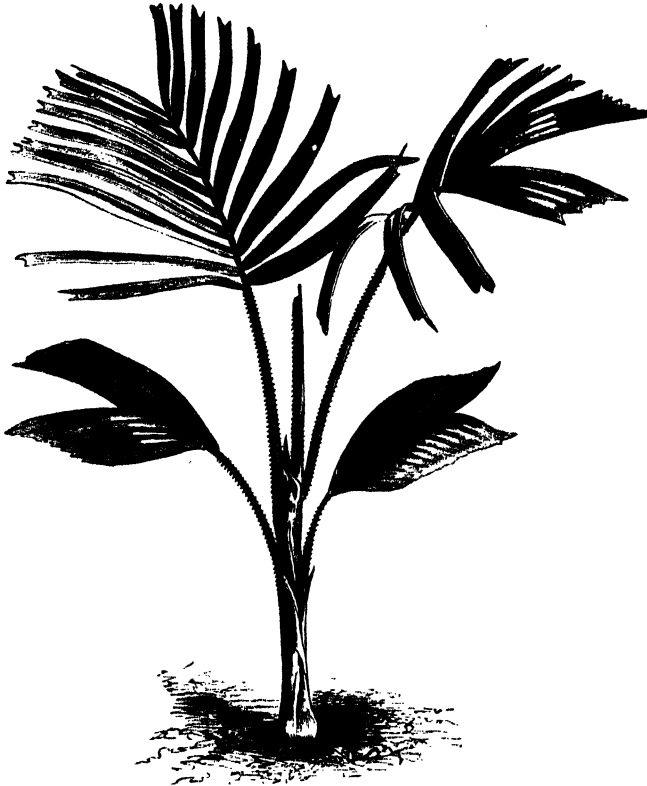


FIG. 153. VEITCHIA JOHANNIS.

V. Johannis (John Veitch's). * *f.* minute; spadix much branched, the branches forming large bunches. *fr.* at first green, at length bright orange, red at base, ovoid-ellipsoid. *l.*, pinnae minutely toothed, the midrib terminating in a small curve, the apex obliquely truncate. Fiji, 1858. "Seedlings have, from the first, a straight stem, their sheath, petiole, and rachis being of a dark blood-colour, and covered when young with a grey tomentum, which is interspersed with lanceol-shaped, thin, dark red lepidia" (Wendland, in Seemann's "Flora Vitiensis"). See Fig. 153. **SYN.** *Kentia Joannis*.

V. Storckii (Storck's). *f.*, spadix resembling that of *Cocos nucifera*, much and repeatedly branched; principal branches triangular, the lower ones having as many as twelve branchlets. *fr.* ellipsoid, with a slender, blunt taper. *l.*, pinnae coriaceous, glabrous on both sides, much folded towards the base, and furnished with three prominent, longitudinal ribs, the two lateral ones of which are close to the margins. Trunk hard and smooth, dark brown below, light brown above. A. 40ft. Fiji. **SYNS.** *Kentia elegans* (of gardens), K. Storckii.

VEITCHIA (of Lindley). Included under *Picea* (which see).

VELAGA. A synonym of *Pterospermum* (which see).

VELANI OAK. See *Quercus Ægilops*.

VELASQUEZIA. A synonym of *Triplaris* (which see).

VELLEZIA (named in honour of Franc. Velez de Arciniega, a Spanish writer on medicinal botany). **ORD. Caryophyllæ.** A genus embracing four species of hardy, annual herbs, inhabiting the Mediterranean region and Western Asia. Flowers sub-sessile, solitary in the axils or clustered at the tips of the branchlets; calyx acutely five-toothed; petals five, inconspicuous. Leaves subulate. Two of the species have been introduced, but they possess no horticultural value.

VELLA (of uncertain derivation, said to be Latinised from *Veler*, a Celtic name for such a plant). **ORD. Crucifera.** A small genus (three species) of small, much-branched, greenhouse or half-hardy shrubs, natives of Spain. Flowers yellow, rather large, sub-spicate, the lower ones bracteate; sepals erect, equal at base. Leaves entire. *V. Pseudo-cytisus*, the only species calling for mention here, is sometimes grown as a greenhouse plant, but is sufficiently hardy to endure the winter if planted in a dry, warm, south border. It may be multiplied by young cuttings, inserted in sand, under a glass.

V. Pseudo-cytisus (False Cytisus). **Cress Rocket.** *f.*, petals yellow, with long, dark purple claws; pedicels very short. April and May. *l.* alternate, obovate, entire, rough with hairs. *h.* 2ft. to 3ft. 1759. (B. R. 293)

VELLEIA (named after Major Velley, who was greatly interested in *Algæ*; he died in 1806). Including *Euthales*. **ORD. Goodeniovæ.** An Australian genus embracing eleven species of greenhouse, perennial herbs, having (except *V. macrophylla*) a short, thick stock and radical leaves. Flowers yellow, like those of *Goodenia*, but the calyx is free from the ovary; scapes (or peduncles in *V. macrophylla*) erect or ascending, di- or trichotomously branched, many-flowered; bracts opposite, free or connate. Four of the species are known to cultivation, and require similar treatment to that recommended for *Goodenia*.

V. lyrata (lyrate-leaved). *f.*, sepals three; corolla about 4in. long, the lobes broadly winged; scapes 6in. to 12in. high, dichotomous, with spreading branches. April. *l.* oblong-spathulate, deeply toothed below the middle or lyrate-pinnatifid, often several inches long. 1819. (B. R. 551; H. E. P. 24.)

V. macrophylla (large-leaved). *f.* in large, loose, dichotomous panicles; peduncles axillary. July. *l.*, cauline ones usually 2in. to 6in. long, toothed and narrowed into a rather long petiole. Stem erect, leafy, branching 3ft. to 4ft. high. 1839. Closely allied to the larger forms of *V. trinervis*. **SYN.** *Euthales macrophylla* (B. 209; B. R. 1841, 3.)

V. paradoxa (paradoxical). *f.*, sepals five, free; corolla pubescent outside, sometimes spurred; scapes 6in. to 15in. high, di- or trichotomously branched. July. *l.* petiolate, from broadly ovate and under 2in., to narrow-oblong and above 4in. long, coarsely toothed or almost entire, sometimes quite entire. 1824. (B. R. 971.)

V. trinervis (three-nerved). *f.*, calyx campanulate, with five unequal lobes; corolla five to six lines long, the lobes all broadly winged; scapes dichotomous, low and ascending or above 1ft. high. July. *l.* on long petioles, broadly or narrowly oblong, entire or remotely toothed. 1803. **SYNS.** *Goodenia tenella* (A. B. R. 446; B. M. 1137), *Euthales trinervis*.

VELLOZIA (called after a Portuguese naturalist named Velloz, who edited the works of Vandelli on Brazil).

Vellozia—continued

SYN. *Xerophyta*. **ORD.** *Amaryllidæ*. A genus comprising about fifty species of stove and greenhouse plants, with fibrous, woody, erect, sometimes arborescent stems, natives of tropical and South Africa, Madagascar, and

Vellozia—continued.

base; stamens six, sometimes indefinite and collected in clusters; peduncles terminal, one-flowered. Leaves clustered at the tips of the branches, sometimes short, narrow, and straight, sometimes elongated, narrowly or

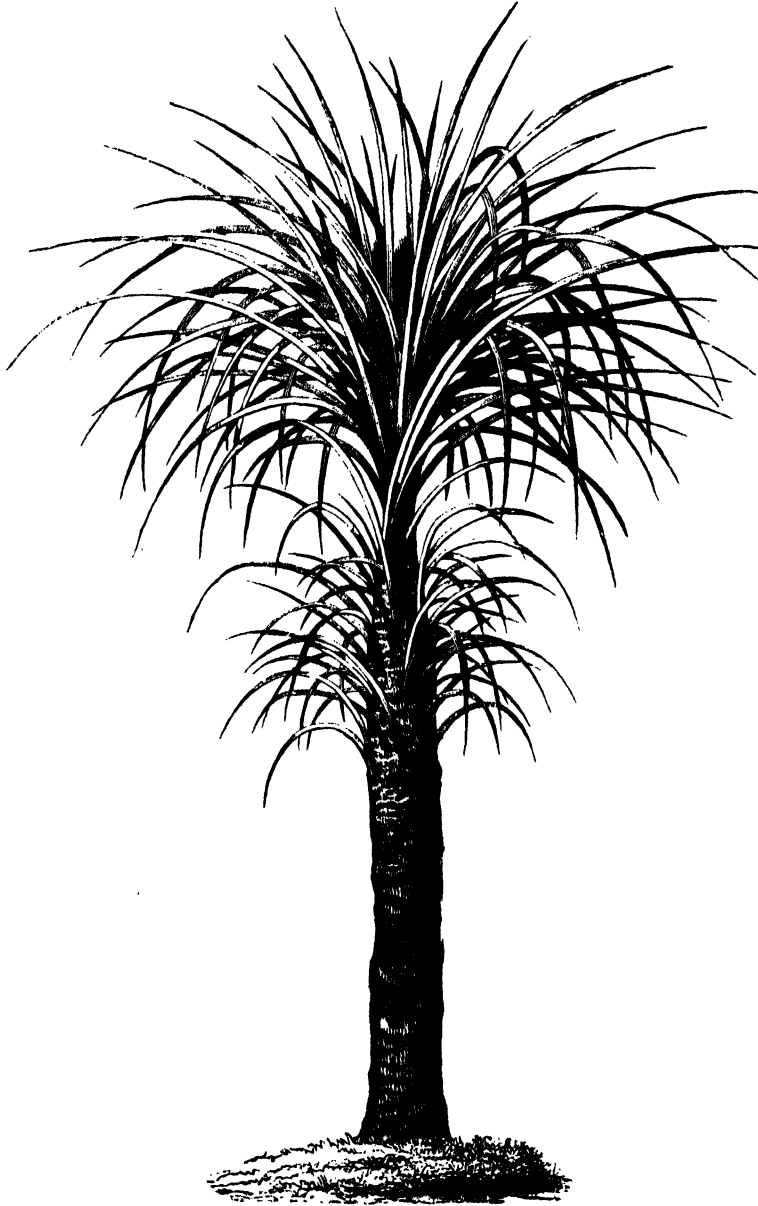


FIG. 154. *VELLOZIA RETINERVIS*.

Brasil. Flowers white, sulphur-coloured, violet, orange-red, or blue, often showy; perianth campanulate or funnel-shaped, with scarcely any tube, the segments equal and erecto-patent, ovate, oblong, or long-acuminate at

broadly linear, rigid, often sharp. The best-known species are here described. They thrive in a compost of well-drained, sandy peat, and must not be over-watered. Propagation may be effected by seeds, or by suckers.

Vellosia—continued.

V. candida (white). *f.*, perianth pure white, very beautiful; stamens eighteen, in six bundles; peduncle elongated, above, as well as the ovary and perianth, scabrid-glandular. Summer. *l.* linear, grass-like, filiform-acuminate, rigidly keeled, remotely spinulose-serrated on the margins. Branches short, leafy at apex. Brazil, 1865. A very handsome, tufted, stove plant. (B. M. 5514.)

V. elegans (elegant). *f.*, perianth pale lilac in bud, then pure white, $\frac{1}{2}$ in. across, the segments spreading; peduncle terminal, sheathed at base, divided into three to five slender pedicels $\frac{2}{3}$ in. to $\frac{5}{8}$ in. long. May. *l.* tristichous, recurved, $\frac{4}{16}$ in. to $\frac{8}{16}$ in. long, linear-lanceolate, acuminate, sharply keeled, serrated towards the apex. Stem rigid, flexuous, $\frac{6}{16}$ in. high. Natal, 1866. Greenhouse. (B. M. 5803.) SYN. *Talbotia elegans*.

V. retinervis (net-veined). *f.*, perianth blue, $\frac{1}{4}$ in. in diameter, the segments $\frac{1}{4}$ in. to $\frac{1}{2}$ in. long, three to four lines broad, naked outside; anthers $\frac{1}{4}$ in. long, nearly sessile; peduncles dark-coloured above, with a few bristles below the oblong ovary, which is densely clothed with ascending, brown bristles. *l.* long-linear, recurved, rigid, glabrous. Trunk 12 $\frac{1}{2}$ in. high, crowned with a tuft of leaves. Natal and Transvaal, 1877. Greenhouse. See Fig. 154. SYN. *Xerophyta retinervis* (G. C. n. s., vl., p. 637; E. G. 503)

V. squamata (scaly). *f.*, perianth of a fine orange-red, the tube slightly enlarged upwards, the segments moderately spreading; scape longer than the leaves. Summer. *l.* terminal, $\frac{4}{16}$ in. to $\frac{6}{16}$ in. long, spreading, glaucous, linear, acuminate, keeled. Stem short, dichotomous, clothed with the scale-like remains of fallen leaves. Organ Mountains, 1841. Stova. SYN. *Barbaenia squamata* (B. M. 4136; P. M. B. xi. 75).

VELLOZIEÆ. A tribe of *Amaryllidææ*.

VELTHEIMIA (named in honour of Aug. Ferd., Count Veltheim, 1741-1801, a German supporter of botanical studies). ORD. *Liliacææ*. A small genus (three species) of greenhouse or half-hardy, bulbous plants, confined to South Africa. Flowers showy, densely clustered in a terminal spike or raceme, shortly pedicellate or subsessile, pendulous or nodding; perianth tubular, cylindrical, equal or slightly enlarged above, persistent, the six lobes equal, very short, tooth-like; stamens six, equally affixed above the middle of the tube, included; scape simple, leafless; bracts scarious, short. Leaves radical, numerous, oblong or loriform, fleshy-herbaceous. The two species known to cultivation thrive in a light, loamy soil. Propagation may be readily effected by offsets; or leaves, pulled off close to the bulb, and inserted in pots of soil, will produce bulbs at their base.

V. glauca (glaucous). *f.*, perianth red-spotted or yellowish, $\frac{1}{2}$ in. to $\frac{3}{4}$ in. long; pedicels scarcely above one line long; raceme $\frac{2}{3}$ in. to $\frac{5}{8}$ in. long, $\frac{1}{4}$ in. to $\frac{2}{3}$ in. thick; scape 1 $\frac{1}{2}$ in. or more high; bracts linear, three to four lines long. March. *l.* narrower than in *V. viridifolia*, glaucous, much undulated. 1781. (B. M. 1091.) A variety *rubescens* (reddish-flowered) is figured in B. M. 3456.



FIG. 155. VELTHEIMIA VIRIDIFOLIA, showing Habit and detached Raceme.

V. viridifolia (green-leaved). *f.*, perianth reddish or yellowish, spotted, $\frac{1}{2}$ in. to $\frac{1}{4}$ in. long; pedicels two to three lines long;

Veltheimia—continued.

raceme $\frac{3}{16}$ in. to $\frac{4}{16}$ in. long, $\frac{3}{16}$ in. thick, forty to sixty-flowered; scapes 1 $\frac{1}{2}$ in. to 1 $\frac{1}{4}$ in. long; bracts lanceolate, four to six lines long. August. *l.* ten to twelve, lorate, $\frac{8}{16}$ in. to $\frac{12}{16}$ in. long, $\frac{2}{16}$ in. to $\frac{3}{16}$ in. broad, green, the margins undulated. 1768. See Fig. 155. (L. B. C. 1245.) SYN. *Aletris capensis* (B. M. 501).

VELUTINOUS. Velvety; coated with soft, fine close, silky pubescence.

VELVET FLOWER. A common name for *Amaranthus caudatus* (which see).

VELVET LEAF. A common name for *Cissampelos Pareira* and *Lavatera arborea*.

VENANA. A synonym of *Brexia* (which see).

VENATION. The arrangement of veins.

VENEER GRAFTING. See *Grafting*.

VENIDIUM (no explanation of name given by its author). SYN. *Cleitria*. ORD. *Compositææ*. A genus comprising eighteen species of greenhouse or half-hardy, cano-tomentose or woolly, perennial herbs, confined to South Africa. Flower-heads rather large, on long peduncles; involucre bracts imbricated in many series; ray florets ligulate, entire or scarcely toothed. Leaves alternate, entire, sinuate-toothed, or pinnately dissected. For culture, see *Arctotis*.



FIG. 156. VERNIDIUM CALENDULACEUM.

V. calendulaceum (Marigold-like). *f.*-heads somewhat like those of the Pot Marigold; ray bright clear yellow; disk dark brown, nearly black. July to October. *l.* green, glabrous above, covered with a white-cottony felt beneath. *f.* $\frac{6}{16}$ in. to $\frac{12}{16}$ in. This is regarded, by Harvey and Sonder, as a variety of *V. decurrens*. See Fig. 156.

VENOSE. Veiny; having many branched veins.

VENTENATIA (of Smith). A synonym of *Styidium* (which see).

VENTILAGO (from *ventilo*, to be exposed to the wind; alluding to the linear wings at the upper part of the fruit). ORD. *Rhamnæææ*. A genus consisting of about ten species of stove, climbing shrubs, scattered over the tropics. Flowers small, in axillary and terminal (usually leafless) panicles, rarely in the axils; calyx with five spreading lobes; petals five, obtriangular or obovate; stamens five. Leaves alternate, sub-bifarious. Only one species has been introduced. For culture, see *Berochemia*.

V. madraspatana (probably a native name). *f.* green, in slender, simple or paniculate spikes. June. *l.* $\frac{2}{16}$ in. to $\frac{4}{16}$ in. long, oblong-lanceolate to ovate, acute or sub-acuminate, crenate or entire. Young branches (and leaves) glabrous or only slightly pubescent. India, 1822.

VENTILATION. Ventilation, or air-giving, is one of the most important operations in garden management, and the cultivation of all kinds of trees and plants under glass. Ventilators are requisite in all horticultural structures, for the purpose of regulating temperatures, and affording an interchange of air in their interiors. The amount of space made available for opening to admit air, depends on the kind of plants cultivated in any particular structure, as, for instance, conservatories and greenhouses. Peach houses and vineries need provision for the admission of an abundant circulation of air whenever it is required, or when circumstances and weather permit; while in plant stoves and houses in which the occupants need a more or less tropical atmosphere at all times, a smaller number of ventilators will suffice. It is always advisable to have some plan of giving Ventilation at, or near, the top: this is provided in most houses of modern construction, so that the least supply, or nearly the full amount, of air may be admitted without rain getting in, except from an occasional splashing. Ventilating gearing has been greatly improved during recent years, so that either top or bottom sashes along a house, say 30ft. long, may be easily opened or closed with one hand, working a lever, and the sashes may be fixed with the other hand to wherever they are required to remain. Where there are no side or front sashes, as in many lean-to houses, wooden door ventilators are best, fixed in the front wall; and if the air from those can be made to pass over the hot-water pipes, it will become warmed before reaching the plants. Wooden ventilators may be similarly placed in a back wall; but wherever convenient, lifting sashes are preferable.

There are numerous details attending the admission of air which depend on widely varied circumstances, and can only be learnt by practical experience; the state of the weather, which is often very changeable, and the difference between outside and inside temperatures, being, perhaps, the most important points to consider. At different seasons, too, the same plants will need very dissimilar treatment according to their stages of growth. During spring, the greatest care is necessary regarding the admission of air, as sudden changes of temperature, caused by improper Ventilation, quickly show their evil effects on young and tender foliage. In old-fashioned houses, with small panes of glass, the sun never has the same effect in raising the temperature inside, as in most of those of modern construction with large panes; hence the necessity of early attention to Ventilation becomes much greater with the last-named. Happily, many of the improved systems of applying air, as already referred to, afford the means of opening or closing the ventilators in a tenth part of the time occupied in handling each sash separately in a large house. In daily management, when it is known that air will have to be admitted to a house, the ventilators should be opened very gradually so soon as the temperature begins to rise in the morning or early part of the day. It is never good practice to allow the temperature to get high and then put on what air is required for the day at once, or even at twice. Under such management tender foliage often droops quickly because of a sudden change and excessive evaporation taking place. Few plants or trees are able to withstand this: their leaves often become scorched during the day, and the attacks of insects are much encouraged. In spring, the ventilating of forcing-houses and other structures may require somewhat different management nearly every day in order to keep near the requisite degree of heat. The quantity of air and the mode of applying it are, therefore, matters which must be determined in dealing with the culture of plants under such varied circumstances. What may be called general advice is to begin ventilating early, as already noted, when it is pretty certain that airing will be necessary,

Ventilation—continued.

and apply a little more at frequent intervals until sufficient for the day is put on. Secondly, draughts should always be avoided: if the air is cold or the wind rough, never open ventilators at the front and back parts of a house at the same time, unless the occupants are such as take no harm—and this is seldom the case. In summer, when the inside and outside temperatures are much more uniform than at other seasons, air may generally be most freely admitted without causing much injury.

VENTRAL. Belonging to the anterior or inner surface of a carpel; opposed to dorsal.

VENTRICOSE. Swelling unequally, or inflated on one side; e.g., the corolla of many labiate and personate plants.

VENTRICULOSE. Abounding with veinlets.

VENUS' BASIN. An old name for *Dipsacus sylvestris*.

VENUS' FLY-TRAP. See *Dionæa muscipula*.

VENUS' GOLDEN APPLE. A common name for *Atalantia monophylla* (which see).

VENUS' HAIR. A common name for *Adiantum Capillus-Veneris* (which see).

VENUS' LOOKING-GLASS. A popular name for *Specularia Speculum* (which see).

VENUS' NAVELWORT. See *Omphalodes linifolia*.

VENUS' OR VENICE SUMACH. A common name for *Rhus Cotinus* (which see).

VEPRIS. Included under *Toddalia* (which see).

VERATAXUS. A synonym of *Taxus* (which see).

VERATRUM (the old Latin name, used by Lucretius and Pliny, from *vere*, truly, and *ater*, black; alluding to the colour of the root). False or White Hellebore. ORT. *Liliaceæ*. A genus embracing eight or nine species of hardy, perennial herbs, inhabiting Europe, Russian Asia, and North America. Flowers numerous in a terminal panicle, shortly pedicellate; perianth purplish, greenish, or whitish, persistent, broadly campanulate or explanate; segments (in hermaphrodite flowers) connate towards the base in a very short tube, in others oblong, spreading, subequal, scarcely contracted at base, many-nerved; stamens six. Leaves often broad, plicate-veined, contracted in an ample sheath, the upper ones rarely all narrow; floral ones bract-like. Stem erect, leafy. Rhizome thick (very poisonous), the root-fibres somewhat poisonous. The best-known species are here described. Gardeners make use of *V. album*, powdered, to destroy caterpillars. Veratrum thrive in any rich soil. Propagation may be effected by divisions, or by seeds.

V. album (white).^{*} Langwort; Lyngwort. *fl.*, perianth whitish within, greenish outside at base, spreading, $\frac{1}{2}$ in. to $\frac{3}{4}$ in. long, the segments crisped-denticulate; pedicels very short or almost wanting; racemes dense, the rachis pubescent; panicle 1ft. to 2ft. long. July. *l.* rather firm, plicate, puberulous beneath; radical ones oblong, 1ft. long, $\frac{5}{16}$ in. to $\frac{6}{16}$ in. broad. Stem puberulous, with ten to twelve leaves. *h.* 3ft. to 4ft. Europe and Siberia, 1548. (F. D. 1120; J. F. A. 335.) The following, formerly classed as species, are regarded, by Baker, as mere varieties:

V. a. Lobelianum (Lobel's). *fl.*, perianth wholly greenish, the segments narrower than in the type; lateral racemes dense, erecto-patent. 1818.

V. a. viride (green). *fl.*, perianth greenish, the segments lanceolate, acute; lower pedicels two to three lines long; lateral racemes loose-flowered, often reflexed. North America, 1742. SYN. *Helonias viridis* (B. M. 1096).

V. Maackii (Maack's). *fl.*, perianth dark-purple, $\frac{1}{2}$ in. to $\frac{3}{4}$ in. long, the segments oblong, blackish at base; lower pedicels three to four lines long; lateral racemes ascending; panicle very loose, $\frac{1}{2}$ in. to 12 in. long. Summer *l.*, lower ones lanceolate, $\frac{1}{2}$ in. long,

Veratrum—continued.

lin. broad in the middle, distinctly petiolate; upper cauline ones sessile. Stem slender, 2ft. high, few-leaved, slightly thickened at base. Eastern Siberia, 1883. (R. G. 1070.)



FIG. 157. VERATRUM NIGRUM.

V. nigrum (black)* *fl.*, perianth blackish-purple, two to three lines long, the segments oblong, obtuse; lower pedicels one to three lines long; racemes dense-flowered, the lateral ones short; panicle narrow, 1ft. to 3ft. long. June. *l.*, lower ones oblong,



FIG. 158. PORTION OF INFLORESCENCE OF VERATRUM NIGRUM.

1ft. long, 6in. to 8in. broad, narrowed at base, plicate. Stem erect, 2ft. to 3ft. high, many-leaved, slightly bulbous at base. Central Europe, 1596. See Figs. 157 and 158. (B. M. 963; J. F. A. 356.)

VERBASCEÆ. A tribe of *Scrophularinæ*.

VERBASCOM (the old Latin name used by Pliny). Mullein. ORD. *Scrophularinæ*. A genus embracing nearly 100 species of mostly hardy, biennial herbs, rarely perennials or sub-shrubs, more or less tomentose or floccose-woolly, inhabiting Europe, North Africa, and West and Central Asia. Flowers yellow, fuscous, purple, or red, rarely white, on usually very short and ebracteolate pedicels, spicate or racemose; calyx deeply five-cleft or parted, rarely shortly five-toothed; corolla tube scarcely any, the lobes five, broad, nearly equal; stamens five, affixed at the base of the corolla. Leaves all alternate, often soft, entire,

Verbascum—continued.

FIG. 159 UPPER PORTION OF PLANT OF VERBASCOM PHENICEUM.

crenulate, sinuate-toothed, or pinnatifid. Few of the species are sufficiently beautiful to claim a place in our gardens. The British Flora embraces five species, *V. Blattaria*, *V. Lychitis*, *V. nigrum*, *V. pulverulentum*, and *V. Thapsus*. A selection of the most desirable kinds is here given. With the exception of *V. nigrum* and *V. phoeniceum* (both propagated by divisions), and of *V. pinnatifidum* (increased by cuttings), all are hardy biennials, and only require sowing in any ordinary soil.

V. bipinnatifidum (bipinnatifid). A synonym of *V. pinnatifidum*.

V. Blattaria (Blattaria). Moth Mullein. *fl.* bright yellow, rarely cream-coloured, 3in. to 1½in. in diameter; panicles slender, glandular; peduncles ½in. to 1in. long. *l.*, radical ones 4in. to 10in. long, oblong-lanceolate, obtuse, crenate, lobulate, or sub-pinnatifid; cauline ones small, sessile, ovate or oblong, toothed or sub-crenate. Stem 8in. to 4ft. high, simple or branched. Europe (Britain). (Sy. En. B. 942.)

V. Boerhaavii (Boerhaave's). Annual Mullein. *fl.* yellow, sessile, fasciated or rarely solitary; corolla ample; raceme simple or rarely slightly branched. *l.* crenate, woolly; lower ones petiolate, obovate or oblong; upper ones cordate-amplexicaul, rarely very shortly sub-decurrent, acute or long-acuminate. *h.* 2ft. South Europe, 1731. A pretty species.

Verbascum—continued.

- V. Chairii** (Chair's). * Nettle-leaved Mullein. *f.* yellow; calyx segments lanceolate, subulate; fascicles loosely many-flowered; raceme paniculate. *l.* green or tomentose beneath, crenate; lower ones petiolate, cuneate at base, truncate or incised; upper ones sessile, rounded at base. *h.* 3ft. South and Central Europe, 1831.
- V. cupreum** (coppery). A hybrid between *V. ovalifolium* and *V. phoeniceum*.
- V. ferrugineum** (rusty). A synonym of *V. phoeniceum*.
- V. formosum** (beautiful). A synonym of *V. ovalifolium*.
- V. Myconi** (Mycon's). A synonym of *Ramondia pyrenaica*.
- V. nigrum** (dark). Dark Mullein. *f.* numerous within each bract, more or less stalked; corolla yellow, with bright purple hairs to the filaments. Summer and autumn. *l.* crenate, nearly glabrous on the upper side, slightly woolly beneath; lower ones large, cordate-oblong, on long stalks; upper ones nearly sessile, small, and pointed. Stem sparingly clothed with woolly hairs, 2ft. to 3ft. high, ending in a long, simply-branched raceme. Europe (Britain), Western Asia. A pretty perennial.
- V. olympicum** (Olympian). * *f.* bright golden-yellow, lin. to 1½ in. in diameter. *l.* rosulate, broad, lanceolate, acuminate, woolly. Stem 5ft. to 6ft. high, branched from near the base in a candelabra-like manner. Levant, 1833. Biennial. (R. G. 1078.)
- V. ovalifolium** (oval-leaved). *f.* orange, large, solitary, disposed in a simple or dense spike; upper filaments orange- or purple-woolly. *l.* ovate; lower ones doubly or incised-crenate; upper ones cordate-amplexicaul. *h.* 1ft. Tauria, 1804. (B. M. 1037.) SYN. *V. formosum* (B. R. 558). *V. cupreum* (B. M. 1226) is a hybrid between this species and *V. phoeniceum*.
- V. phlomoides** (Phlomis-like). Woolly Mullein. *f.* yellow, fasciated; pedicels shorter than the calyx; racemes sub-solitary, elongated. *l.* crenulate, or the oblong radical ones doubly or sub-incised crenate; upper ones short, obtuse, or the intermediate ones somewhat angular-decurrent. *h.* 3ft. South Europe, 1739. (S. F. G. 221.)
- V. phoeniceum** (violet). * *f.* violet or red, rather large; pedicels solitary, remote, many times longer than the calyx; raceme glandular-pilose, simple or slightly branched. *l.* glabrous above, pubescent beneath; radical ones petiolate, ovate or oblong, entire or grossly crenate; cauline ones few, small. *h.* 3ft. South Europe, 1796. See Fig. 159. (B. M. 885; L. B. C. 637; R. G. 436, f. 2.) SYN. *V. ferrugineum* (A. B. R. 163). Perennial.

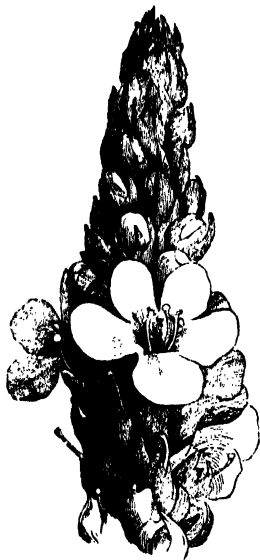


FIG. 160. PORTION OF INFLORESCENCE OF VERBASCUM THAPSUS.

- V. pinnatifidum** (pinnatifid). *f.* yellow, in remote, few-flowered fascicles, sometimes sub-solitary; raceme slightly branched, rigid. *l.* mostly naked, green; radical ones bipinnatifid; cauline ones pinnatifid, with oblong, toothed segments; upper ones serrated or pinnatifid. Stems 1ft. or more high. Tauria, &c. 1813. Sub-shrub. (S. F. G. 228.) SYN. *V. bipinnatifidum* (B. M. 1777).
- V. pyramidatum** (pyramidal-flowered). *f.* yellow; panicle pyramidal, caescent, 1ft. to 2ft. long, with short, bundle-flowered

Verbascum—continued.

- branchlets (or, in gardens, an often elongated raceme). *l.* doubly crenate; lower ones ample, long-narrowed to the base; upper ones sessile, cordate-auriculate. *h.* 3ft. or more. Caucasus, 1804. A pretty species. (S. B. F. G. 31.)
- V. rubiginosum** (reddish-brown). *f.* yellow and red; pedicels bi- or ternate, rarely solitary, twice or many times as long as the calyx; raceme loose, branched, sub-paniculate. *l.* pubescent beneath, crenate; lower ones petiolate; upper ones sessile or cordate-amplexicaul. *h.* 2ft. Hungary, 1817.
- V. r. tauricum** (Taurian). *f.* larger, on shorter pedicels; raceme simpler. (B. M. 3793, under name of *V. tauricum*.)
- V. speciosum** (showy). *f.* yellow; pedicels longer than the calyx; fascicles loose, often many-flowered; panicles very long, branched. *l.* thick, entire, or the lower ones crenate, oblong, elongated, long-narrowed into the petioles; upper ones sessile or cordate-amplexicaul. *h.* 6ft. Hungary, 1818.
- V. spectabile** (remarkable). *f.* yellow and purple; pedicels solitary or few together; raceme elongated, nearly simple, viscoso-villous. *l.* doubly crenate, glabrous or pilose above, slightly tomentose beneath; lower ones petiolate, oblong-ovate, cordate at base; upper ones sessile, semi-amplexicaul. *h.* 2ft. Tauria, 1820.
- V. Thapsus** (Thapsus in Africa). Aaron's Rod; Adam's Flannel; Blanket Leaf; Cow's Lungwort; Hag or Hig Taper; Jacob's Staff; Shepherd's Club; Torch, &c. *f.* yellow; corolla ½ in. to 1 in. in diameter, woolly outside; spike 6 in. to 10 in. long, dense, simple. *l.* very decurrent; radical ones 6 in. to 8 in. long, obovate-lanceolate, entire or crenate; cauline ones oblong, acute, the upper acuminate. Stem 2ft. to 3ft. high, stout. Europe (Britain). See Fig. 160. (F. D. 631; Sy. En. B. 937.)

VERBENA (the old Latin name used by Virgil and Pliny). Vervain. ORD. *Verbenaceae*. A genus comprising about eighty species of greenhouse or hardy, annual or perennial herbs or sub-shrubs, almost wholly American. Flowers small or mediocre, solitary in the axils of the often narrow bracts; calyx tubular, five-ribbed, five-toothed; corolla tube straight or incurved, equal or slightly enlarged above; limb spreading, sub-bilabiate, the five lobes oblong or broad, obtuse or retuse; stamens four, didynamous, very rarely two, affixed above the middle of the tube, included; spikes terminal, rarely axillary. Leaves opposite, or rarely ternately whorled or alternate, toothed or often incised or dissected, rarely entire. *V. officinalis*, the British representative of the genus, was formerly held in great repute as a remedy for affections of the bladder, and its flowers were considered an instrument for restoring defective vision. Verbenas may readily be propagated by seeds, sown in heat, some time in early spring; or by cuttings of the young growths which have no flowers on them. The hardy species may also be increased by division of the rootstock. All require a rich soil, and may be planted in open borders during summer from the middle or end of May.

The best-known species are here described. Except where otherwise indicated, they are perennials, and flower in summer.

- V. alata** (winged). *f.* rosy; spikes short, dense, sub-cylindric; panicle terminal, cymose, sub-fastigiata. *l.* sessile, ½ in. to 1 in. long, ovate or triangular-oblong, acute, entire or argutely serrated, three-nerved, wrinkled, strigos-scabrous. Stems sub-fastigiata. *h.* 4ft. Brazil, 1828. Half-hardy. (S. B. F. G. ser. II. 41.)
- V. amena** (pleasing). *f.* pinkish-purple; corolla lobes bifid; spikes long, dense, erect. *l.* stipulate, pinnatifid; lobes oblong, acute, clothed with closely-pressed pubescence; stipules much more hairy than the blade. Stems partially recumbent, covered with stiff, whitish hairs. *h.* 1ft. Mexico. Half-hardy. (P. M. B. vii. 3.)
- V. Aubletii** (Aublet's). Rose Vervain. *f.* reddish-purple or lilac, rarely white; corolla limb ½ in. to ¾ in. broad; spikes pedunculate, elongated in fruit. *l.* 1 in. to 2 in. long, ovate or ovate-oblong, incisely lobed and toothed, often more deeply three-cleft, the truncate or broadly cuneate base tapering into a margined petiole. *h.* 1ft. or less. North America, 1774. Hardy. (B. M. 308; B. R. 294, var. 1925). *V. Lambertii* (B. M. 2200) is a form of this with narrower and more incised leaves. *V. L. rosea* (S. B. F. G. ser. II. 363) has a light-coloured, firm-gran corolla, ½ in. wide.
- V. bracteosa** (conspicuous-bracted). *f.* purplish or blue, very small, exceeded by some of the leafy bracts; spikes thick, terminal. *l.* cuneate-oblong or cuneate-obovate, mostly narrowed into a short-margined petiole, pinnately incised or three-cleft, and coarsely-toothed. North America, 1820. Plant diffuse or decumbent, hirsute, annual or becoming perennial at base. Hardy. (B. M. 2914.)

Verbena—continued.

- V. chamædrifolia** (Chamedrys-leaved). *f.* of a splendid scarlet colour, large and showy; spike solitary, on an elongated, ascending peduncle. *l.* oblong or ovate, broadly cuneate at base, crenate or somewhat incised-serrated, strigose above, hairy beneath, on short petioles. Stems filiform, fork-branched, creeping. Brazil, 1827. Half-hardy under-shrub. (B. 129; B. M. 3333; S. B. F. G. ser. ii. 9.) SYN. *V. melissoides*.
- V. c. Melindres** (vernacular name). *l.* oblong or oblong-lanceolate, unequally incised-serrated and less hairy. (P. M. B. i. 173; B. R. 1184 and L. B. C. 1514, under name of *V. Melindres*.)
- V. elegans** (elegant). *f.* blue; corolla limb large, with emarginate lobes; spikes terminal, pedunculate, pyramidal. *l.* shortly petiolate, pinnatifid-laciniate, cuneate at base, slightly strigose-hispid; segments entire, linear-oblong, the margins slightly revolute. Stems branched, procumbent. Mexico, 1826. Hardy annual.
- V. erinoides** (Erinus-like). *f.* reddish-violet; corolla shortly exserted; spikes terminal, pedunculate, solitary, elongated, fastigiate, caescent-hairy. *l.* cuneate at base, decurrent, tripartite-pinnatifid or laciniate; lacinie lanceolate, slightly acute, entire or somewhat toothed, the margins slightly revolute. Stems hairy, much-branched, decumbent, rooting; branches ascending. Peru, 1818. Hardy annual. SYN. *V. multifida*.
- V. e. contracta** (contracted). *l.* tripartite; lacinie incised-pinnatifid; ultimate segments linear-oblong, acute. (B. R. 1766, under name of *V. multifida contracta*; S. B. F. G. ser. ii. 347, under name of *V. e. Sabini*.)
- V. hastata** (spear-shaped). Blue Vervain; Simpler's Joy; Wild Hyssop. *f.* blue; spikes dense, strict, naked at base, or more or less pedunculate, numerous in a panicle. *l.* oblong-lanceolate, gradually acuminate, coarsely or incisely serrated, petiolate; some of the lower ones often hastately three-lobed at base. Stem erect, 3ft. to 6ft. high. North America, 1810. Hardy. *V. paniculata* (B. R. 1102) is a form wanting the three-lobed leaves.



FIG. 161. FLOWERING BRANCH OF VERBENA INCISA.

- V. incisa** (cut). *f.* rosy-purple; calyx five lines long; spikes pedunculate, sub-ternate at the tips of the branches, corymbose-paniculate. *l.*, lower ones oblong-triangular, cuneate, truncate or sub-cordate at base, attenuated into the petioles, pinnatifid-lobed, deeply incised-serrated, wrinkled; upper ones nearly lanceolate, sessile, incised-pinnatifid. Stem ascending; branches erect. *h.* 2ft. Brazil, 1826. Greenhouse sub-shrub. See Fig. 161. (B. M. 3628.)
- V. Lambertii** (Lambert's). A form of *V. Aubletii*.
- V. Melindres** (vernacular name). A variety of *V. chamædrifolia*.
- V. melissoides** (Melissa-like). A synonym of *V. chamædrifolia*.
- V. multifida** (much-cleft). A synonym of *V. erinoides*.
- V. mutabilis** (changeable). A synonym of *Stachytarpheta mutabilis*.

Verbena—continued.

- V. officinalis** (official). Common Vervain; Holy Herb; Juno's Tears; Pigeon's Grass; Simpler's Joy. *f.* lilac, 4in. in diameter; spikes dense-flowered, afterwards elongating. *l.* opposite, oblong, pinnatifid or tripartite, with acute or obtuse lobes; upper ones narrower. Stems 1ft. to 2ft. high, rigid, branched above. Europe (Britain). Plant hispid-pubescent. (F. D. 628; Sy. Kn. E. 1018.) SYN. *V. serotia* (S. B. F. G. 202).
- V. paniculata** (panicle). A form of *V. hastata*.
- V. phlogiflora** (flame-flowered). *f.* purple or lilac (varying in cultivation to red and blue); corolla eight to nine lines long; spikes terminal, pedunculate, solitary or ternate, cymose-paniculate. *l.* oblong- or lanceolate-triangular, acute, cuneate at base, entire, long-attenuated into the petioles, incised-serrated, wrinkled, strigose above, hairy beneath, the margins slightly revolute. Stems ascending; branches erect. *h.* 1½ft. Brazil, 1834. Greenhouse sub-shrub.
- V. p. vulgaris** (common). *f.* in solitary, terminal spikes. Stems slender, decumbent; branches much-spreading, diffuse, ascending-erect. (B. 60; H. M. 3541, P. M. B. iv. 5, and S. B. F. G. ii. 391, under name of *V. Tweediana*.)
- V. pulchella** (pretty). A synonym of *V. tenera*.
- V. radicans** (rooting). *f.* lilac, fragrant; corolla twice as long as the pubescent calyx; spikes short, sub-capitate. *l.* trifid; segments mostly again trifid, the lacinie oblong-linear, slightly fleshy, highly glabrous. Stems procumbent, rooting. Andes, 1832. Greenhouse sub-shrub.
- V. rugosa** (wrinkled). A synonym of *V. venosa*.
- V. serotia** (sisterly). A synonym of *V. officinalis*.
- V. stricta** (straight). *f.* blue; corolla four to five lines long; spikes comparatively thick, dense, caescent, mostly sessile, or leafy-bracted at base. *l.* nearly sessile, ovate or oblong, very sharply and densely, mostly doubly serrated, rarely incised cuneous with dense, soft, hirute-villous pubescence, rugose-veiny. *h.* 1ft. to 2ft. North America. Hardy. (B. M. 1976.)
- V. sulphurea** (sulphur-coloured). *f.* pale sulphur-coloured; corolla limb rather large; spikes pedunculate, capitate, many-flowered. *l.* pinnatifid or nearly so, petiolate, strigose-hispidulous on both sides; lacinie much spreading, linear, obtuse, revolute. Stems procumbent; branches ascending or erect. *h.* about 2ft. Chili, 1832. (greenhouse, hairy sub-shrub. (B. R. 1748; S. B. F. G. ser. ii. 221.)
- V. tenera** (tender). *f.* violet; corolla tube twice as long as the calyx; spikes terminal, pedunculate, solitary or ternate, fastigiate, at length elongated and relaxed, slightly caescent. *l.* decurrent in short petioles, laciniate-pinnatifid; segments linear, slightly acute, entire, the margins somewhat revolute. Branches ascending. Brazil, 1827. A much-branched, creeping, greenhouse sub-shrub. SYN. *V. pulchella* (S. B. F. G. 295).
- V. t. Maonetti** (Maonette). *f.* of a pleasing reddish-violet; corolla segments white-margined. (B. R. 1870, 6; F. d. S. 1129; R. G. 142, f. 1.)
- V. teucrioides** (Teucrium-like). *f.* white or pinkish; calyx 4in. long; corolla large, sweet-scented at night; spikes terminal, solitary, glandular-hairy. *l.* ovate or oblong-triangular, shortly cuneate at base, entire, shortly narrowed into the petioles, obtuse, somewhat sinuate-serrated, much wrinkled, the margins revolute, hairy above, tomentose beneath. Stems tufted, rooting at base, ascending, spreading-hairy. *h.* 2ft. Brazil, 1837. (greenhouse sub-shrub. (B. M. 3694; P. M. B. v. 243.)
- V. trifida** (trifid-leaved). *f.* purple; spikes terminal, many, subsessile, short, very dense, clustered in a head. *l.* clustered, cuneate at base, sessile, 4in. to 1in. long, strigose-hispidulous, trifid or nearly so, emitting fasciculate-leafy branchlets from the axils; segments lanceolate, acuminate, the margins revolute. Branches tetragonal, and, as well as the spikes, hairy. *h.* 3ft. Mexico, 1818. A remarkable, greenhouse sub-shrub. (L. & P. F. G. i., p. 169.)
- V. triphylla** (three-leaved). A synonym of *Lippia citrodora*.
- V. Tweediana** (Tweedie's). A synonym of *V. phlogiflora vulgaris*.
- V. venosa** (conspicuous-veined).* *f.* lilac or bluish; corolla tube slender, thrice as long as the calyx; terminal spikes sub-ternate, lateral ones pedunculate, fastigiate, at length cylindrical, imbricated. *l.* approximating, rigid, oblong, sub-cuneate, entire, semi-amplexicaul at base, adnate, acute, incised-serrated, spreading, unequal, the margins revolute, wrinkled and strigose above, hispidulous on the nerves beneath. Stems simple, ascending. *h.* 2ft. Brazil, 1830. A beautiful and well-known, half-hardy plant, very useful for bedding, particularly if mixed with a silver-leaved Pelargonium. (B. M. 3127; S. B. F. G. ser. ii. 207.) STR. *V. rugosa* (S. B. F. G. ser. ii. 313).
- V. xutha** (yellow). *f.* purple or blue, more crowded in the strict spikes and larger than in *V. officinalis*. *l.* incisely pinnatifid or laciniate, or some of the lower ones tripartite, more or less caescent; lobes deeply toothed. *h.* 2ft. to 3ft. North America, 1824. Half-hardy.

Garden Varieties. Verbenas are amongst the most beautiful of summer bedding plants when they can be induced to succeed; but, unfortunately, of late years this

Verbena—continued.

has been an uncertainty, because of the plants being subject to, apparently, some kind of disease. For this reason, and also because stock plants are not, as a rule, easily preserved through the winter, many cultivators have taken to the raising of seedlings each spring for growing only through one summer. This is easily done, as the young plants grow rapidly and flower freely if the seed has been saved from a good source. Green Fly and Mildew are the greatest enemies to which the plants are subject; either of these, if allowed to remain on them, will soon work irreparable mischief.

For exhibition purposes, *Verbenas* may be grown in pots in a cold frame. The following is a list of varieties that are best suited for bedding:

BOULE DE NEIGE, white, nicely scented. **CRIMSON KING**, crimson, with white eye; fine bedder. **LADY LONDESBOROUGH**, mauve, with white stripe. **LUSTROUS**, intense scarlet, with large, pure white eye; strong grower. **NEMESIS**, very deep pink. **PURPLE KING**, purple self; a good, well-known, old variety.

VERBENACEÆ.

A natural order of herbs, shrubs, or trees, broadly dispersed over the warmer parts of the globe, and particularly abundant in South temperate regions. Flowers hermaphrodite or rarely, by abortion, polygamous, variously disposed; calyx inferior, persistent, the tube campanulate, tubular, or rarely almost obsolete, the teeth, lobes, or segments five, four, or rarely six to eight, or obsolete; corolla gamopetalous, the tube often incurved, the limb four or five-cleft, rarely multifid, the lobes equal or more or less bilabiate; perfect stamens four, didynamous, or two, or in a few genera as many as the corolla lobes; filaments inappendiculate; anthers two-celled; bracts variable, often small. Fruit more or less drupaceous or sub-capsular. Leaves generally opposite or whorled, entire, toothed, or incised-multifid, in one genus pinnate, in another digitately compound; stipules absent. Teak, one of the most important timbers in the world, is the wood of *Tectona grandis*. *Lippia citriodora*, and several species of *Lantana*, are used as tea. The order embraces fifty-nine genera, and nearly 700 species. Well-known examples are: *Clerodendron*, *Lantana Verbena*, and *Vitis*.

VERBENA, LEMON-SCENTED. A common name for *Lippia citriodora* (which see).

VERBENA OIL-PLANT. A name given to *Andropogon Schoenanthus* (which see).

VERBENA, SAND. A common name for *Abronia* (which see).

VERBENA, SWEET-SCENTED. See Aloysia.

VERBESINA (altered from *Verbena*, which some of the species are supposed to resemble). **Crown Beard.** Including *Platypterys* and *Ximenesia*. **ORD. Compositæ.** A genus comprising about fifty species of stove, greenhouse, or hardy, annual or perennial herbs, sub-shrubs, or rarely shrubs, inhabiting the warmer parts of America. Flower-heads yellow, or the ray florets white; involucre bracts oblong or linear, in few series; receptacle convex or conical, paleaceous; ray florets ligulate, spreading.



FIG. 162. VERBESINA PINNATIFIDA.

entire or two or three-toothed; achenes glabrous or pilose. Leaves opposite or the upper ones (or all) alternate, petiolate, sessile, or decurrent, toothed, lobed, or rarely entire. Few of the species possess any horticultural value. Those described below are, with the exception of *V. encelioides*, perennials. All thrive in rich soil, and may be increased by seeds, the perennials also by divisions.

V. alata (winged). *f. heads* sub-globose, solitary, terminal; ray florets orange-yellow, numerous, sub-biseriate. **August.** *l.* alternate, long-decurrent, oblong or obovate, obtuse, undulated and sinuate-toothed, nearly glabrous. Stem winged. **A. 2ft.** West Indies, &c., 1699. **Stove.** (**B. M. 1716.**)

V. oreata (yellow). *f. heads* orange-yellow, solitary, globose. **Summer.** *l.* opposite, decurrent, irregularly pinnately lobed;

Verbesina—continued.

lobes oval, erose-dentate, the terminal one somewhat deltoid. Branches four-winged. *h.* 2ft. Mexico, 1812. *Stove.* *SYNS.* *Platyteris crocata*, *Spilanthes crocata* (B. M. 1627).

V. encelioides (Encelia-like). *fl.* heads yellow, disposed in a somewhat corymbose manner; achenes of the rays wingless, three-toothed, those of the disk winged, two-awned. August. *l.* ovate or oblong, coarsely serrated; petioles broadly winged, auricled at base. Stem erect, 2ft. to 3ft. high. Mexico, 1785. A caulescent, greenhouse annual. *SYN.* *Ximenesia encelioides*.

V. pinnatifida (pinnatifid-leaved). *fl.* heads pale yellow; involucre scales blackish, linear-lanceolate, acute; rays about twelve, oblong; panicles opposite, branched, corymbose at apex. August. *l.* opposite, long-decurrent, pinnatifid, long-cuneate at base, hairy-puberulous on both sides, especially on the nerves. Stem four-winged, tomentose. *h.* 3ft. Mexico, 1825. Greenhouse. See Fig. 162.

V. sativa (cultivated). A synonym of *Vestigia sativa*.

V. virginica (Virginian). *fl.* heads white, in compound corymbs; ray florets three or four, oval. August. *l.* alternate, ovate-lanceolate, feather-veined, toothed or lobed, decurrent, below, as well as the narrowly or interruptedly-winged stem, downy-pubescent. *h.* 2ft. North America, 1812. Hardy.

VEREIA. A synonym of *Kalanchoe* (which see).

VERGE-CUTTER. Another name for an edging-iron, a tool which is employed for cutting grass verges by the side of walks, flower-beds, &c., also for cutting out new beds in turf. The simple form with crescent-

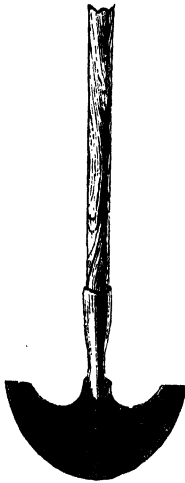


FIG. 163. VERGE-CUTTER.

shaped blade (see Fig. 163) is the best, as it may be guided by the hand to cut in whatever direction is desired. It is unnecessary, as a rule, to use a Verge-cutter for the edges of walks more than once a year—spring is the best season—the shears being sufficient for the rest of the year. By the continued use of an edging-iron on both sides of a walk, the latter very soon becomes considerably widened.

VERMICULAR. Worm-shaped.

VERMIFUGA. A synonym of *Flaveria* (which see).

VERNAL. Appearing in spring.

VERNAL GRASS. The common name for *Anthoxanthum odoratum* (which see).

VERNATION. The disposition of the leaves within a leaf-bud.

VERNICOSE. Covered with natural varnish; appearing as if varnished.

VERNONIA (named in honour of William Vernon, a botanical traveller in North America). Ironweed. Including *Ascaricida* and *Webbia*. *ORD.* *Compositæ.* A vast genus (about 380 species) of stove, greenhouse, or hardy, annual or perennial herbs or shrubs, broadly distributed, chiefly

Vernonia—continued.

in the tropics, but most opiously in the warmer parts of America. Flower-heads purple, reddish, bluish, or rarely white, terminal, solitary, cymose, or paniculate, homogamous; involucre bracts in many series, the inner longest; receptacle naked or pitted, sometimes shortly hairy; florets all equal, tubular, slender, narrowly five-cleft; achenes striated, ribbed, or angled, rarely terete; pappus of many hairs, often girt with a row of outer short hairs or flattened bristles. Leaves alternate (or in one Brazilian species opposite), entire or toothed, pinniveined, sessile or petiolate. Few of the species are known to cultivation, the majority being mere weeds. Those described below thrive in rich, light soil, and may be readily increased by seeds, cuttings, or divisions, according to the nature of the plant.

V. acutifolia (acute-leaved). *fl.* heads pale purple, sub-sessile at the sides of the branches; involucre hemispherical; florets forty. December. *l.* sessile, linear, acuminate, reticulate-nerved, slightly serrated, glabrous above, obscurely pilose beneath. Stem erect, terete. *h.* 4ft. South America. Greenhouse perennial. (B. M. 3062.)

V. axilliflora (axillary-flowered). *fl.* heads violet-purple, sessile, much shorter than the floral leaves; cymes long, scorpioid, terminal. September. *l.* shortly petiolate, oblong-elliptic, acute at both ends, nearly entire, scabrous and pilose above, villous-tomentose beneath. Branches terete, villous. *h.* 1½ft. Brazil. *Stove* shrub. (L. B. C. 1690.)

V. Calvoana (Calvo's). *fl.* heads white, 2in. broad, with a purple eye; involucre scales large and spreading, in many series; corymbs large, branching and spreading, bearing leafy, toothed bracts. January. *l.* sessile, oblong-lanceolate, acuminate, 8in. to 14in. long, toothed, much narrowed and unequally auricled at base. Stem stout, sulcate, branched, tomentose-pubescent. *h.* 8ft. to 12ft. Cameroons, 1861. A magnificent, stove shrub. (B. M. 5698.)

V. centriflora (centre-flowered). A synonym of *V. scorpioides*.

V. flexuosa (flexuous). *fl.* heads purple or white; involucre campanulate, the bracts mucronate-acuminate; cymes scorpioid. September. *l.* sessile, oblong or linear-lanceolate, nearly entire, scabrous-pilose on both sides. Stem herbaceous, from a tuberous rhizome. *h.* 1½ft. Brazil, 1823. *Stove.* (B. M. 2477; L. B. C. 1880.)

V. noveboracensis (New York). *fl.* heads purple; involucre scales tipped with a long, bristle or awl-shaped, spreading appendage, in some varieties merely pointed. August. *l.* lanceolate or oblong. *h.* 5ft. North America, 1710. Hardy perennial.

V. odoratissima (highly odorous). *fl.* heads purple; involucre scales acuminate; cymes disposed in a panicle. October. *l.* shortly petiolate, rigid, obovate, cuneate at base, slightly toothed at apex, scabrid above, reticulated and hirsute-pubescent beneath. Stem terete, shrubby. *h.* 4ft. Caraccas, 1817. *Stove.*

V. pinifolia (Pine-leaved). *fl.* heads bright purple; involucre scales mucronate, canescent; corymbs 5in. to 8in. across, mostly compound, of many heads, flat-topped. Summer. *l.* sessile, crowded, linear, acute, 1in. to 4in. long, half to four lines wide, becoming glabrous above, the margins revolute. Stems 1ft. to 2ft. high, mostly closely leafy throughout. South Africa, 1865. Greenhouse perennial. *SYN.* *Webbia pinifolia* (B. M. 5412).

V. scorpioides (scorpioid-cymed). *fl.* heads lilac-rose, sessile, contiguous; involucre scales hairy, the inner ones acuminate, the outer ovate; cymes scorpioid, recurved, leafless, approximate. Summer. *l.* petiolate, elliptic, acute, pubescent beneath. *h.* 1ft. Brazil and West Indies, 1874. *Stove* shrub. (L. H. 1874, 251.) *SYN.* *V. centriflora*.

V. sericea (silky). *fl.* heads purple or white, sessile, solitary or twin in the axils; involucre campanulate, the outer scales recurved, mucronate, the inner ones obtuse. December. *l.* very shortly petiolate, lanceolate, acuminate, sub-obtuse at base, sub-entire, nearly glabrous above, adpressedly pubescent beneath. Stem terete, striated, very slightly puberulous. *h.* 4ft. Brazil, 1823. *Stove* sub-shrub. (B. R. 522.)

VERONICA (a mediæval name of doubtful derivation, probably from *hiera eicon*, sacred image; in allusion to the legend of the sacred handkerchief of S. Veronica). Cancerwort; Speedwell. Including *Diplophyllum* and *Leptandra*. *ORD.* *Scrophulariæ.* A genus comprising about 160 species of greenhouse or hardy herbs, shrubs, or rarely trees, broadly dispersed over temperate and frigid regions. Flowers often varying in colour in the same species, blue, purple, flesh-coloured, or white, disposed in bracteate, terminal or axillary racemes, rarely solitary in the axils of alternate leaves; calyx four, five, or very rarely three-parted, the segments scarcely imbricated; corolla tube rarely exceeding the calyx; limb spreading,

Veronica—continued.

four or five-cleft, the lateral lobes exterior (or one exterior), the upper and lower ones usually narrowest; stamens two, exerted; pedicels bracteolate. Leaves opposite, rarely whorled or somewhat scattered, the cauline ones very rarely alternate; floral ones always alternate, similar to the cauline ones or often reduced to bracts. Sixteen species are indigenous in Britain; among them the following may be mentioned: *V. Beccabunga* (Brooklime), with rather fleshy, blunt leaves, which are considered to be anti-scorbutic; *V. Chamædrys*, one of the loveliest of our wild flowers; and *V. spicata*, often grown in gardens. The best-known cultivated species are here described. Except where otherwise stated, they are hardy, and of perennial duration, thriving in any fairly good soil, and being increased by divisions. The shrubby kinds may be readily multiplied by cuttings, and the annuals by seeds.

V. alpina (alpine). *f.* blue or violet; corolla two to three lines across; raceme spiciform or somewhat capitate, dense, or interrupted below. May. *l.* mostly shorter than the internodes of the simple stem (3in. to 1in. long), ovate to oblong, crenulate-serrate or entire. *h.* 9in. to 12in. Europe (Britain), Asia, North America. (F. D. 16; Sy. En. B. 980.)

V. a. Wormskjoldii (Wormskjold's). A villous-pubescent form, with larger leaves. 1819. (B. M. 2875.)

V. amethystina (amethystine-blue). A synonym of *V. paniculata*.

V. amplexicaulis (stem-clasping). *f.* in short, conical, dense spikes 3in. to 1in. long, on hairy peduncles 1in. to 1½in. long, crowded together near the ends of the branchlets; corolla white, the tube 3in. long, the limb 3in. across. *l.* loosely imbricated, amplexical or sub-amplexical, oblong, obtuse, 3in. long, 3in. broad, glaucous, coriaceous, entire, slightly concave. *h.* 1ft. to 2ft. New Zealand. Decumbent or sub-erect shrub.

V. Andersonii (Anderson's). *f.* bluish-violet, sometimes whitish towards the base of the raceme; racemes shortly pedunculate, narrow-oblong, rather longer than the leaves. July. *l.* oblong, 3in. to 4in. long, somewhat obtuse, entire, puberulous on the margins, rather thick. *h.* 1½ft. Half-hardy shrub. Garden hybrid. (F. D. S. 658; L. J. F. 103; L. & P. F. G. 38.)

V. A. variegata (variegated). This differs from the type in having finely variegated leaves.

V. anomala (anomalous). *f.* white, very shortly pedicellate or sessile; corolla tube 3in. long, the limb 3in. to 3in. broad, the lobes nearly equal, three or two unequal, spreading, narrow; racemes crowded together, five to ten-flowered, sub-terminal. *l.* decussate, 3in. to 1½in. long, 3in. to 3in. wide, linear or linear-oblong, patent, often reddish-coloured, coriaceous, quite glabrous on the upper surface, sometimes ciliated on the margin, concave, entire, shortly petiolate. Branches long, slender, purplish or reddish towards the tips. *h.* 3ft. to 6ft. New Zealand. A dense-growing shrub.

V. Buxbaumii (Buxbaum's). *f.* bright blue; corolla 3in. across; peduncles solitary, axillary in alternate, leaf-like bracts. April to September. *l.* shortly petiolate, oblong or ovate-cordate, 3in. to 1½in. long, coarsely serrated; floral ones similar, shorter than the decurrent pedicels. Branches 6in. to 12in. long. Europe (naturalised in Britain). A prostrate annual. (F. D. 1982; Sy. En. B. 973.)

V. buxifolia (Box-leaved). *f.* white; corolla tube short, the limb 3in. to 3in. across; racemes very short, dense-flowered, crowded at the ends of the branches and sub-capitate, puberulous or glabrous; pedicels short; bracts as large as the sepals. *l.* 3in. to 3in. long, 3in. to 3in. broad, broadly oblong-obovate, obtuse, suddenly truncate or cordate at the very short, thick petiole, excessively thick and coriaceous, concave. *h.* 2ft. to 3ft. New Zealand. A small, stout, glabrous shrub.

V. carnosula (slightly fleshy). *f.* white, with reddish-yellow anthers; corolla tube very short, the limb 3in. to 3in. across; spikes short, pilose and pubescent, crowded and forming heads at the ends of the branches, very dense-flowered. Summer. *l.* closely imbricated, sub-erect, 3in. to 3in. long, broadly obovate or oblong or orbicular, round at tip, entire, very thick and coriaceous, almost sessile or on broad petioles. New Zealand. A stout, often prostrate shrub.

V. cataractæ (waterfall). *f.* white or pinkish, 3in. to 3in. in diameter; pedicels very slender, 3in. to 1in. long; racemes axillary, slender, 3in. to 8in. long, very many flowered; bracts linear, subulate. *l.* sessile or petiolate, 3in. to 5in. long, ovate-oblong or narrow-lanceolate, acuminate, deeply and acutely serrate, coriaceous. Stems sub-erect or prostrate at the base and ascending, 10in. to 2ft. long, branched, rather slender. New Zealand. Shrub.

V. caucasicæ (Caucasian). *f.* pale red; pedicels filiform; racemes loose, many-flowered, on slender peduncles. June. *l.* sub-sessile, once or twice pinnatisect; segments oblong or linear-cuneate, narrowed at base, entire or incised. Stems ascending or erect, pilose. Caucasus, 1816. (L. B. C. 1369.)

V. Chamædrys (Chamædrys). Angela's Eyes; Birds' Eyes; Ger-

Veronica—continued.



FIG. 164. FLOWERING BRANCHLET OF VERONICA CHAMÆDRYS.

mander Speedwell; God's Eye. *f.* bright blue; corolla 3in. to 3in. across; raceme loose, 2in. to 5in. long, including the slender peduncle. May and June. *l.* all opposite, sub-sessile, ovate-cordate, 3in. to 1½in. long, deeply serrated. Branches 8in. to 2ft. long, slender, ascending. Europe (Britain). Plant hairy. See Fig. 164. (F. D. 448; L. B. C. 55; Sy. En. B. 986.)

V. chathamica (Chatham Island). *f.* dark purple, large, numerous, closely set; peduncles 3in. long, pubescent; racemes 1in. to 1½in. long, sub-terminal at the ends of the branches and axillary to the uppermost leaves. *l.* spreading, sessile, 3in. to 1½in. long, 3in. to 3in. broad, obovate-oblong or ovate-oblong, acuminate, entire, flat, scarcely coriaceous. Branches very pubescent. Chatham Island. A small, prostrate, rambling shrub, adapted to the ornamentation of rockwork or earth-banks.

V. Colensoi (Colenso's). *f.* white, pink, or bluish; corolla tube short, the limb 3in. to 3in. across; racemes sub-terminal, often compound, pedunculate, hardly longer than the leaves, puberulous. Summer. *l.* spreading or erect-patent, almost sessile, 3in. to 1in. long, very coriaceous, linear-oblong or narrowly oblong-obovate, acute, entire, sometimes glaucous. New Zealand. A small, glabrous, half-hardy shrub.

V. cypressoides (Cypress-like). *f.* violet, 3in. in diameter, three or four at the end of the slender branchlets; bracts larger than the sepals, both broadly oblong, obtuse, not ciliated. *l.* 3in. long, ovate-oblong, obtuse, not broader than the branch, opposite pairs connate at the base, erect or adpressed, glabrous, fleshy. New Zealand, Middle Island, &c. A dense, much-branched bush, 6in. to 3ft. or 4ft. high. This is known in gardens under name of *V. salicornioides*.

V. decussata (decussate). A synonym of *V. elliptica*.

V. Derwentia (Rivier Derwent). *f.* light blue or white, rather crowded in racemes often 6in. to 8in. long, in the upper axils; corolla lobes broad, acute, 3in. long, obscurely arranged in two lips. June. *l.* sessile, broadly lanceolate, acuminate, 3in. to 4in. long, serrated. Stems 2ft. to 3ft. high. Australia, 1802. Greenhouse. (A. B. R. 531.) SYN. *V. labiata* (B. M. 1660, 3461).

V. diosmaefolia (Diosma-leaved). *f.* lilac, 3in. to 3in. across; pedicels slender; corymbs terminal, depressed, many-flowered. July. *l.* petiolate, close-set, spreading, rigidly coriaceous, 3in. to 3in. long, 3in. broad, linear-oblong, acute at both ends, entire, not shining, sharply keeled by the midrib below. Branches rather slender. *h.* 3ft. to 12ft. New Zealand, 1835. Greenhouse shrub.

V. elliptica (elliptic). *f.* white, large; corolla limb 3in. to 3in. broad; racemes very short, few-flowered, forming together a loose, sub-corymbose head at the tips of the branchlets. July. *l.* close-set, spreading, uniform, petiolate, 3in. to 3in. long, linear or obovate-oblong, truncate at base, entire, flat, not shining. *h.* 5ft. to 20ft. New Zealand, Chili, Fuegia, and Falkland Islands, 1776. Half-hardy shrub or tree. (L. & P. F. G. iii., p. 101.) SYN. *V. decussata* (B. M. 242).

V. epacridea (Epacris-like). *f.* white, collected into terminal, ovoid, leafy heads; corolla with a long tube, the limb 3in. in diameter. *l.* sessile, 4in. in diameter, densely imbricate, spreading and recurved, 3in. to 3in. long, very broadly obovate-oblong, concave, rigid, glabrous, round or sub-acute at the tip. Stem much branched, rigid, tortuous. New Zealand. Half-hardy shrub.

V. formosa (beautiful). *f.* pale blue, in short, loose racemes in the upper axils, forming terminal, leafy corymbs; corolla lobes 3in. or more long. July. *l.* rather crowded, oval-oblong or lanceolate, entire or rarely obscurely toothed, thick, often recurved, 3in. to 3in. long. *h.* 2ft. to 4ft. Australia, 1835. A

Veronica—continued.

beautiful, corymbosely-branched, greenhouse shrub (B. M. 4512; L. J. F. 3; L. & P. F. G. 95.)

V. gentianoides (Gentian-like). *f.* blue, rather large; pedicels at length $\frac{1}{2}$ in. to $\frac{3}{4}$ in. long; racemes elongated, loose, many-flowered, pubescent. June. *l.* rather thick, entire or with a few crenatures, $\frac{1}{2}$ in. to $\frac{3}{4}$ in. long, the lower ones rosulate, obovate or oblong, the rest remote, oblong or lanceolate. Stems tufted, erect, simple, $\frac{1}{2}$ in. to $\frac{12}{16}$ in. or more high. Caucasus, 1748. (R. M. 1002; S. F. G. 5.) There is a very pretty variety, *alba*, with white flowers.

V. glauco-cerulea (glaucous-blue).* *f.* deep blue, changing to purple, in short, few-flowered spikes, crowded together near the tips of the branchlets; corolla limb $\frac{1}{2}$ in. to $\frac{3}{4}$ in. in diameter; peduncles covered with soft, white hairs. *l.* closely imbricated, $\frac{1}{2}$ in. long, obovate-oblong, acute, rather concave, on short, broad petioles. New Zealand. A small, stout, decumbent or sub-erect shrub, much branched, intensely glaucous throughout, with slightly hairy branches.

V. Grievei (Grieve's). A garden hybrid near *V. saxatilis*, resembling that species, but with brighter coloured-flowers. It is more suitable for flower borders.

V. Guthrieana (Guthrie's). A garden hybrid of which one of the parents is *V. saxatilis*.

V. Hulkeana (Hulke's).* *f.* lilac, sessile; corolla $\frac{1}{2}$ in. broad; spikes spreading, puberulous and glandular, forming long, terminal, opposite-branched panicles, $\frac{1}{2}$ in. to $\frac{10}{16}$ in. long. Summer. *l.* in distant pairs, $\frac{1}{2}$ in. to $\frac{1}{4}$ in. long, oblong-ovate, obtuse or acute, coarsely serrated, rather coriaceous; petioles $\frac{1}{2}$ in. to $\frac{3}{4}$ in. long. Stem nearly simple, terete. *h.* 1 ft. to 3 ft. New Zealand, 1865. Half-hardy shrub. (B. M. 5484.)

V. incana (hoary).* *f.* blue; pedicels much shorter than the woolly calyx; racemes often solitary. July. *l.* petiolate, oblong or lanceolate, narrowed at base, the lower ones obtuse and crenate, the upper ones acute and serrated or entire at apex, both sides (as well as the stem) hoary-tomentosa. *h.* 2 ft. Russia, 1759. *SYN. V. neglecta* (S. B. F. G. 55).



FIG. 165. VERONICA LONGIFOLIA SUBSEQUALIS, showing Habit and single detached Flower.

V. incisa (cut-leaved). *f.* blue, on pedicels rather longer than the calyx; racemes solitary or paniculate, slender. July. *l.* scattered, pinnatifid to the middle or rather deeper; lobes lanceolate, acute. Stems glabrous or canescent-pubescent. *h.* 2 ft. Siberia, 1739. (L. B. C. 1397.)

V. Kirkii (Kirk's). *f.* pure white, shortly pedicellate, disposed in slender racemes in the axils of the uppermost leaves; corolla tube $\frac{1}{2}$ in. long, the limb $\frac{1}{2}$ in. in diameter; racemes $\frac{1}{2}$ in. to $\frac{3}{4}$ in. long, dense-flowered. *l.* $\frac{1}{2}$ in. to $\frac{1}{4}$ in. long by $\frac{1}{2}$ in. wide, lanceolate, decussate or loosely imbricate, entire, smooth, acute, sessile by a broad base, slightly concave, recurved. *h.* 6 ft. to 12 ft. New Zealand. A tall, handsome shrub, with dark brown, polished branches.

V. labiata (lippled). A synonym of *V. Derwentia*.

V. laevis (smooth). *f.* white, $\frac{1}{2}$ in. across; racemes twice as long as the leaves, usually crowded at the ends of the branches.

Veronica—continued.

puberulous. *l.* erect and adpressed, imbricating, rarely spreading, $\frac{1}{2}$ in. to $\frac{3}{4}$ in. long, $\frac{1}{2}$ in. to $\frac{3}{4}$ in. broad, broadly obovate-oblong, obtuse or acute, extremely coriaceous, entire, concave, sharply keeled by the stout, prominent midrib; petioles short, very stout. *h.* 2 ft. to 4 ft. New Zealand. A glabrous shrub.

V. latifolia (broad-leaved). A form of *V. Teucrium*.

V. lignatrifolia (Ligustrum-leaved). *f.* white, rather large; pedicels slender; racemes about twice as long as the leaves, rather slender, loose-flowered, puberulous. *l.* $\frac{1}{2}$ in. to $\frac{3}{4}$ in. long, usually very narrow, linear-lanceolate, acuminate, $\frac{1}{2}$ in. to $\frac{3}{4}$ in. broad, flat or concave and keeled at the back, quite entire, sometimes $\frac{1}{2}$ in. to $\frac{3}{4}$ in. broad and obtuse. New Zealand. A large, glabrous, diffusely-branched, greenhouse shrub.

V. Lindleyana (Lindley's). A form of *V. salicifolia*.

V. longifolia (long-leaved). *f.* lilac; pedicels often shorter than the calyx; racemes solitary or few, dense-flowered. August. *l.* shortly petiolate, opposite or ternately whorled, ovate or cordate at base, ovate- or oblong-lanceolate, acuminate, argutely serrated. Stems glabrous or puberulous. *h.* 2 ft. Central Europe, 1731.

V. l. subsequalis (nearly sessile). *f.* of a beautiful amethystine blue; rachis of the raceme adpressedly-pubescent. *l.* very shortly petiolate, $\frac{1}{2}$ in. to $\frac{3}{4}$ in. long, simply serrated, adpressedly puberulous beneath. *h.* 2 ft. to 4 ft. Japan, 1878. See Fig. 165. (B. M. 6407; G. C. n. s. xvi., p. 789; It. II. 1881, p. 270.)

V. Lyallii (Lyall's).* *f.* white, the veins pink near the throat; corolla nearly $\frac{1}{2}$ in. across; pedicels slender, the lower ones $\frac{1}{2}$ in. long; peduncles axillary, slender, $\frac{1}{2}$ in. to $\frac{3}{4}$ in. long, glabrous, many-flowered. Summer. *l.* shortly petiolate, $\frac{1}{2}$ in. to $\frac{3}{4}$ in. long, ovate to ovate-lanceolate, obtuse or acute, glabrous, with a few coarse serratures. Stems slender, prostrate and rooting, diffusely branched, $\frac{1}{2}$ in. to $\frac{15}{16}$ in. long. New Zealand, 1879. Shrub. (B. M. 6455.)

V. lycopodioides (Lycopodium-like). *f.* white, sessile, disposed in small, dense, oblong heads at the ends of the branches; sepals linear-oblong, obtuse, ciliated; corolla tube very short, the limb $\frac{1}{2}$ in. in diameter. *l.* very densely and closely imbricate, thickly coriaceous, very broadly reniform-ovate, much broader than long, abruptly narrowed into an acute tip, about $\frac{1}{2}$ in. broad; opposite pairs connate at the base. New Zealand. An erect, much-branched, stout shrub.

V. multifida (much-cleft). *f.* light blue; pedicels scarcely exceeding the calyx; racemes dense-flowered. June. *l.* rarely more than $\frac{1}{2}$ in. long, once or twice pinnatifid; segments linear or subulate, rarely oblong, narrowed at base. Stems decumbent or diffuse, woody at base, cano-pubescent, $\frac{1}{2}$ in. long. Central and Eastern Asia, 1748. (B. M. 1679; J. F. A. 329.)

V. neglecta (neglected). A synonym of *V. incana*.

V. officinalis (official). Common Medicinal-herb Speedwell; Fluellen; Ground-hels. *f.* pale blue or lilac, on very short pedicels; corolla $\frac{1}{2}$ in. across; racemes slender, many-flowered. May to July. *l.* all opposite, shortly petiolate, obovate-oblong or orbicular, $\frac{1}{2}$ in. to $\frac{1}{4}$ in. long, serrated. Stem hairy, decumbent; branches $\frac{1}{2}$ in. to $\frac{18}{16}$ in. long, ascending. Europe (Britain). (F. D. 248; Sy. En. B. 984-5.)

V. orchiidea (Orchis-like). A form of *V. spicata*.

V. orientalis (Eastern). *f.* flesh-coloured, small, and shortly pedicellate, or blue, larger, and longer-pedicellate; raceme loose. July. *l.* linear, lanceolate, or cuneate-oblong, entire, toothed, or with a few pinnatifid laciniae, narrowed at base. Stems decumbent or diffuse, woody at base, cano-pubescent or glabrous. Levant, 1748. (L. B. C. 419.) *SYN. V. taurica* (L. B. C. 911).

V. paniculata (panicled). *f.* blue; pedicels longer than the calyx; racemes numerous, loose, many-flowered, paniculate. June. *l.* mostly opposite or ternately whorled, lanceolate, acute, crenate-serrate, narrowed at base, petiolate or rarely sub-sessile, rather thick, pale, glabrous or scarcely puberulous. Stems 1 ft. to 3 ft. high, glabrous or canescent-puberulous. South-Eastern Europe, 1797. *SYN. V. amethystina*.

V. parviflora (small-flowered). *f.* blue, small; corolla $\frac{1}{2}$ in. across; racemes generally straight, about twice as long as the leaves, dense-flowered, pubescent. May. *l.* erect or spreading, $\frac{1}{2}$ in. to $\frac{3}{4}$ in. long, lanceolate to linear-lanceolate, flat or concave and keeled, quite entire, acute or acuminate. *h.* 4 ft. to 6 ft. New Zealand, 1822. Half-hardy shrub. *V. p. angustifolia* (B. M. 5965) is a narrow-leaved form, with lilac flowers.

V. pectinata (comb-like). *f.* blue; corolla ample; pedicels scarcely longer than the calyx; racemes at length as much as 1 ft. long. May. *l.* often small, obovate to oblong-linear, crenate or scarcely incised, narrowed at base. Stems prostrate, cano-pubescent or villous. Syria, &c., 1819.

V. p. rubra (red). A fine variety, with reddish-pink flowers.

V. perfoliata (perfoliate). Digger's Speedwell. *f.* bluish-violet, streaked with purple, in long, slender racemes in the upper axils;

Veronica—*continued*.

corolla lobes nearly rotate, but obscurely bilabiate. August. *l.* amplexical and often more or less connate by their broad bases, ovate or ovate-lanceolate, acuminate or acute, entire or few-toothed, 1in. to 2in. long. Stems simple or slightly branched. *h.* about 3ft. Australia, 1815. (Greenhouse perennial or under-shrub. (B. M. 1936; B. R. 1930; L. B. C. 781.)

V. pimeleoides (Pimelea-like). *f.* deep purple, opposite, in the axils of large, leafy, ciliated bracts; spikes short, very pubescent or tomentose, sub-distichous. *l.* sessile, imbricated, erectopotent, 2in. to 4in. long, broadly ovate-oblong, obtuse, rather concave, obtusely keeled, slightly glaucous. Branches erect, transversely scarred. *h.* 4in. to 10in. New Zealand. A sub-erect, greenhouse shrub.

V. pinguifolia (fat-leaved).* *f.* white; sepals obtuse, ciliated; spikes very short, pilose and pubescent, crowded in heads at the tips of the branches, very dense-flowered. June. *l.* sessile, imbricated, 2in. to 3in. long, ovate-oblong, obtuse, entire, very thick and coriaceous, concave, not keeled. Branches pubescent above, transversely scarred. *h.* 4in. to 8ft. New Zealand, 1870. An erect or decumbent, robust shrub. (B. M. 6147; B. M. 6587, under name of *V. carnosa*.)

V. prostrata (prostrate). A form of *V. Teucrium*.

V. salicifolia (Willow-leaved). *f.* bluish-purple or white, very variable in size and length of corolla tube; pedicels slender; racemes much longer than the leaves, simple, very many flowered, pubescent or glabrate. June. *l.* sessile, 2in. to 6in. long, linear or oblong-lanceolate, acuminate, entire, glabrous. Branches terete, as thick as a crow-quill. New Zealand. A large, half-hardy, glabrous shrub. *V. Lindleyana* (P. M. B. xii. 247) is a form of this.

V. salicornioides (Salicornia-like). The plant grown under this name in English gardens is *V. cuspidata*; the true *V. salicornioides* has apparently not yet been introduced.

V. saturoioides (Satureia-like). *f.* blue; calyx unequally five-partite; corolla limb sub-bilabiate; raceme spicate, 2in. long. May. *l.* opposite, decussate, crowded, oblong or ovate, 4in. long; tip slightly toothed. Stems caespitose; base woody. *h.* 3in. Dalmatia, 1885. (H. G. 1192, fig. 3.)

V. saxatilis (rock-loving). Rock Speedwell. *f.* bright blue, very beautiful; corolla 2in. across; raceme sub-corymbose, terminal, few-flowered. July to September. *l.* 2in. to 4in. long, the lower ones ovate, the upper oblong, coriaceous; teeth very few or none. Stem woody; branches many, 2in. to 4in. long, with leafy barren shoots. Europe (Britain). Plant decumbent. (L. B. C. 704; Sy. En. B. 981.)

V. speciosa (showy). *f.* deep blue-purple; corolla 2in. broad; racemes dense-flowered, 1in. in diameter, not longer than the leaves, stout, erect. May. *l.* sessile or on very short, thick petioles, 2in. to 4in. long, ovate-oblong, rounded at apex, very coriaceous, shining, entire, downy on the midrib above. Branches angled. *h.* 1½ft. New Zealand, 1835. Half-hardy shrub. (B. M. 4057; P. M. B. x. 247.)

V. s. imperialis (Imperial). A very handsome and free-flowering garden variety, producing its purple flowers in large, dense spikes. 1878. (F. d. S. 2517.)

V. s. rubra (red). This differs from the type in having rose-coloured flowers. (F. d. S. 196.)

V. spicata (spike-flowered).* *f.* bright blue; corolla tube shorter than the calyx; stamens very long, purple; spike dense, 1½in. to 3in. long. July and August. *l.* opposite or whorled, 1in. to 1½in. long, sub-sessile, narrow-oblong or oblong-lanceolate, serrated above the middle. Stem 6in. to 18in. long, stout, erect from a decumbent base, leafy. Europe (Britain) &c. (F. D. 52; Sy. En. B. 982. *V. orchidea* (B. M. 2210) is a form of this species, with narrow, tortuous corolla segments.

V. syriaca (Syrian). *f.* blue; corolla rather large; pedicels filiform, several times longer than the calyx; racemes slender, bundle-flowered. June. *l.* lower ones petiolate, upper ones sessile, ovate or ovate-lanceolate, with a few incised teeth; lower floral ones somewhat conformed, the rest small, entire. Stems ascending or diffuse, branched. Syria, 1857. Half-hardy annual. (B. H. vii. 42; F. d. S. 1259.)

V. taurica (Taurian). A synonym of *V. orientalis*.

V. Teucrium (Teucrium). Hungarian or Saw-leaved

the lower ones shortly petiolate, ovate to linear, rounded or cordate at base, more or less toothed or sub-pinnatifid. Sterile stems prostrate; floral ones ascending from a decumbent base, or erect, cano-pubescent or villous. South Europe, 1566. A variable species. (B. H. xxx. 7; L. B. C. 425.) There is a prostrate, small-leaved form

Veronica—*continued*.

with bright blue flowers. (B. M. 3683, under name of *V. prostrata*.)

V. T. latifolia (broad-leaved). A tall form, with broader leaves than the type. (S. B. F. G. 23, under name of *V. latifolia*.)

V. Traversii (Travers)* *f.* white; corolla lobes 2in. across; racemes longer than the leaves, sub-terminal, 1in. to 2in. long, puberulous, many-flowered. Summer. *l.* spreading, sessile, 2in. to 1in. long, ovate or linear-oblong, acute or obtuse, entire, coriaceous, flat. Branches terete. *h.* 2½ft. New Zealand, 1873. Shrub. (B. M. 6390.)

V. vernicosa (varnished). *f.* white; racemes crowded at the ends of the branches, puberulous, 1in. to 1½in. long, often peduncled, tapering or caudate; bracts very small. *l.* close-set, spreading, petiolate, 2in. to 3in. long, 2in. to 3in. broad, ovate-oblong, obtuse or apiculate, varnished on the upper surface, entire, flat or a little concave. New Zealand. A small, stout, glabrous shrub.

V. virginica (Virginian)* Culver's Physic; Great Virginian Speedwell. *f.* white, sometimes bluish; corolla salver-shaped; terminal spike 6in. to 10in. long, with usually several shorter ones from the upper axils. July. *l.* in whorls of three to nine, lanceolate, slenderly acuminate, sometimes oblong, very closely and sharply serrated, 3in. to 5in. long. Stems simple, 2ft. to 6ft. high. North America, 1714. (B. M. Pl. 196.) SYN. *Leptandra virginica*.

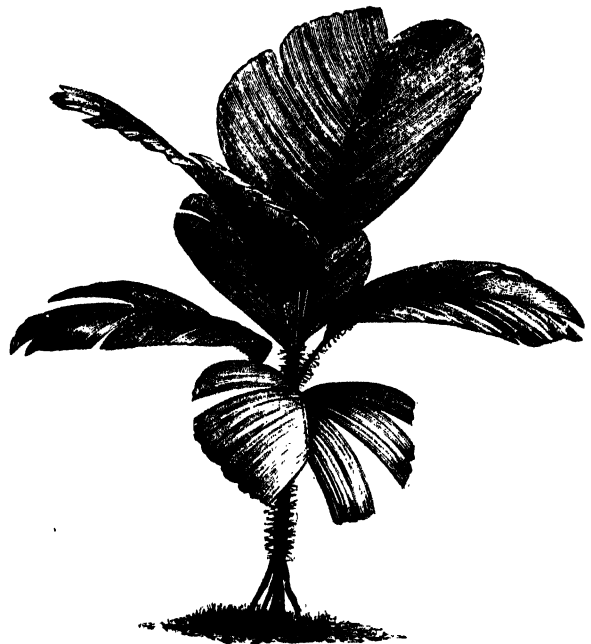
Shaped like a wart.

VERRUCOSE. Warted; covered with wart-like, sessile elevations.

VERSATILE. Turning freely on its support; swinging to and fro.

VERSCHAFFELTIA (named in honour of Ambrosius Verschaaffelt, who wrote a work on Camellias in 1848). SYN. *Regelia* (of gardens). ORD. *Palmæ*. A monotypic genus. The species is a handsome, stovo Palm, requiring similar culture to *Stevensonia* (which see).

V. melanochetos (black-spined). A synonym of *Roscheria*



V. splendida (splendid)* *f.* spathes three; spadix 3ft. to 6ft. long, on a compressed peduncle 3ft. to 4ft. long; flowering branches 7in. to 8in. long. *l.* 4ft. to 7ft. long, 3ft. to 5ft. broad, cuneate-obovate, bright green, bifid, the edges deeply incised,

Verschaffeltia—*continued*.

the primary veins prominent on both surfaces; petioles 6in. to 12in. long, pale green, semi-terete, grooved down the face; sheaths 2½ft. to 3½ft. long, white-granular. Stem 6in. to 12in. in diameter, and (as well as the leaf-sheaths and petioles) very spiny when young. A. 80ft. Seychelles, 1864. See Fig. 166. (F. d. S. 1597-8; I. H. 430; R. G. 1875, p. 308; R. H. 1869, 148.) This has been known in gardens as *Regetia magnifica*, *R. majestica*, and *R. princeps*.

VERTEBRATE. Contracted at intervals, like the vertebrae of animals, there being an articulation at each contraction, as in some leaves.

VERTEX. The apex of an organ.

VERTICAL. Placed in the direction from base to apex.

VERTICIL. A whorl.

VERTICILLASTER. A false whorl, composed, in *Labiata*, of a pair of opposite cymes.

VERTICILLATE. Disposed in a whorl; when several bodies form a ring round a common axis: e.g., leaves round a stem; sepals, petals, and stamens round an ovary.

VERTICORDIA (from *verto*, to turn, and *cor*, cordis, a heart; a title of Venus, to whom the Myrtle was sacred). Juniper Myrtle. Including *Chrysorrhoe*. ORD. *Myrtaceæ*. A genus embracing thirty-seven species of greenhouse shrubs, with usually the aspect of a Heath or Diosma, glabrous except the cilia on the edges of the leaves, limited to Australia. Flowers whitish, pink, or yellow, usually pedicellate in the upper axils, often corymbose, spikeate, or racemose; calyx lobes five, often coloured, elegantly plumose, radiating; petals five, entire, fringed, or digitate; stamens ten, alternating with as many staminodia. Leaves small, opposite or very rarely alternate, entire. A selection of the introduced species is here given. They are of easy culture in a compost of sandy loam and leaf mould. They are readily propagated by cuttings of firm or partially-ripened shoots, inserted under a glass, or in a close frame. An abundance of water and frequent syringings are requisite throughout the summer. The roots should not be allowed to get quite dry at any time.

V. Brownii (B. Brown's). *f.* white, small, very numerous, in dense, broad, terminal, leafy corymba, more or less pedunculate; petals shorter than the calyx lobes. April. *l.* obovate or oblong, very obtuse, keeled or triquetrous, ½in. to ¾in. long. A. 3ft. 1842. Shrub erect, bushy, and much branched.

V. densiflora (dense-flowered). *f.* white or pink, in dense, terminal, leafy corymba, usually pedunculate; petals short, nearly orbicular, fringed. June. *l.* linear, semi-terete or triquetrous, usually slender, obtuse or mucronate, three to four lines long, densely crowded on the short lateral shoots, or rarely ½in. long and looser. A. 3ft. to 4ft. 1822. Shrub erect and bushy.

V. Fontanesii (Desfontaines'). *f.* white or pink, in terminal, leafy corymba, or rounded, dense panicles, close above the stem leaves or shortly pedunculate; petals as long as the calyx lobes, slightly pubescent. April. *l.* linear, semi-terete or triquetrous, usually slender, obtuse or mucronate, three to four lines long, densely crowded on the short lateral shoots, or rarely ½in. long and looser. A. 3ft. to 4ft. 1822. Shrub erect and bushy. SYN. *Chamaelaucium plumosum*.

V. insignis (remarkable). *f.* pink, on pedicels often more than ½in. long, in loose, irregular, terminal, leafy corymba; petals orbicular, ciliated. April. *l.* broadly ovate to oblong, very obtuse or almost mucronate, two to four lines long, the lower ones, and those of the barren branches, often laterally compressed. A. 1ft. to 2ft. 1839. Shrub erect, branching from

V. nitens (shining). *f.* golden-yellow, on slender pedicels, in a broad, terminal corymb; petals about as long as the calyx, irregularly toothed. April. *l.* linear, semi-terete, rather slender, acute or mucronate, mostly ½in. to ¾in., but the lower ones sometimes above ½in., long. A. 2ft. 1862. Shrub corymbosely branched. (B. M. 5286.) SYN. *Chrysorrhoe nitens*.

VERULANIA. A synonym of *Pavetta* (which see).

VERVAIN. See *Verbena*.

VERVAIN, BASTARD. See *Stachytarpheta*.

VERVAIN SAGE. See *Salvia Verbenaca*.

VESICARIA (from *vesica*, a bladder or blister; alluding to the inflated pods). Bladder Pod or Seed. ORD. *Cruciferae*. A genus embracing about a score species of mostly hardy, branched, annual or perennial herbs, found in temperate North America, South Europe, Syria, Persia, and the Andes. Flowers yellow or purple, variable in form, large, rarely small; sepals equal at base, or the lateral ones sub-saccate; racemes obraceate. Pods globose or inflated. Leaves entire, sinuate, or pinnatifid. The species here described are well adapted for ornamenting rockwork. They are of the simplest culture. The annuals may be increased by seeds, and the perennials by divisions.

V. arctica (Arctic). *f.* yellow, many in dense racemes. August. *l.* oblanceolate and linear-spathulate, of a beautiful silvery colour, clustered. A. 1ft. North America, 1828. Perennial. (B. M. 2882.)

V. gracilis (slender). *f.* yellow; petals spreading, obovate, nearly sessile; racemes elongated. June. *l.* lanceolate, entire or slightly angular, nearly naked; lower ones sub-spathulate, petiolate. Stems many, filiform, rigid, slightly scabrid. A. 6in. Texas, 1834. Annual. (B. M. 3533.)

V. graeca (Greek). *f.* petals nearly twice as long as the calyx, the lamina yellow, elliptic. Summer. *l.* of the sterile branches thick, oblong-spathulate, slightly acute; those of the fertile stems sessile, erect, acute, the margins ciliated and often denticulate. Greece. Perennial. SYN. *Alyssum utriculatum*.

V. grandiflora (large-flowered)*. *f.* yellow, large; petals rounded, spreading, very shortly clawed; racemes elongated, many-flowered. July. *l.* oblong; radical ones sub-lyrately pinnatifid, petiolate; cauline ones sinuate-toothed, sessile. Stem erect, flexuous. A. 1ft. Texas, 1835. A stellately-pubescent annual. (B. M. 3464; S. B. F. G. ser. ii. 401.)



FIG. 167. VESICARIA UTRICULATA, showing Habit and detached Flower.

V. utriculata (bladder-podded)*. *f.* yellow, closely resembling the Wallflower; calyx bisaccate at base. April to June. *l.* oblong, quite entire, smooth; lower ones ciliated, somewhat spathulate. A. 1ft. South Europe, 1730. Perennial. See Fig. 167. (S. F. G. 627.)

VESICLE. A small bladder or air cavity.

VESICULAR, VESICULATE, VESICULOSE, VESICULIFORM. Inflated; bladdery; appearing as if composed of little bladders.

VESLINGIA (named after John Vesling, 1598-1649, a traveller in the East, and Professor of Botany at Padua). SYNS. *Guisotia* (the proper name, according to Bentham and Hooker), *Rantilla*. ORD. *Compositae*. A small genus (three species) of tropical African, stove, annual herbs. Flower-heads yellow, at the tips of the branches or pedunculate in the upper axils, heterogamous;

Veslingia—*continued*.

involucral bracts somewhat biseriate; receptacle convex or conical; ray florets ligulate, three-toothed at apex; achenes glabrous. Leaves opposite or the upper ones alternate, entire or toothed. Only one species calls for description here. It thrives in any rich soil, and may be increased by seeds.

V. sativa (cultivated). *f. heads* golden-yellow, 2in. across, rather handsome; involucre simple, of five leaflets. August and September. *l. amplexicaul*, cordate-lanceolate, remotely serrated. *h. fl.* 1806. *SYN. Verbascina sativa*. (B. M. 1017.) *Guzotia oleifera* is now the correct name of this plant.

VESPA. See Wasps.

VESPERTINE. Appearing or expanding in early evening.

VESPUCIA (commemorative, in honour of Amerigo Vesputci, 1451-1512, after whom America is named). *Hydrocleis* is now the correct name of this genus. **ORD. Alismaceae**. A small genus (three or four species) of highly glabrous, stove, aquatic herbs, inhabiting tropical South America. Flowers solitary, large, hermaphrodite, on long, thick peduncles; perianth segments six, the three outer ones (sepals) persistent, the three inner ones (petals) yellow, larger, very slender, deciduous; stamens numerous, hypogynous, in many series. Leaves fascicled, floating, ovate or cordate-orbicular, the nerves converging at the apex; petioles thick, sheathing at base. *V. Humboldtii*, the only species calling for description here, is of easy culture in a tub or cistern of water. It may be readily increased by seeds, or by runners.

V. Humboldtii (Humboldt's). *f.*, sepals narrow-ovate, obtuse; petals broadly obovate-cuneate, ample; stamens numerous, fertile or sterile; peduncles springing from the nodes, one-flowered. May. *l.*, both radical and cauline ones broadly ovate or sub-orbicular, obtuse, loosely cordate at base, 2in. to 3½in. long, 1½in. to 2½in. broad, coriaceous; petioles terete, 4in. to 6in. long. Venezuela to Buenos Ayres. *SYN. Limnocharis Humboldtii* (B. M. 3248; B. R. 1640). *Hydrocleis Commersonii* is now the correct name of this plant.

VESSELS. In the vascular system of vascular plants (i.e., the flowering plants and higher Cryptogams), Vessels are found plentifully; but they do not occur in any groups of plants lower than the Ferns and their allies, though the laticiferous cells of a few Fungi are a good deal like them in appearance.

Vessels may be grouped as follows: 1. True Vessels, being those of the fibro-vascular bundles, which compose the vascular system. These comprise (a) Vessels of the Wood ("xylem") and (b) Vessels of the Bast ("phloem"), or sieve-tubes. 2. Vessels of the Cellular Tissue, or Ground Tissue, scattered through the pith and cortex of the roots and stems, and among the green cells of leaves. These three classes of Vessels differ materially in their nature, contents, and uses. The two classes of true Vessels agree in being present in all complete fibro-vascular bundles; and also in being always formed by the absorption of the walls that separate elongated cells placed in rows, either end to end, or overlapping more or less at the tapering ends, so that tubes are thus formed of indefinite length. In most Vessels it is easy to trace the cells of which they are formed by the marks that remain on the walls where the cells meet. The Vessels of the Wood differ from those of the Bast in several important respects. But before stating these it may help to elucidate the subject if a brief account of the ordinary structure of fibro-vascular bundles is given.

We shall select for description such a bundle as may be found in the stems of many Monocotyledons. In these plants the bundles usually remain separated from one another, during their whole existence, by the cellular tissue in which they are imbedded; and after they are once formed they do not undergo changes, so that the arrangement of the cells and Vessels of which they are built up is little, if at all, altered during growth. The simplest bundles of this kind consist of a group of the Vessels

Vessels—*continued*.

of the Wood (called "tracheæ"), united with a group of Vessels of the Bast ("sieve-tubes"); but in most parts of plants these are accompanied by cells, some of which are elongated and slender (fibre-cells or "prosenchyma") while others are little, if any, longer than broad ("parenchyma"). Some of the cells usually remain thin-walled; but others have the walls much thickened by deposits upon the inner surface, and then the tissue is called "sclerenchyma." This tissue adds to the strength of the bundle, being arranged alongside the Vessels (as wood-fibres or hard-bast fibres), or forming a sheath surrounding the bundle entirely or in part. The commonest position of the wood and bast of each bundle, as seen in transverse section, is that in which the wood lies nearer the centre of the stem, and the bast nearer the circumference; but in some plants there is bast inside, but not outside, of the wood, or there may be bast both inside and outside, or even all round the wood. Less often the bast lies in the middle, with the wood all round it. The arrangements in leaves correspond with those in stems. If the leaf is held erect, with the upper surface next the stem, that surface is nearer the centre of the stem, and the lower surface is further from it. In accordance with this, the Wood-vessels of each bundle are usually nearer the upper surface, and the bast nearer the lower surface of the leaf. In roots the earliest bundles to appear (called the primary wood-bundles), consist entirely of Wood-vessels, which are formed successively nearer and nearer the centre of the root, increasing in size as they come nearer to the centre. Between them, and at the same distance from the centre as they are, the bast is formed; hence, the root is markedly different from the stem in the arrangements of the bundles. In the stems and roots of Monocotyledons, the bundles early assume the appearance and structure that they permanently retain; but in woody Dicotyledons and Conifers, changes occur after the first year of growth, which greatly affect their original appearance. In each bundle in the stem, the wood and the bast are separated by a layer of thin-walled cells (the "cambium") which continues to form new cells by divisions parallel to its surfaces, producing new wood to the outside of the older wood, and new bast to the inside of the older bast. The cambium forms a complete cylinder around the wood of the stems of these plants, and gives origin to ring above ring of wood, usually one in each year of growth. The bundles grow so large that they are separated only by narrow belts of cells (medullary rays), the oldest of which runs from the pith in the centre to the cortex outside the bast; while the new rays formed each year run from the inner border of the ring of wood to the cortex. The fibro-vascular bundles can scarcely be separated, after a time, from one another; but the wood and the bast are easily disunited in most Dicotyledons at the cambium, as the cells of this ring readily give way, and the bark is thus easily separable from the wood. The bast forms the innermost layer of the bark, and its connection with the wood tends to become less evident than it was before the bundles were united by the continuous cambium.

In the roots of Dicotyledons and Conifers, the earliest-formed wood-bundles do not grow; but there is a layer of cambium to the inside of each bast bundle, and soon this layer begins to form wood from its inner surface, and bast from its outer. After a short time, the cambium forms a continuous layer like that in the stem, and the roots in cross-sections look much like stems, except that the pith in the centre is often small or wanting, and that a practised eye can usually detect the primary wood-bundles lying close to the centre, and free from the bundles formed by the cambium.

We must now pass to the various kinds of Vessels met with in the wood and the bast. In the wood of all

Vessels—continued.

bundles there are "spiral" or "annular" Vessels. These are long, slender tubes, which appear round in transverse section. They frequently show very slight traces of the cells of which they were built up. The characteristic feature in them is the existence of a peculiar thickening deposit in the vessel, which, in a longitudinal section of the bundle, is not unlike a glass tube inclosing a closely-wound spiral wire, or wire rings; or a more familiar comparison may be made with an indiarubber tube, kept open by a wire spirally coiled in its interior. Besides spiral and annular Vessels, the wood-bundles very generally contain others, in which the thickening deposits are laid down on the inner surface of the walls in the form of a more or less regular network ("reticulated Vessels"), or of the steps of a ladder ("scalariform Vessels" of Ferns and their allies), or covering the wall, so as to leave only narrow tubes or pits through the new layers ("pitted or dotted Vessels," or "Ducts"). All these Vessels show an angular form in transverse section; and they are generally wider than the spiral Vessels. They also show distinctly the boundaries of the cells of which they are built up; though the openings from cell to cell are always relatively large. Spiral and annular Vessels are very rarely formed by the cambium; hence, in Dicotyledons and in Conifers, they are present in the stems and roots usually only in the earliest-formed wood—i.e., they surround the pith; and, at one period, they were supposed to form around the pith a peculiar organ, which was called the "medullary sheath." In Dicotyledons, the Vessels in the wood formed by the cambium are almost all reticulated, dotted, or pitted. In Conifers, very few Vessels are formed by the cambium, their work being done by wood-cells, with openings from one to the other of a peculiar nature. All the characteristic Vessels of the Wood very soon lose their protoplasm, and contain only air or sap, or more generally, both air and sap. The walls of fully-formed Wood-vessels are lignified and firm.

The Vessels of the Bast are very distinct from those of the wood. They are always present in the soft bast (though not always easily detected, except by an expert microscopist); but a few may also be found in some plants in the pith or the cortex. They assume the form of slender tubes, with thin, flexible walls, unmarked by thickening deposits. The walls separating the cells that make up these Vessels are not entirely absorbed (as is the case in the Wood-vessels). They can always be recognised as cross-partitions; but they are pierced by numerous small openings, so as to resemble a sieve, whence they are called "sieve-plates," and the Vessels are called "sieve-tubes." Often, the side walls of adjoining tubes also show sieve-plates. The sieve-tubes retain their protoplasmic contents; and the protoplasm extends through the sieve-plates. Sachs believes that the new protoplasm is largely produced in the sieve-tubes; and there is no doubt that they are the channels by which the protoplasm is chiefly, if not entirely, carried from one part of a plant to another, as may be required during growth.

The Vessels of the ground-tissue are of far less general occurrence than those of the vascular system; and they are very different from these in their nature, if we except the small, scattered bundles of sieve-tubes that traverse the ground-tissues of certain plants. The only form of ground-tissue Vessels that calls for special mention is that containing "latex," from which the Vessels themselves are called "Laticiferous Vessels." They exist only in certain orders of plants, chiefly among Dicotyledons, e.g., *Camparulaceæ*, many *Compositæ*, *Euphorbiaceæ*, *Ficoideæ*, *Papaveraceæ*. Among Monocotyledons, they can scarcely be said to exist in their characteristic form, or with their characteristic contents. Laticiferous Vessels vary in their mode of origin in different plants. In most (e.g., Poppies, Dande-

Vessels—continued.

lion), they are formed, like other Vessels, by the union of cells, of which the dividing-walls are entirely or partially absorbed. Thus very irregular Vessels are formed, which unite freely with one another by branches, so as to form a copious network, with free inter-communication. The walls of these Vessels seldom show thickening deposits. In a few orders (*Asclepiadeæ*, *Euphorbiaceæ*), the Laticiferous Vessels are probably formed, not by the union of cells, but by the elongation and branching of cells, which are not divided by cross-partitions, and which thus reach a very great length. It is believed, by many botanists, that the Laticiferous Vessels of some plants (e.g., *Rhus*) are really intercellular spaces, into which the latex is poured. The Laticiferous Vessels frequently accompany the sieve-tubes, and may even take their place to some extent. In those Monocotyledons that possess latex, it is contained in rows of large cells, separated by walls, in which perforations have not been clearly made out (*Allium Cepa*); or, in those plants (*Galanthus*) in which the Vessels consist of cells, with perforated walls, the contents do not resemble latex, but are only clear sap, with raphides, i.e., slender crystals of Oxalate of Lime. The latex, in Dicotyledons, is a peculiar fluid, which at once appears on breaking any part of a plant in which it exists. It is clear while in the uninjured tissues; but on exposure to the atmosphere, on a broken surface, it becomes turbid. It is then white, like milk, in most plants; but in some it is coloured yellow (*Chelidonium*) or orange by pigments in it. The microscope shows that it is chiefly composed of watery sap, in which float myriads of extremely minute granules: these, as in milk, are the cause of its opaque, white appearance when exposed to the air. On continued exposure to the air, or mixture with alcohol, acids, &c., masses separate from the latex in the form of "coagula," which usually become dark in colour. These coagula often afford useful products, e.g., Opium, and Caoutchouc, or Indiarubber. They vary considerably in composition, texture, and properties. The latex usually has dissolved in it small quantities of sugar, gum, protoplasm, and alkaloids; and starch granules are present in the latex of some plants (*Euphorbia*). In the Papaw (*Carica Papaya*), there is a peculiar substance ("papayotin") dissolved in the latex, which exerts a digestive action on muscular fibre. It is believed by many botanists that the Laticiferous Vessels may be of the same use in plants that veins are in animals; but the plants that possess them are comparatively few, and there is never a central organ for propelling the latex, as the heart propels the blood. The latex, like the blood, contains substances employed in the nutrition of the plant, and also substances that must be regarded as mere excretions formed during the processes of growth, and that would be hurtful if allowed to remain in the cells. Laticiferous Vessels are confined to the higher plants; but Laticiferous cells occur among some of the cellular Cryptogams, and notably in the genus *Lactarius*, among Mushrooms.

VESTIA (named in honour of L. C. de Vest, 1776-1840, Professor at Götting). ORD. *Solanaceæ*. A monotypic genus. The species is an interesting, erect, glabrous, much-branched, greenhouse shrub. For culture, see **Cestrum**.

V. lycioides (Lycium-like). Chilean Box-thorn. *f.* yellow, solitary or few at the tips of the branches, pendulous; calyx shortly five-toothed, $\frac{1}{2}$ in. long; corolla tube $\frac{1}{2}$ in. long, the limb of five induplicate-valvate lobes; stamens five, exerted. June. *l.* entire, oblong or obovate, shining, slightly fleshy, $\frac{1}{2}$ in. to $\frac{3}{4}$ in. long; petioles about $\frac{1}{2}$ in. long, channelled above. *h.* 3 ft. Chili, 1815. (B. M. 2412; B. R. 259.)

VETCH. See **Vicia**.

VETCH, BASTARD OR BLADDER. See **Phaca**.

VETCH, BITTER. See **Orobans**.

VETCH, CHICKLING. See *Lathyrus sativus*.

VETCH, CROWN. A popular name for *Coronilla* (which see).

VETCH, LIQUORICE. A common name for *Astragalus glycyphyllos* (which see).

VEXILLUM. The standard or large posterior petal in a papilionaceous corolla.

VIBORGIA (named in honour of Eric Viborg, 1759-1822, Professor of Botany at Copenhagen). SYN. *Wiborgia*. ORD. *Leguminosae*. A genus consisting of seven species of South African, rigid, sometimes spiny, greenhouse



FIG. 168. FLOWERING BRANCHLET OF *VIBURNUM MACROCEPHALUM* KETELEERI.

VETCH, MEDICK. A common name for *Onobrychis* (which see).

VETCH, MILK. See *Astragalus*.

VEXILLARY. An aestivation in which one piece is considerably larger than the others, and is folded over them, they being arranged face to face, as in papilionaceous flowers.

shrubs. Flowers yellow, in terminal, often unilateral racemes; calyx teeth sub-equal; standard ovate or orbicular; keel incurved; bracts and bracteoles small or inconspicuous. Pods stipitate, flat, indehiscent. Leaves digitately trifoliolate. Only one species calls for mention in this work. It thrives in a mixture of sandy loam and fibry peat. Cuttings of young shoots should be inserted in sandy soil, under a glass, in May.

Viborgia—continued.

V. obovata (obovate-leaved). *f.*, racemes terminal or spuriously lateral, 3in. to 8in. long, densely many-flowered. July. *l.* rather distant; leaflets cuneate-oblong, obtuse or emarginate, the young ones thinly silky, the older ones glabrate. Branches long, twiggy, graceful. *h.* 3ft. to 6ft. SYN. *Crotalaria floribunda* (L. B. C. 569).

VIBURNUM (the old Latin name used by Virgil, &c.). Including *Tinus*. ORD. *Caprifoliaceæ*. A genus comprising about eighty species of mostly hardy, deciduous trees and shrubs, indigenous in North temperate and subtemperate regions and the Andes, rare in the West Indies and Madagascar. Flowers white or pinkish, articulated with the pedicels, one or two-bracteolate, disposed in axillary or terminal, sub-umbellate corymbs or panicles, hermaphrodite, or the outer ones larger and neuter; calyx tube turbinate or ovoid, the limb short, equally five-toothed, persistent; corolla rotate, campanulate, or tubular, the limb of five equal, imbricated lobes; stamens five, inserted in the corolla tube (in one species biserial); filaments short or elongated; anthers oblong, exserted; disk none. Drupe dry or fleshy, ovoid or globose, terete or compressed, one or spuriously two or three-celled, one-seeded. Leaves opposite, very rarely ternately whorled, petiolate, entire, serrated or dentate; stipules inconspicuous or obsolete, in a few cases ample. The culture is of the easiest description. The species thrive in almost any soil, and may be readily propagated by layering, or by cuttings of the half-ripened shoots, inserted in sandy soil, under handlights, in a somewhat shady position. The best-known species are here described; except where otherwise indicated, they are hardy, deciduous shrubs with white flowers, from North America.

V. acerifolium (Maple-leaved). Dockmackie. *f.*, cymes small, on slender peduncles. May and June. *fr.* crimson, turning purple, with a flattened stone. *l.* coarsely toothed and somewhat three-lobed, roundish, the base truncate or cordate, the pointed lobes diverging. *h.* 3ft. to 6ft. 1736. (W. D. B. 118.)

V. cotinifolium (Cotinus-leaved). Indian Wayfaring-tree. *f.* small; corymbs 2in. to 3in. in diameter, generally terminal, dense, the branches stellately tomentose. June. *l.* ovate or elliptic, obtuse at base, nearly entire, rarely coarsely crenate, usually woolly beneath. *h.* 5ft. to 10ft. Himalays, 1830. (B. R. 1650.)

V. dentatum (toothed-leaved).* American Arrow-wood. *f.* in pedunculate cymes. June. *fr.* blue or purple, small, ovoid. *l.* broadly ovate, slightly cordate at base, very numerous and sharply toothed, pale, often with hairy tufts in the axils of the straight veins; petioles slender. *h.* 5ft. to 10ft. 1763. (W. D. B. 25.)

V. dilatatum (dilated).* *f.* ½in. in diameter, very shortly pedicellate; cymes sessile or on stout peduncles, much branched, 2in. to 6in. in diameter. June. *l.* variable, 2in. to 5in. long, orbicular to obovate, usually abruptly and obtusely pointed, coarsely toothed, rounded or cordate at base, slightly hairy; petioles ½in. long. *h.* 10ft. Japan, 1845. A very handsome shrub. (B. M. 6215.)

V. edule (edible). A synonym of *V. Opulus*.

V. Fortunei (Fortune's). A garden synonym of *V. macrocephalum*.

V. Keteleeri. See *V. macrocephalum Keteleeri*.

V. Lantana (plant). Common Wayfaring-tree. *f.* ½in. in diameter, all perfect; cymes flat-topped, with stout rays. May and June. *fr.* black, flattened, ½in. long. *l.* broadly oblong-cordate, 2in. to 4in. long, serrulated, rugose, obtuse, exstipulate. *h.* 6ft. to 20ft. Europe (Britain). Shrub scarily pubescent. (J. F. A. 341; Sy. En. B. 640.)

V. l. foliis-variegatis (variegated-leaved). *l.* variegated with white and yellow.

V. lantanoides (Lantana-like). American Wayfaring-tree; Hobbie Bush. *f.* handsome, in very broad and flat, sessile cymes, the outer flowers much the larger. May. *fr.* red, turning darker, ovoid. *l.* round-ovate, ½in. to 8in. across, abruptly pointed, cordate at base, closely serrated, pinnately many-veined, the veins beneath (as well as the stalks and branchlets) rusty-scuffy. 1820. A straggling shrub, the re- branches often rooting. (L. B. C. 1570.)

Viburnum—continued.

V. Lentago (Lentago). Sheep Berry; Sweet Viburnum. *f.* all perfect, in a sessile cyme. May and June. *fr.* black, or with a blue bloom, edible, sweet, oval, ½in. or more long. *l.* ovate, strongly pointed, closely and very sharply serrated; petioles long and margined. *h.* 15ft. to 30ft. 1761. Treas. (W. D. B. 21.)

V. macrocephalum (large-headed).* *f.* in compound, subpyramidal cymes, the neuter flowers large. June. *l.* ovate, flat, obtuse, denticulate, slightly scabrous, beneath (as well as the branches, petioles and peduncles) stellately furfuraceous-pubescent. *h.* 20ft. China, 1844. (B. R. 1847, 43; F. J. S. 263, 264.) SYN. *V. Fortunei* (of gardens).

V. m. Keteleeri (Keteleer's). This is the wild type, and bears the same relationship to *V. macrocephalum* that the wild *V. Opulus* does to the garden *V. O. sterilis*. See Fig. 168. (B. II. 1863, 31.)

V. molle (soft). *f.* in pedunculate, stellate-pubescent cymes. July. *fr.* purple or blue, ovoid, small, oily. *l.* broadly oval, obovate, or ovate, scarcely pointed, slightly cordate at base, coarsely crenate or repand-toothed, the lower surface, as well as the rather slender petioles and branchlets, softly downy. *h.* 6ft. to 12ft. 1812.

V. nudum (naked). American Withe Rod. *f.* all alike and perfect; cyme shortly pedunculate. May and June. *fr.* black, or with a blue bloom, globose, sweet, round-ovoid, ½in. long.



FIG. 169. FLOWERING BRANCHLET OF *VIBURNUM OPULUS STERILIS*.

l. rather thick, oval, oblong, or lanceolate, not shining, the margins entire, repand, or crenate. *h.* 6ft. to 10ft. 1752. (B. M. 2281; W. D. B. 20.)

V. n. cassinoides (Cassine-like). *l.* more opaque, often toothed. 1761. (W. D. B. 24, under name of *V. squamatum*.)

V. n. Claytoni (Clayton's). *l.* nearly entire, the veins somewhat prominent beneath.

V. obovatum (obovate-leaved). *f.* in small, sessile cymes. May. *fr.* black, or with a blue bloom, sweet, ovoid-oblong. *l.* obovate or spatulate, obtuse, entire or denticulate, rather thick, ½in. to 1½in. long, shining. *h.* 2ft. to 8ft. 1812. (L. B. C. 1476.)

V. odoratissimum (very odorous).* *f.* with the scent of *Olea fragrans*; corymbs 2in. to 4in. high, usually pedunculate. May. *fr.* ovoid-oblong, ½in. by ½in., hardly compressed. *l.* elliptic, 5½in. long, acute, cuneate at base, entire or sparingly sinuate-toothed, coriaceous, glabrous; petioles stout, ½in. to 1in. long. *h.* 6ft. to 10ft. Khasia Mountains, China, &c. 1818. Half-hardy. (B. R. 456.)

V. Opulus (Opulus).* Cranberry-tree; Dog Elder; Dog Rowan-tree; Guelder Rose; Marsh or Water Elder; Snowball-tree. *f.*, outer ones white, 2in. in diameter; inner ones creamy-white, ½in. in diameter; cymes sub-globose, 2in. to 4in. in diameter. June and July. *fr.* red, globose, translucent, ½in. in diameter. *l.* 2in. to 3in. long, three-lobed, stipulate, the young ones downy; lobes unequal, serrated; stipules glandular, adnate to the petioles. Branches slender, lenticellate. *h.* 6ft. to 8ft. Europe (Britain) and North America. (F. D. 661; Sy. En. B. 639.) SYNS. *V. edule V. oxyccocus* (L. B. C. 1123).

Viburnum—*continued*.

- V. O. foliis-variegatis** (variegated-leaved). *l.* variegated with white and yellow.
- V. O. nana** (dwarf). A very distinct little plant, scarcely 1ft. in height.
- V. O. sterilis** (sterile)*. Garden Guelder Rose; Snowball-tree. *fl.*, nearly the whole cyme consisting of radiant, sterile flowers, and becoming globular. A very handsome shrub. See Fig. 169.

Viburnum—*continued*.

- obtuse or sub-acute, slightly revolute-margined, crenulate-serrulate. Branches terete, erect. *h.* 6ft. to 7ft. Japan, 1875. (B. M. 6172.) SYN. *V.* -----
- V. suspensum** (uncertain). A synonym of *V. Sandankwa*.
- V. Tinus** (Tinus)*. Laurustinus. *fl.* white, but rose-coloured before expansion, and sometimes a little time afterwards; corymbs flat. December to March. *fr.* dark blue. *l.* ovate-

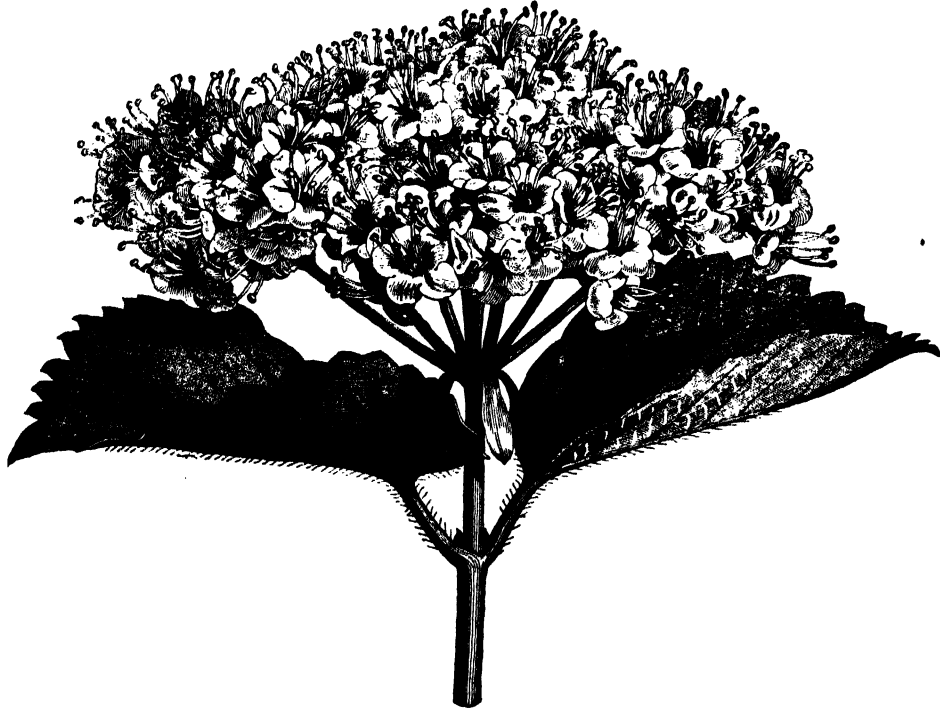


FIG. 170. FLOWERING BRANCHLET OF VIBURNUM PUBESCENS.

- V. orientale** (Eastern). *fl.* in terminal, not radiant, corymbs. July. *fr.* oblong, compressed. *l.* three-lobed, acuminate, coarsely and bluntly toothed; petioles glandless, glabrous. *h.* 6ft. to 10ft. (Caucasus, 1827, 1863. (R. G. 567.)
- V. oxycoccos** (Cranberry-fruited). A synonym of *V. Opulus*.
- V. plicatum** (plaited)*. *fl.* radiant, in the cultivated plant all sterile, dilated, and crowded in globose cymes resembling those of the Guelder Rose. Many. *l.* rounded at base, ovate or somewhat ovate-orbicular, cuspidate, coarsely serrated, somewhat plicate, dark green, glabrous above, tomentose beneath. *h.* 4ft. to 6ft. Japan, 1846. (B. R. 1874, 51; F. d. S. 278; G. C. n. s., vi., p. 141; L. J. F. 88; L. & P. F. G. 29; S. Z. F. J. 37.)
- V. p. tomentosum** (tomentose). This differs from *V. plicatum* in its more hairy leaves, and in the sterile flower being generally confined to the outer part of the inflorescence. (S. Z. F. J. 38, under name of *V. tomentosum*.)
- V. prunifolium** (Prunus-leaved)*. American Black Haw. *fl.* in a sessile cyme. May. *fr.* similar to, or rather smaller than, that of *V. Lentago*. *l.* oval, obtuse or slightly pointed, finely and sharply serrated, 1in. to 2in. long. 1731. A tall shrub or small tree. (W. D. B. 23.)
- V. pubescens** (downy). *fl.* in pedunculate cymes. June. *fr.* dark purple, small, ovoid. *l.* ovate or oblong-ovate, acute or acuminate, the veins and teeth fewer and less conspicuous than in *V. dentatum*, the lower surface and the very short petioles softly downy, at least when young. 1736. Low and straggling. See Fig. 170.
- V. rugosum** (wrinkled-leaved). *fl.* all fertile; corymbs not radiant; general involucre seven-leaved. December to March. *fr.* ovate-oblong. *l.* broad, ovate, wrinkled, hairy. *h.* 4ft. to 6ft. Canary Islands, 1796. A half-hardy, evergreen shrub, very like *V. Tinus*, but having leaves larger, and hairy all over. (B. M. 2062; B. R. 376; L. B. C. 859.)
- V. Sandankwa** (Sandankwa). *fl.*, corymbs mostly terminal, sometimes axillary, short, small, erect, trichotomous. June. *fr.* red, globose. *l.* shortly petiolate, ovate or ovate-oblong,

- oblong, quite entire; ramifications of the veins beneath, as well as the branchlets, glandular-hairy. *h.* 8ft. to 10ft. South Europe, &c., 1596. Evergreen. See Fig. 171. (B. M. 38.)
- V. T. Froeblii** (Froebel's). A compact form, with lighter green leaves and whiter flowers than the type.



FIG. 171. FLOWERING BRANCHLET OF VIBURNUM TINUS.

Viburnum—continued.

V. T. hirtum (hairy). *f.* appearing in autumn, and persistent through the winter. *l.* oval-oblong, hairy beneath and on the margins.

V. T. lucidum (clear-leaved).* *f.* and cymes larger than in the type. Spring. *l.* also larger, ovate-oblong, glabrous, shining. Mount Atlas. There is a form having leaves more or less variegated with white.

V. T. strictum (erect). A variety of somewhat erect and fastigate habit. Gardens. There is also a variegated sub-variety.

V. T. virgatum (twiggy). *l.* oblong-lanceolate, pilose below and on the margins. Italy.

VICIA (the old Latin name used by Virgil, &c.). Tare; Vetch. Including *Ervum*. *Faba* is also included, by the authors of the "Genera Plantarum," under this genus, but is kept distinct in this work. ORD. *Leguminosæ*. A genus comprising about 100 species of mostly hardy, annual or perennial herbs, of variable habit, dispersed over North temperate regions and South America. Flowers often blue, violet, or yellowish-white, axillary, racemose; calyx teeth sub-equal, or the lower longer; standard obovate or oblong, emarginate; wings adnate to the keel; bracts very caducous. Pods compressed, two-valved. Leaves abruptly pinnate; leaflets usually numerous, entire or toothed at the tip; petiole often ending in a tendril. The following species are British: *V. angustifolia*, *V. bithynica*, *V. Cracca*, *V. hirsuta* (Common Tare), *V. lathyroides*, *V. lutea*, *V. Orobus* (Bitter Vetch), *V. sativa* (Common Vetch; Fitch; Fitches), *V. sepium*, *V. sylvatica* (Wood Vetch), *V. tetrasperma*, *V. hybrida* and *V. lavigata*, formerly found in England, are now extinct. *V. sativa* is extensively grown as fodder for cattle. Few of the species are of any horticultural value. Those described below are of simple culture in common garden soil. They may be increased by seeds, the perennials also by divisions.

V. argentea (silvery).* *f.* pinkish, the tip of the keel spotted with black, secund, rather loose; peduncles many-flowered. June. *l.* cinereous-silvery, without tendrils; leaflets oblong-linear, mucronate. Stem tetragonal. *h.* 1ft. Pyrenees, 1827. Perennial. (B. M. 2946.)

V. atropurpurea (dark-purple). *f.* purple, secund, approximate; calyx teeth bristly; peduncles many-flowered, scarcely as long as the leaves. June. *l.* leaflets oblong, mucronate, opposite or alternate; stipules often toothed at base. Stem tetragonal. *h.* 3ft. Algiers, 1815. A villous annual. (B. R. 871.)

V. Cracca (Cracca). Cow Vetch; Tufted Vetch. *f.* bright blue, 4in. long, drooping; racemes dense, ten to thirty-flowered, unilateral; peduncles longer than the leaves. June to August. *l.* 1in. to 4in. long, sessile, linear-oblong, acute or mucronate. Stems 2ft. to 6ft. long, scandent or diffuse. Europe (Britain). Perennial. (F. D. 804; Sy. En. B. 385.)

V. galegifolia (Galega-leaved). A synonym of *Suaresona gale-*

V. lathyroides (Lathyrus-like). Spring Vetch; Strangle Tare. *f.* lilac-coloured, solitary, sessile, 4in. to 5in. long; calyx teeth subulate. May and June. *l.* 4in. to 1in. long; leaflets two or three pairs, linear-oblong or obovate, acute, obtuse, or notched. Stem 5in. to 8in. long, spreading. Europe (Britain). A hairy annual. (Sy. En. B. 385.)

V. onobrychioides (Onobrychis-like).* *f.* purple, distant; calyx teeth lanceolate; peduncles very long, many-flowered. June. *l.* numerous, linear, alternate or opposite, obtuse or mucronulate. Stem striated. *h.* 2ft. South Europe, 1759. Annual. (A. F. P. 42; B. M. 2206.)

V. oroboides (Orobus-like). *f.* of a very beautiful blue, usually three or four racemes standing together; peduncles many-flowered, axillary. June. *l.* leaflets ovate, mucronate. *h.* 1ft. to 2ft. Siberia, 1758. Perennial. SYN. *Orobus lathyroides* (B. M. 2086).

V. polysperma (many-seeded). *f.* pale blue, erect, loosely racemose; calyx teeth unequal; peduncles eight to ten-flowered, and longer than the leaves. June. *f.*, pods linear-lanceolate, fourteen to twenty-seeded. *l.* leaflets fourteen to sixteen, ovate-oblong, obtuse, entire, mucronate, glabrous. Tendrils decoumpound. Stems 6ft. to 8ft. long, much-branched. Naples, 1833. Climbing annual. (S. B. F. G. ser. ii. 274.)

V. stonla (little dagger). *f.* of a fine purple, large, secund, numerously disposed on pedunculate racemes. May. *l.* leaflets linear, bluntish, mucronulate, rather silky beneath. Stem tetragonal, almost simple, creeping. 1827. (B. M. 4943 and S. B. F. G. 288, under name of *Orobus Fischeri*.)

V. tenuifolia (slender-leaved). *f.* violet; calyx teeth unequal; racemes clustered, secund; peduncles many-flowered, longer

Vicia—continued.

than the leaves. June. *l.*, leaflets linear, alternate or opposite, nearly glabrous, mucronate. Stems branched. A. 1½ft. Germany and Tauria, 1799. Climbing perennial. (B. M. 2141.)

VICTORIA (named after Her Majesty Queen Victoria). ORD. *Nymphaeaceæ*. A monotypic genus. The species—a gigantic, handsome, prickly, aquatic, stove herb, with a thick rhizome—is one of the most remarkable productions of the vegetable kingdom. It is found, growing in still water of about 4ft. to 6ft. in depth, in equinoctial America. The peculiar formation of the under surface of the leaves imparts to them great buoyancy—sufficient, for instance, to withstand the weight of a good-sized child sitting in a chair, provided, by means of a flat board, the pressure be equally distributed over the whole of the leaf. In this country, at any rate, it is best to treat the *Victoria* as an annual, as it is difficult to keep alive during dull, unless weather in winter. The seeds—which should be kept in a vessel of water until ready for sowing—should be placed in loamy soil, and the pot containing them submerged a couple of inches in a "nursery" tank of water, the temperature of which should not be allowed to fall below 85deg. The tank, too, should be in as light a position, and as near the glass, as possible. It is desirable to sow the seeds in January, and as soon as the seedlings appear, prick them singly into small pots, gradually shifting into larger pots as the plants grow stronger. About the beginning of May, the best plant will probably be ready to place out in the large tank. Two or three cartloads of good, strong loam, with a good proportion of rotted cowdung, will be necessary to enable the plant to attain its full size. After it is fairly established, the temperature of the water may be allowed to fall to 80deg., but not below. All the sunlight possible is needed to keep the plant in robust health, so the house in which it is grown should not be artificially shaded in any way. Where it is practicable to maintain the water of a large tank at the temperature above mentioned, the *Victoria* may be grown in the open air places sheltered from the wind, which has—except under such conditions—too much power on the upturned edges of the huge leaves. The illustration represents a plant in the open, surrounded by hardy subjects.

V. regia (royal).* Queen Victoria's Water Lily; Royal Water Lily; Water Maize; Water Platter. *f.* 1ft. or more in diameter; calyx deeply quadrid, the tube tawny, very prickly, turbinate, adnate with the ovary, the segments purple-brown, concave, deciduous, rather shorter than the petals; torus annular; petals very numerous, the outer ones white, spreading, oblong, concave, obtuse, the inner ones gradually passing into filaments and becoming deeply coloured with purple or full rose; perfect stamens in about two series, large, fleshy, subulate, gracefully incurved below, the rest erect; peduncles or scapes radical, longer than the petiole, and rising above the surface of the water when in flower, terete, prickly, sometimes 1in. in diameter, single-flowered. Summer. *f.* a large, cyathiform, truncate, fleshy, green, prickly berry, bearing many oval, very dark brown seeds. *l.* usually floating, 4ft. to 6½ft. in diameter, at first oval with a deep, narrow cleft or sinus at one end, and at last almost exactly orbicular, peltate, flat, but having a turned-up margin broad; full green, reticulated; under side deep purple, sometimes green, spongy-pubescent, copiously veined, more or less beset with sharp and horny, subulate prickles; petioles terete, radical, copiously prickly. Rhizome thick. 1838. See Fig. 172, p. 158. (B. M. 4275-4278.)

VICTORIAN DOGWOOD. See *Prostanthera lasianthos*.

VICTORIAN HAZEL. See *Pomaderris apetala*.

VICTORIPERREA. A synonym of *Freyinetia* (which see).

VIUSSEUXIA. Included under *Morrea* (which see).

VIGIERA. A synonym of *Escallonia* (which see).

VIGNA (named after Dominic Vigni, Professor at Padua, who wrote a commentary on Theophrastus, in 1625). SYMS. *Calliocythus*, *Scytalis*. ORD. *Leguminosæ*. embracing about thirty species of stove, greenhouse, or hardy, twining or prostrate herbs, inhabiting



Fig. 172. VICTORIA REGIA (page 157).

Vigna—continued.

the warmer regions of the globe. Flowers yellowish or rarely purplish, shortly fasciculate-racemose at the apex of an axillary peduncle; two upper calyx teeth or lobes connate or distinct; corolla with two ear-like appendages; standard orbicular; wings falcate-obovate; bracts and bracteoles small, caducous. Pods linear, straight or scarcely incurved. Leaves pinnately trifoliate, stipellate. *V. sinensis* is largely cultivated in the East; the Chinese cook and eat the pods as we do kidney beans. Seeds of the under-mentioned species may be sown in any fairly good soil.

V. Burchellii (Burchell's). *f.* purple, on peduncles 3 in. to 5 in. long, umbellate; calyx deeply four-cleft; wings with an ear-shaped appendage to the claw. Summer. *l.* lin. to 2½ in. long, on petioles ½ in. to ¾ in. long; leaflets ovate-lanceolate or lanceolate, rigid, bristly-mucronate, glabrous. Stems woody, diffuse, the branches rigid and sub-erect. Cape of Good Hope, 1816. Greenhouse. SYN. *Otoptera Burchellii*.

V. Catiang (Catiang). *f.* yellow or reddish; corolla twice the length of the calyx, which is less than ¼ in. long; racemes few-flowered, long-peduncled. July and August. *fr.*, pods 1 ft. to 2 ft. long, less than ¼ in. broad, edible. *l.*, leaflets membranous, ovate-rhomboid, entire or slightly lobed. East Indies, &c., 1776. Hardy, low and sub-erect, or tall and twining annual. SYN. *Dolichos sinensis* (B. M. 2232). This has been grown as a vegetable in France under the name of *Phaseolus Riccardianus*.

V. glabra (glabrous). *f.* yellow, crowded; racemes borne on stout peduncles, which are longer than the leaves. July to September. *fr.*, pods hirsute. *l.*, leaflets ovate or ovate-lanceolate. Southern United States, 1685. Nearly hardy, twining annual. SYN. *Dolichos luteolus*.

VIGNALDIA. A synonym of **Pentas** (which see).

VIGUIERA (named after Alexander Vignier, a bookseller, of Montpellier, who wrote a work on Poppies, in 1814). ORD. *Compositæ*. A genus comprising about sixty species of greenhouse or half-hardy, erect, branched, annual or perennial herbs, rarely shrubs, inhabiting the warmer parts of America. Flower-heads mediocre, rarely large, pedunculate at the tips of the branches, heterogamous; involucre broadly campanulate or hemispherical, the bracts in three or more series; receptacle convex, conical, or at length oblong, paleaceous; achenes often more or less pilose. Lower leaves (rarely all) opposite; upper ones usually alternate. Only one species calls for mention here. For culture, see **Helianthus**.

V. linearis (linear-leaved). *f.* heads yellow; involucre scales oblong, leafy-appendiculate at apex. September. *l.* sessile, alternate, rarely opposite, linear, entire, one-nerved, revolute-margined, hispid-scabrous on the nerves. Stems erect, branched, scabrid. *h.* 2 ft. Mexico, 1823. Half-hardy perennial. SYN. *Helianthus linearis* (B. R. 523).

V. rigida (rigid). A synonym of *Helianthus rigidus*.

VILFA (of Adanson). A synonym of **Agrostis** (which see).

VILFA (of Beauvois). A synonym of **Sporobolus** (which see).

VILLA GARDEN. See **Garden**.

VILLANOVA (named after Tomas M. Villanova, 1757-1802, Professor of Botany at Valencia). ORD. *Compositæ*. A small genus (six or seven species) of greenhouse or hardy, diffuse, glandular-pubescent herbs, inhabiting Peru, Columbia, and Mexico. Flower-heads yellow, heterogamous, pedunculate, irregularly paniculate or corymbose; involucre campanulate, with a few sub-equal bracts; receptacle small, naked; ray florets ligulate, three-toothed; disk florets five-cleft; achenes glabrous. Lower leaves (or all) opposite, the upper ones often alternate, ternately or pinnately dissected, often few-lobed. *V. chrysanthemoides*, the only species introduced, is a hardy annual. Seeds should be sown on the open border, in April.

V. chrysanthemoides (Chrysanthemum-like). *f.* heads lin. in diameter; ray florets fifteen to twenty; peduncles stout, glandular, naked or with one or more imperfect leaves. September. *l.* alternate, petiolate, 2 in. long and broad, twice ternately cut into linear or obovate, lacinate, recurved lobes. Stem grooved, leafy, erect. *A.* 1 ft. to 2 ft. Rocky Mountains, 1878. (B. M. 6422.)

VILLANOVA (of Ortega). A synonym of **Parthenium** (which see)

VILLARESIA (named after Matthias Villarex, a Spanish botanist, Superintendent of the Gardens at Santa Espina). SYN. *Citronella*. ORD. *Olacineæ*. A genus consisting of eight or ten species of stove, evergreen, climbing shrubs or small trees, inhabiting the tropics of both hemispheres. Flowers white; calyx five-parted; petals five, ribbed inside; stamens five; cygms small, paniculate or racemose. Leaves alternate, oblong, entire or spinulose-dentate, thickly coriaceous, clear. Only one species has been introduced. For culture, see **Olax**.

V. mucronata (mucronate-leaved). *f.* fragrant, sessile; racemes terminal and in the upper axils, solitary, rarely in twos or threes, 2 in. long. September and October. *l.* shortly petiolate, ovate or oblong, mucronate, highly glabrous, shining above, paler beneath, spiny-toothed in young trees, entire in adults. Trunk erect, terete. Chili. Tree.

VILLARIA. A synonym of **Berardia** (which see).

VILLARSIA (named in honour of Dominique Villars, 1745-1814, Professor at Grenoble; he wrote on the plants of Dauphiné). SYN. *Renalmia* (of Houttuyn). ORD. *Gentianeæ*. A genus embracing ten species of South African or Australian, marsh-loving, greenhouse herbs. Flowers yellow or white, cymose; calyx five-parted or deeply five-cleft; corolla broadly campanulate, sub-rotate, the lobes valvate; stamens five, affixed to the tube; filaments filiform. Radical leaves long-petiolate, entire or irregularly sinuate-toothed. Stems simple and leafless, or slightly branched and furnished with a few leaves. The following species are known to cultivation, and form elegant subjects when in blossom. Peat and sand form the most suitable compost, and the pots in which the plants are grown should be placed in water. Propagation may be readily effected by divisions, or by seeds.

V. capitata (headed). *f.* yellow, sessile, in compact, globular or depressed heads about ½ in. in diameter, on long peduncles. Summer. *l.* long-petiolate, broadly ovate, orbicular, or reniform, coarsely sinuate-toothed or entire, under 1 in. long. Stems slightly branched, leafy, 6 in. high. Australia, 1879. (B. M. 6420.)

V. Crista-galli (cock's comb). A synonym of *Menyanthes Crista-galli*.

V. Humboldtiana (Humboldt's). A garden name for a form of *Limnanthemum indicum*.

V. nymphaeoides (Nymphaea-like). A synonym of *Limnanthemum nymphaeoides*.

V. ovata (ovate-leaved). *f.* citron-yellow; corolla segments crenate-fimbriate on the margins, pilose at the base within; cygms terminal, raceme-like. June. *l.* clustered, coriaceous, oval, entire. Stems ascending, nearly naked. *h.* 6 in. Cape of Good Hope, 1786. SYN. *Menyanthes ovata* (B. M. 1909).

V. parnassifolia (Grass of Parnassus-leaved).* *f.* yellow; corolla lobes shortly exceeding the calyx. August. *l.* long-petiolate, ovate or almost orbicular, entire or sinuate-crenate, slightly cordate or rounded at base, mostly under 1 in. long. Flowering stems 1 ft. to 2 ft. high, loosely paniculate, leafless except small bracts, or a solitary leaf at the first branching. Australia, 1826. (B. R. 1533, under name of *V. reniformis*.)

V. reniformis (kidney-shaped).* *f.* yellow; corolla spreading, ½ in. to 1 in. in diameter, the lobes copiously bearded or fringed inside at base. July. *l.* in a dense tuft, on long petioles, ovate to orbicular or reniform, more or less cordate at base, entire or slightly sinuate-toothed, mostly 1 in. to 2 in. long. Flowering stems as in *V. parnassifolia*. *h.* 6 in. to 3 ft. Australia, 1820. SYN. *Menyanthes exaltata* (B. M. 1029). The plant figured in B. M. 1328 as *Menyanthes sarmentosa* is only a stoloniferous form of this species.

VILLOSE, VILLOUS. Shaggy; covered with long and soft (not interwoven) hairs or villi.

VILMORINIA (named after Pierre Louis Vilmorin, a French cultivator, who wrote on leguminous plants in 1825). ORD. *Leguminosæ*. A genus containing three species of erect, stove shrubs, natives of San Domingo, requiring similar culture to that recommended for **Clitoria**. The only species introduced is described below; it is probably no longer in cultivation.

V. multiflora (many-flowered). Vilmorin's Purple Pea-flower. *f.* purple, in axillary racemes; calyx cylindrical, obtusely four-toothed, sub-bilabiate; petals narrow-oblong, the wings shorter than the keel. May. *l.* imparipinnate; leaflets five or six-jugate, oval, pubescent beneath; stipules rather broad at base long-subulate. *h.* 6 ft. 1826. SYN. *Clitoria multiflora*.

VIMINARIA (from *vimen*, a twig; alluding to the twiggy, leafless branches). Rush Broom. ORD. *Leguminosæ*. A monotypic genus. The species is a green-shrub, with Rush-like stems. It thrives in a mixture of loam and peat. Propagation may be effected by cuttings of half-ripened shoots, inserted in sand, under a bell glass, in April; or by seeds, sown on a gentle hotbed.

V. denudata (naked). Australian Rush Broom; Victorian Swamp Oak. *f.* orange-yellow, small, in long, terminal racemes; calyx teeth short, equal; petals on rather long claws; wings shorter than the standard; stamens free. August. *l.* alternate, mostly reduced to filiform petioles 3in. to 9in. long, the lower ones on luxuriant specimens occasionally bearing at the extremity one to three oval-oblong or lanceolate, herbaceous leaflets, $\frac{1}{2}$ in. to 1 $\frac{1}{2}$ in. long. *h.* 10ft. to 20ft. (or sometimes low and decumbent). Australia, 1780. (B. M. 1190; P. M. B. xiv. 123.)

VIMINEOUS. Having long, flexible twigs or shoots; *e.g.*, many Osiers.

VINCA (*Vinca*, or *Perivincæ*, was the old Latin name used by Pliny). Periwinkle. Including *Catharanthus*. ORD. *Apocynaceæ*. A genus comprising ten broadly-distributed species of pretty, stove, greenhouse, or hardy, erect, or procumbent herbs or sub-shrubs. Flowers rather large, axillary, solitary; calyx five-parted, without glands, the lobes narrow; corolla salver-shaped, the tube cylindrical, the five lobes ample; stamens above the middle of the tube, included. Leaves opposite. The best-known species are here described. *V. rosea*, which requires stove or greenhouse treatment, may readily be propagated from cuttings of young shoots, taken off soon after new growth is commenced in spring, and inserted in sandy loam, in a close frame. The points should be taken out as the young plants become established, to make them bushy; the flowers are borne on the new shoots as they lengthen. A compost of fibrous loam and a little decayed manure intermixed is well suited to the requirements of this species. It is not necessary to propagate every year, except for increasing stock: the old plants can be kept through the winter. The hardy Vincas are excellent trailing plants for furnishing banks, rockwork, rooteries, &c., in wild gardens, pleasure-grounds, and woods. They grow in almost any kind of soil, and spread rapidly when once established. Propagated by division: any of the single pieces with roots attached may be dibbled in from autumn until early spring.

V. acutiflora (acute-flowered). * A synonym of *V. media*.

V. herbacea (herbaceous). *f.* purplish-blue; corolla eight to eleven lines long, bearded in the middle and at the throat. June and July. *l.* elliptic or lanceolate, somewhat obtuse, 1in. long, the margins revolute and slightly ciliated. Stems all fertile, herbaceous, glabrous, decumbent, simple. Eastern Europe, 1816. Hardy. (B. M. 2002; B. R. 301.)



FIG. 173. FLOWER OF VINCA MAJOR.

V. major (greater). * Band plant; Cut-finger. *f.* blue-purple; calyx lobes ciliated, equalling the corolla tube. April and May. *l.* ovate, or cordate at base, ciliated. Flowerless stems rooting at the tip only; fertile ones erect in flower, elongated afterwards. Europe (Britain), &c. Larger in all its parts than *V. minor*. See Fig. 173. (Sy. En. B. 905.)

V. m. elegantissima (very elegant). * A form with foliage beautifully margined or blotched with creamy-white.

V. media (intermediate). *f.* blue; corolla 1in. long, the lobes obliquely ovate, acuminate. August. *l.* ovate, narrowed at both ends, highly glabrous, 1in. to 2in. long, $\frac{1}{2}$ in. to 3in. broad. Sterile stems reclinate; fertile ones nearly erect, 1ft. or more high. Mediterranean region. Hardy perennial. SYN. *V. acutiflora*.

Vinca—continued.

V. minor (lesser). * *f.* 1in. in diameter; calyx lobes glabrous, one-third the length of the corolla tube; corolla blue-purple. April and May. *l.* 1in. to 1 $\frac{1}{2}$ in. long, elliptic-ovate, with glabrous margins, on very short petioles. Stems tough; flowerless ones 1ft. to 2ft. long, prostrate, rooting; flowering ones short, erect. Europe (Britain), &c. (F. D. 1613; Sy. En. B. 905.) Of this pretty plant there are a variegated form, a white-flowered variety, and others with double white and double blue flowers.



FIG. 174. VINCA ROSEA, showing Habit and detached Flowering Branchlet.

V. rosea (rosy). * Madagascar Periwinkle; Old Maid. *f.* almost sessile; corolla tube 1in. long; throat with a hairy ring over the tips of the stamens, and a slighter one at the narrow orifice; lobes white, with a pink eye, sometimes all rose-coloured or white, showy, obovate. March to October. *l.* long, on short petioles. South Florida, Tropics, 1758. Plant low, erect, puberulent. (Greenhouse or stove. See Fig. 174. (B. M. 248.)

VINCETOXICUM (from *vincere*, to conquer, and *toxicum*, poison; in allusion to supposed antidotal powers). ORD. *Asclepiadææ*. A genus comprising about seventy species of stove, greenhouse, or hardy, erect or twining, perennial herbs or sub-shrubs, inhabiting temperate and warm regions, but rarer in the tropics. Flowers usually greenish-yellow or purplish, sometimes nearly black, in variable cymes; calyx five-parted; corolla somewhat rotate-campanulate, deeply five-cleft; corona affixed to the staminal tube, sub-entire, toothed, shortly five to ten-lobed or nearly five-parted. Leaves opposite or rarely quaternately whorled or alternate. The better-known species are here described. All (except *V. pilosum*) are hardy perennials. They were formerly classified under *Cynanchum* (which see for culture).

V. acutum (acute). *f.* white; petals oblong, obtuse. July. *l.* oblong, ovate-cordate, acute. South Europe, 1596. Twiner.

V. fuscatum (brown-flowered). *f.* yellow; corolla bearded; umbels simple. July. *l.* ovate. Stems twining at top. *h.* 2ft. to 3ft. South-east Europe, 1817. SYN. *Cynanchum minus*.

V. japonicum (Japanese). *f.* whitish, on slender pedicels; corolla segments glabrous; cymes shorter than the leaves, loose-flowered. Summer. *l.* rounded, shortly acuminate or retuse, very shortly mucronate, paler beneath, the veins softly puberulous and somewhat velvety. Japan. Plant somewhat twining above. (L. & P. F. G. iii, p. 150.)

V. medium (intermediate). *f.* white; corolla beardless; pedicels hardly longer than the peduncle; umbels often divided. May. *l.* broadly ovate, obtuse, or ovate-lanceolate, acute. Stems twining at tops. *h.* 2ft. to 3ft. Eastern Europe, &c.

V. nigrum (black). *f.* brown; corolla bearded; pedicels hardly longer than the peduncles; umbels simple. July. *l.* ovate-lanceolate, acuminate, finely ciliated on the edges, narrower than those of the next species. Stems twining at top. *h.* 2ft. to 3ft. South Europe, 1596. SYN. *Cynanchum nigrum* (B. M. 2390).

V. officinale (official). Tame Poison. *f.* white; corolla beardless; pedicels three times longer than the peduncle; umbels simple. May. *l.* ovate, acuminate, finely ciliated on the edges when young. Stems erect, furnished with a downy line on each side. *h.* 1ft. to 3ft. Europe, 1596. SYN. *Cynanchum Vincetoxicum*.

V. pilosum (pilose). *f.* white, on short, erect pedicels; peduncles nearly equalling the leaves, many-flowered. July. *l.* ovate,

Vincetoxicum—continued.

rounded and mucronulate at apex, rounded or sub-cordate at base. Cape of Good Hope, 1726. Greenhouse, twining sub-shrub. SYN. *Cynanchum pilosum* (L. R. 111).

V. purpurascens (purplish). fl. dull purple, on slender pedicels; cymes long-stalked, many-flowered, proceeding from the axils of the upper leaves. L. narrow-oblong, mucronate, becoming smaller near the ends of the shoots where the flowers appear.

Vine—continued.

Caspian Sea. According to De Candolle, in "L'Origine des Plantes Cultivées," it grows there "with the luxuriant wildness of a tropical creeper, clinging to tall trees, and producing abundant fruit without pruning or cultivation (see Fig. 175). . . Its dissemination by birds and other agencies must have begun very early—perhaps

before the existence of man in Europe, or even in Asia. . . . Seeds of the Grape Vine have been found in the lake dwellings of Castione, near Parma, which date from the age of bronze . . . and Vine leaves have been found in the tufa round Montpellier—probably deposited before the historical epoch." Records of the cultivation of the Grape, and of the making of wine, in Egypt, go back 5,000 to 6,000 years.

The introduction of the Vine into this country is generally credited to the Romans, in the reign of the Emperor Augustus, about A.D. 10. Vineyards existed in England at a very early period of our history. They are mentioned in the "Domesday Book," and also by Bode, who wrote in A.D. 731. The Isle of Ely was called the Isle of Vines by the Normans, the Bishop of Ely, shortly after the Conquest, receiving as tithes wine made from the Vines grown in his diocese. In the reign of Henry III. we read of vineyards. Malmosbury mentions the county of Gloucester as being, in his time, very rich in vineyards; and there still remain traces of them at Tortworth. The first Earl of Salisbury planted a vineyard at Hatfield, which is noted as being in existence when Charles I. was taken there as a prisoner. There are records of vineyards existing in various parts of Surrey, and a notable one, which is still partly in existence, once flourished at Bury St. Edmunds. Vineyards seem to have been common to all monastic establishments; but the suppression of the latter, and, subsequently, the fact of cheap foreign wines becoming more easily accessible, led, no doubt, to neglect in Grape cultivation.

Of noteworthy Grape Vines, Speechly, who wrote on the Vine at the end of the last

century, mentions one that was growing in the open air at Northallerton, in Yorkshire, in 1789, that had covered a space of 132 square yards, and was supposed to have been planted 150 years. During the last century, the cultivation of Grapes seems to have become pretty general; several notable examples being still in existence—as that of the Black Hamburg Vine at Valentines, Ilford, in Essex, which Gilpin, in his "Forest Scenery,"



FIG. 175. LEAVES AND FRUITS OF THE WILD VINE (*VITIS VINIFERA*).

Stems and all the green parts slightly downy; when in flower, becoming weaker, with a tendency to twine. Japan, 1850. Half-hardy or hardy perennial.

VINE (*Vitis vinifera*). The Grape Vine is found growing wild in the temperate regions of Western Asia, Southern Europe, and parts of Northern Africa, and is generally believed to be a native of that part of Asia Minor to the south of the Caucasus and of the

Vine—continued.

says was planted in 1758. This is stated to be the oldest Vine in England, and to be the parent of the still more celebrated Vine at Hampton Court, which was planted in 1769, and now covers a space of about 220 square yards. Of more modern Vines, the most remarkable examples are those at Cumberland Lodge, Windsor, which annually produce about 2,000lb. weight of Grapes; that at Mr. Kay's, Finchley, covering a house 89ft. long by 18ft. wide; and that at Manresa Lodge, Roehampton, filling a house 224ft. long, the stems extending to 1,365ft. The Grape Vines of Europe are all varieties of *Vitis vinifera*; whilst those of America belong to *V. Labrusca*.

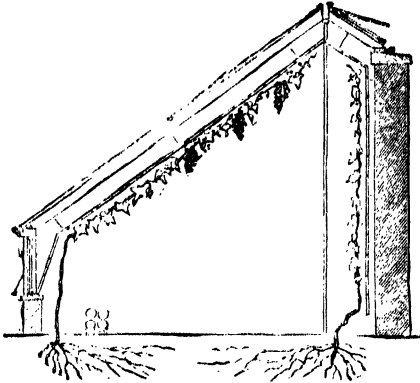


FIG. 176. SECTION OF HIP-ROOFED VINERY.

In regard to these Vines, it may be remarked, are extremely accommodating, and will grow in any structure sufficiently exposed to the influence of light and air—an essential point. For certain purposes, however, it has been found that some forms are more suitable than others. Thus, for the growth of very early grapes, lean-to houses (see Fig. 181) are most approved. They are naturally warmer, the back wall affording considerable shelter, and require less fixing, &c. For general purposes, the three-quarter span or hip-roofed vinery (see Fig. 176) is much approved, combining the merits of the lean-to, facing the South, with those of the span-roof, generally erected facing East and West. The commonest form, and that most generally erected by the

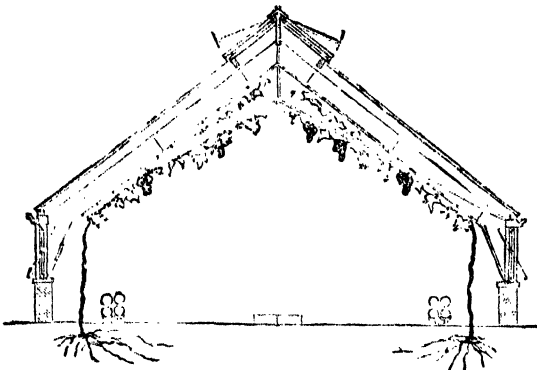


FIG. 177. SECTION OF SPAN-ROOFED VINERY.

growers for market, is the span-roof (see Fig. 177). Vineries may be of any size that circumstances allow for

Vine—continued.

general cropping, but for early grapes, where much fire-heat is required, as well as for keeping late grapes, moderate-sized houses are desirable; and low houses are to be preferred to high ones for general utility and working purposes.

Heating. All structures for the growth of grapes should be efficiently warmed. Artificial heat, in distinction from solar heat, may be supplied either by flues or by hot-water piping. Flues are objectionable on account of the great amount of space they occupy, and the very arid heat they supply, favouring the intrusion of Red Spider, &c. Hot-water is the system now generally adopted. The amount of piping must be regulated by the special requirements in each case. An ample supply is preferable at all times, so as to avoid keeping the pipes at a high temperature, which is injurious.

Ground Vineries. The Vine may be grown in a very circumscribed space, and under very diverse conditions. The cottager with his single rod of ground may, by aid of "old Father Sol" and a few squares of glass, supplemented by care and attention, produce his own grapes nearly equal in quality to those of his lordly neighbour, with his costly vineries and gardening skill. Thanks to the introduction of cheap glass, and the examples of such worthy men as the late Mr. Thomas Rivers, Mr. Wells, Dr. Newington, and Mr. Harrison Weir, the success of ground vineries has been thoroughly established.

The magnificent examples of grapes grown in ground vineries by Mr. Weir, consisting of such varieties as Black Hamburg, Muscat Hamburg, Muscat of Alexandria, and especially of Muscat Champaign, all of which have been exhibited to the Fruit Committee of the Royal Horticultural

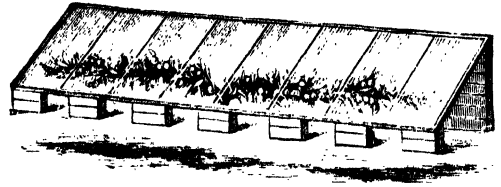


FIG. 178. GROUND VINERY.

Society, proved to be of very superior quality. Fig. 178 represents an extremely simple contrivance. A few plain bricks (or boards) form the back, some 2ft. to 3ft. high, and a simple wall-plate in front, on which the squares of glass are loosely placed, rests on couples of bricks. The structures, however, may be of almost any form, provided the Vine in its growth be thoroughly exposed to the direct influence of the sun's rays. Mr. Harrison Weir prefers a span-roofed structure, 7ft. in length, 2ft. 8in. wide, the sloping sides each 2ft. 8in. deep, and the height in centre, from ground line to ventilator, 1ft. 10in. The ends are of wood, with an air-hole for ventilation, fitted so as to be closed when required. A warm, dry soil, and an open, sunny situation, are of the greatest importance: there would be very little hope of success in a low-lying, cold situation.

The Vines should be planted inside the vinery, and trained along the top to a wire or pole going its whole length, and hung somewhat from it, so that the string or fastening may not be tight. The lights should never be taken off, either in summer or winter, for a permanence, or even left off for a single night, unless the weather be very hot, or for the purpose of ripening the wood. The bunches of fruit should be thinned in the usual way, and not so many left as to retard the ripening.

Vine—continued.

Varieties. Nearly all the cool-house Vines, such as Black Hamburg, Buckland Sweetwater, Foster's Seedling, Madresfield Court, Muscat Champion, Royal Muscadine, and most of the small Chasselas and Frontignans, may be grown in this way, and, in most instances, with great success.

PROPAGATION. The propagation of the Vine, as generally practised in this country, is effected by "eyes." By this term is meant the buds on the ripened shoots of the



FIG. 179. VINE EYE.

previous season's growth, as represented by Fig. 179. These are cut as shown, about 1in. or more in length, the best-matured wood, having firm, plump buds, or "eyes," being selected. The season best adapted for the operation is during the months of January and February—the earlier the better, so that the plants may have plenty of time to

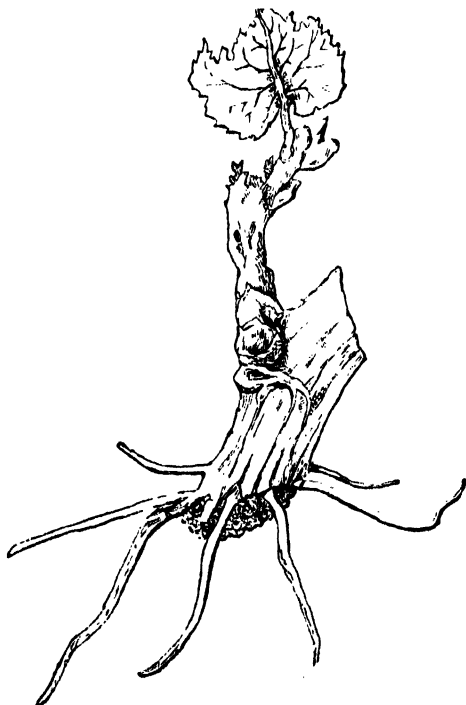


FIG. 180. VINE EYE STARTED.

grow. A number of small pots or pans should be prepared, and filled with fine soil. A single eye should be inserted in the middle of each small pot, and pressed down until the top of the bud is just level with the surface of the

—continued.

soil: in the pans, a number of eyes may be inserted in the same manner, to be potted off singly afterwards. The pots and pans, when filled, should be plunged in a bed having a bottom-heat of about 80deg., and a top temperature of from 65deg. to 70deg., and afterwards gently watered. Many other methods of "putting in" the eyes may be adopted. Great care is required when the buds commence to grow (see Fig. 180), they being extremely liable to "damp off" at this period. As soon as the roots have reached the sides of the pots, the plants should be transferred to larger ones, and plunged in the hotbed, to be repotted again, and so on. Vines may also be layered. This consists in taking a young shoot of a Vine, and pegging it down to the surface of the ground, or on pots; roots are freely produced, every bud becoming a separate plant when severed. In Vine-growing countries the plants are propagated by cuttings—i.e., shoots cut into lengths of from 10in. to 18in., which are frequently planted in their permanent positions at once. Budding and inarching are also practised in various ways. Grafting the Vine is largely adopted where it is desired to introduce new varieties without complete renewal of the plants. The grafting of Vines differs somewhat from that of ordinary grafting—not in the mechanical operation itself, which is practically the same, but owing to the extraordinary flow of sap which occurs in the Grape Vine at the commencement of growth in spring; if any portion of the stem be cut at that time, a very large outpouring of watery fluid takes place, termed "bleeding," which prevents union. It is necessary to defer the operation until this flow ceases, which will be when the first few leaves have become properly expanded. Common whip-grafting is the simplest and best method to adopt. At whatever part of the stock it may be determined to affix the scion, it is necessary to leave a growing shoot and some leaves above this point, for the purpose of drawing off by evaporation the superabundant water that will have to be disposed of, and likewise for forming and perhaps drawing up nourishment for the supply of the scion itself until a union is effected. The scions being affixed, they should be tied securely, and covered with some sort of grafting wax in preference to either clay or moss. See also remarks under POT CULTURE.

CULTIVATION UNDER GLASS. The Grape Vine is a remarkably free-growing plant, and naturally requires a great amount of nourishment in the matter of soil, manure, and water, for its successful cultivation. Vine borders require to be constructed with some degree of care. Low-lying situations, with damp, cold subsoils, should be avoided; ample drainage is most essential. The best situation for a Vine border is on a gentle slope, where the ground is drained naturally. In such a situation, if on a gravelly subsoil, little artificial drainage is required. It is well, however, when forming a border, to put in from 1ft. to 1½ft. of broken bricks, &c., as drainage; and in many cases it is expedient to concrete the bottom below this, so as to prevent any possibility of the roots descending. As to the sizes of the border, the roots of Vines travel (if allowed) a great way, and it is necessary to restrict their passage. An ordinary-sized border should correspond to the width of the house; thus, a vinery 16ft. wide may have a border 16ft. wide, and so on. A good practice is to form the border both inside and outside, the front wall being built on arches, so as to allow the roots to go either way (see Fig. 181). The depth of a Vine border should range from 2ft. to 3ft., and need never exceed the latter figure.

Soil. The soil best suited for Vines is a fibry, calcareous, yellow loam—that is, the top spit, or turf cut 3in. to 4in. thick, from some old pasture land. This may vary greatly, from light, sandy loam to that of a clayey nature. Chop the turfs roughly in pieces, and to five or six cubic yards add one yard of old lime

—continued.

rubbish or broken bricks, a small portion of charcoal, wood ashes, or burnt soil, and about 2cwt. of $\frac{1}{2}$ in. ground bones. These ingredients, well mixed, will constitute the main body of the soil to be used, modified in proportions according to the character of the loam. If the loam used

Vine—continued.

the soil, but also for the prevention of evaporation, whereby a greater and more constant degree of humidity may be maintained. Covering Vine borders, excepting where very early grapes are required, is unnecessary. Watering is one of the most important operations; per-

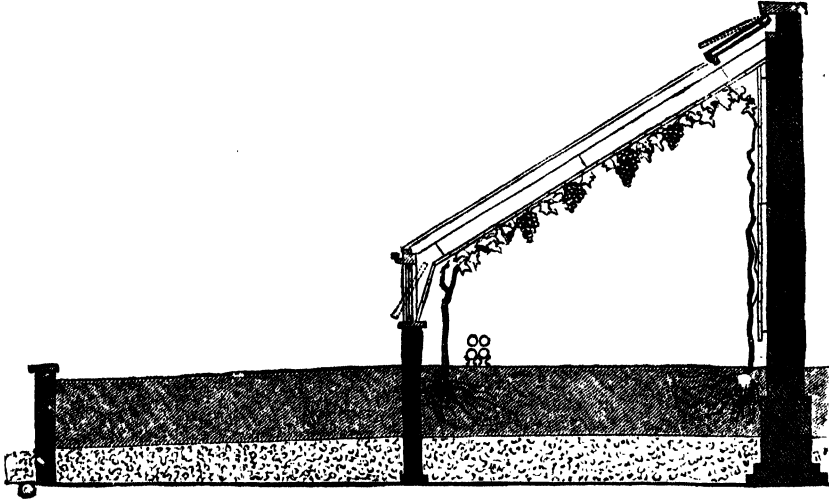


FIG. 181. SECTION OF LEAN-TO VINERY AND OF VINE BORDER.

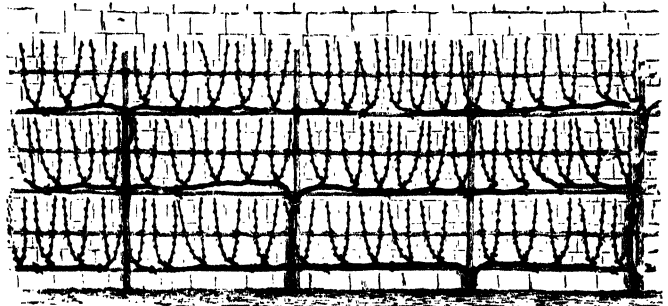
be of a sandy nature, less of the lime rubbish will be required, as the main object in using this is to give porosity to the soil. The top-dressing of Vine borders is of great importance, and should be attended to every season; the greater the quantity of fresh soil that can be given, the better, especially after the Vines have got into heavy cropping. The soil used for this may be of a somewhat richer character than that recommended for the formation of the border. As much of the old soil should be taken away as can be afforded, and new soil added; or, if the soil cannot be removed, a dressing of some kind of manure should be given, and lightly forked into the border before the Vines commence to grow, in spring.

Manures. For the growth of Vines nearly all soils require the addition of some fertilising ingredients—some kind of manure. Farmyard manure is frequently used; but, as this rapidly decays, its influence is soon exhausted: it can only be recommended for mulching or top-dressing. Bones, as containing phosphate of lime, constitute one of the best manurial ingredients for mixing with the soil; being slow to decay, they continue to afford sustenance for many years. Large, unbroken bones are next to useless. Bone-meal, dissolved bones, and horn-shavings are all valuable ingredients of a similar character presented in a more readily available form, and, consequently, more immediately effective.

phosphate to 1cwt. of nitrate of potash, applied at the rate of 1lb. to the square yard, has been found highly beneficial. A very excellent prepared, or what is termed "artificial," manure, now largely used, is Thomson's Vine Manure. Mulching is very necessary in hot, dry seasons, not only as a means of enrichment to

haps more Vines are ruined through want of water than from any other cause. During the growing season, Vines can scarcely receive an over-supply. Inside borders require special care and attention in this respect, as they receive no benefit from the rains, and are directly and entirely under the control of the cultivator. When the fruit is ripe, a somewhat drier condition should be maintained, but it is not desirable to allow the soil to become very dry even then.

Planting. Vines may be planted at any season of the year, provided all the requisite conditions be fulfilled. October is a very good period, the soil then being generally in good condition: the roots commence to



grow a little, and get, to some extent, established before spring. January and February are another good season. In planting ripened Vines, care should be taken to shake out all the soil from the roots, and to spread these fully out as near to the surface as possible. Another method

Vine—continued.

is that of planting the young growing Vines that have been raised from eyes during the same season; this would take place in May, June, or July. These Vines, if properly attended to in regard to heat and moisture, make the very best of plants. As to the distances apart at which Vines should be planted, this almost entirely depends on the style of training to be adopted. They should never be less than 4ft., to allow the side shoots to develop; in many cases, 5ft. is preferable.

Pruning and Training. The Vine is a free-growing, long-lived plant. In its natural state it is of a climbing character, sustaining itself by its tendrils, so that in its cultivated condition it has to be supported in some way. Of the various methods adopted in the training of the Vine, three call for notice here: (1) That practised in the vineyards or wine-growing countries; the young or fruit-bearing shoots are tied to upright poles, 6ft. to 8ft. in height, the plants being about the same distance apart. In other cases they are sometimes pruned into the form of candelabra or other fancy shapes. (2) That adopted for Vines against walls, as practised at Thomery (see Fig. 182). (3) In this country, the Grape Vine is generally trained, in vineries, to trellises fixed at a certain distance from the glass or roof of the house, and is pruned either on what is termed the Spur system, or on that known as the Long Rod system, each of which is subject to all sorts of modifications according to fancy or convenience. The Spur System is that most practised, and may be briefly described thus: The Vines being planted at the proper distances apart, the young plants are cut down to some three or four eyes from the ground; one shoot is trained up in the first season, forming the main stem of the Vine. During the winter season following, this stem is cut back to some 5ft. or 6ft. in length, according to its strength. In the second year, the buds on this stem form shoots on which the fruit is borne, and which are stopped at one or two leaves beyond the bunches, or at a length of 16in. or 18in., the main stem being allowed to extend as before. In pruning, the next winter, these side shoots are cut back to one or two buds, which, being left, form what is termed a "spur" (see Fig. 183), the main stem being pruned back to 5ft. or 6ft. as before. In the third year, one or more shoots are produced from each spur, one of which is selected, trained and stopped as before, and again pruned in winter to one or more eyes; and so on from year to year—in most cases, the Vines filling their allotted space in five or six years. The Long Rod system consists in leaving a number of young shoots or rods to form the bearing shoots, and it is more suitable for some varieties than the Spur system. Vines may be trained to any number of stems or rods, and extended as circumstances may permit, the pruning otherwise being similar.

Disbudding. The first operation that requires to be performed each succeeding year, on the commencement of the growth of the Vine, and to which attention must be early directed, is that which is termed disbudding, but which is, in reality, a thinning-out and regulating of the young shoots. This is an operation of very great importance in respect to young Vines, as upon its being properly performed will depend the future form or character of the plant. Disbudding is, in fact, the first step in training, although it is practised much in the same manner long after the form of the Vine is established. The time for disbudding is as soon as it may be perceived that there are more buds than are requisite—say, when the shoots are an inch or so in length; but the sooner it is done, the better. To allow the superfluous buds to develop into shoots, and then to cut them off, is a waste of the energies of the plant.

Vine—continued.

In disbudding a young Vine, or a leading shoot of the previous year's growth, the first care should be for the top or leading bud, the growth from which should be carefully tied in and preserved from injury, as forming a continuation of the stem. In the disbudding of a young Vine, we also regulate the number of shoots which form the future spurs. To allow space for the full development of the foliage, these side-shoots should not be less than 18in. or 20in. apart. It frequently happens, especially in the case of slowly-grown Vines, that the buds on the stem are more numerous than the shoots required, and in such cases all superfluous buds must be removed—

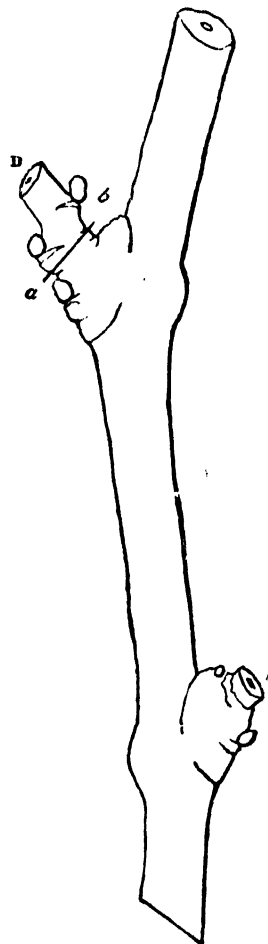


FIG. 183. YOUNG VINE STEM—PORTION OF SECOND SEASON'S GROWTH.

A, Properly-pruned Spur. B, Improperly-pruned Spur—*ab*, line showing where Cut should have been made.

"rubbed off," as the phrase is. Nothing is more pernicious in Vine culture than the crowding of the shoots and leaves. It is well, therefore, to make a fair beginning, with the proper number, and this is done by disbudding.

Disbudding, also, at times, takes the place of pruning. If the lower buds of a young Vine-rod do not break

Vine—continued.

well, it is a good plan to rub off the higher or top buds, which will induce the lower ones to break stronger. Again, if it has been forgotten to prune a Vine or shoot until it has become too late to do so, on account of the risk of bleeding, the neglect may, to some extent, be rectified by a careful rubbing-off of the buds, as soon as they may appear, to the point to which the shoot ought to have been pruned; and then, when the leaves are about fully developed, the sap of the Vine will be sufficiently diverted, and the shoot may be pruned with safety.

Stopping the Shoots. This is requisite in order to keep the growth within certain limits, and thus to prevent overcrowding and confusion. According to the Spur system, the main stems being from 4ft. to 5ft. apart, the side shoots, on which the fruit is borne, cannot be allowed to extend to more than 2½ft. in length, otherwise they must overlap each other. The length of the shoots is generally regulated by the position of the bunch, the usual practice being to stop them at two joints beyond the bunch, or at one point beyond, if there is not space for a greater extension. Practically, the longer these shoots can be allowed to grow, the better, as the greater the quantity of fully-developed first leaves, the greater the amount of vigour induced. The operation itself should be performed as soon as the shoot attains the requisite length, and is done simply by pinching off the tip, between the finger and thumb, before it has become fully developed. There is thus scarcely anything to take off, no denuding of the Vine of a portion of its foliage, and no consequent check to its growth. It is a very bad practice indeed to allow the shoots to grow to such a length as to render it necessary to use the knife in stopping them. The tendril forming a part of the bunch of fruit should be pinched off at the same time, also all superfluous bunches.

After this first pinching or stopping, the foremost buds in the axils of the leaves again produce shoots, according to their vigour, which are called laterals, or summer lateral shoots. They should be stopped in the same way immediately beyond the first leaf, and so on again and again throughout the season, as they may continue to grow.

The leading shoot of a young Vine is, of course, to be exempted from this stopping, excepting in so far as relates to the laterals it produces; and these, if space is limited, must be stopped in the manner explained, or they may be trained out in the same way as the proper shoots, and allowed to extend and occupy as much space as may be available. It should always be borne in mind that the greater the quantity of fully-developed leaves and shoots, the more powerful must be the root action, and the more vigorous the plant. The stopping of the shoots of a Vine is not a checking or repressing of its vigour, but rather a guiding or directing of its energies into certain channels of a more desirable and beneficial character than those they would follow if left to themselves.

Setting or Fertilisation of the Fruit. If the flowers are not properly fertilised, they will probably fall off, or, perhaps, small berries may be formed; but, as no seed can be produced by reason of non-fertilisation, they, as a consequence, will not grow to their proper size. The impregnating process, in a mechanical point of view, consists of the application of the pollen to the stigma of the flower. It is effected at a very early stage, the little jerk occasioned by the dislodgment of the "cap" or covering causing the pollen-dust to be dispersed. This is generally effected naturally, or without any assistance beyond the maintenance of the proper temperature, atmospheric conditions, &c., and these, of course, vary according to circumstances.

Some cultivators consider it necessary to maintain a very high temperature—from 65deg. to 70deg. by night—

Vine—continued.

for the setting of their grapes. This, even if desirable for the forcing-on of the grapes, is not required for the mere "setting" of the fruit. For example, in late houses, and on open walls, the Vines set their fruit quite freely at a lower temperature. Grapes frequently set well at as low a temperature as 45deg. by night. Temperature ranging from 55deg. to 60deg. by night is quite high enough for the mere purpose of setting the fruit, provided there be the desired rise during the day. The setting process takes place in the early morning and forenoon. The temperature by day should always be high by sun-heat. The one great requirement is sunshine, with a fine, mild, bracing atmosphere, so that fresh air in abundance may be admitted to the houses. It is the bracing air, supplemented by the action of sun-heat, which induces the dispersion of the pollen, and by this means effects the setting of the berries.

At times, when sunshine is wanting, it is well to apply artificial assistance, such as "setting" the flowers with foreign pollen, by the aid of a camel-hair pencil. The smallest portion of pollen applied to the stigma will be sufficient; or the plan of smartly tapping the stems of the Vines, so as to shake the bunches, may be adopted, when the pollen will be seen to fly off like a cloud of dust; or, again, recourse may be had to drawing the hand gently over the bunch. The last plan is frequently practised with success amongst the "shy setters."

Certain varieties of Grapes, it is well known, set their fruit freely at all times, and under all sorts of conditions that may be favourable for the Vine. Other varieties do not set freely, whatever may be the reason, and are, in consequence, termed "bad setters." Many and varied conjectures and ideas have been submitted from time to time as to the probable cause of this defect. The pollen and the stigma in some varieties do not ripen at the same time, so that fertilisation cannot take place, and the action of foreign pollen becomes necessary. In other cases the pollen is found to be inert; and some varieties—notably, Black Morocco—have the point of the stigma exceedingly moist, which seems to prevent fertilisation, although this is a condition generally supposed to be favourable for the reception of the pollen.

Attention has also recently been directed to the fact that certain shy-setting Grapes—e.g., Alwick Seedling, Chaouch, and some American sorts—have the stamens deflexed, or falling away from the stigma, so that they cannot readily be fertilised (the ordinary Vine flower has the stamens erect, and pressing round the stigma). In such cases, the defect of non-setting being due to a structural or constitutional peculiarity, artificial impregnation is the only remedy to adopt.

Thinning the Fruit. The Vine is an extremely fruitful plant; so much so, that were the whole crop of the bunches produced by it allowed to remain, the plant would soon succumb through over-fertility. It is impossible to state how many bunches, or what crop, a Vine should carry, so much depends upon its health and constitution, on its surroundings, and on the subsequent management accorded it. A rule something like this might be laid down: According to the surface of properly-developed leaves, &c., so should be the crop of fruit taken. We know we must have so many good leaves for every pound of fruit. The greater the amount of properly-developed foliage allowed, the better. If we bear in mind that all the colouring and sweetening matter, which goes to the perfecting of the berries, has first to pass through and be elaborated by the leaves, we shall see that without a certain amount of healthy leaf-surface good fruit cannot be produced. A Vine with weak, sickly foliage cannot produce or bear much fruit, and a plant whose foliage gets destroyed by Red Spider, &c., is in exactly the same condition.

Vine—continued.

One bunch on each spur would be considered a heavy crop; an average of 1lb. to every foot of rod is about the general quantity left, and is considered an ordinary crop. In thinning the bunches of such free varieties as the Black Hamburgh, every second bunch on each spur should be cut off before the flowers open, and all others which it is desirable to remove as soon as the grapes are set. The thinning of the bunches, as well as of the berries, should be done early. It is a great waste of power to allow that to develop itself which is not required, and which it is known must be cut away; therefore, as soon as the berries are fairly set, thin out—that is, cut off—the supernumerary bunches at once, and commence the thinning of the berries.

The thinning of the berries—or grape-thinning, as it popularly called—is a delicate and somewhat tedious operation. To be expert at this work requires considerable practice. For ordinarily well-set Black Hamburgh grapes, about one-third the number of berries require to be cut out; such varieties as the Royal Muscadine do not require to be so severely treated. It seems to the uninitiated a great sacrifice to cut away so many, the thinned bunch appearing quite a skeleton; but as each berry, when fully grown, should be nearly lin. in diameter (oftentimes more), there is nothing gained by leaving more than space actually permits. In thinning, first trim the bunch, if required, into proper shape, then continue by cutting out all the inside berries, next all the small berries, and then the side berries. The expert hand will cut these off two or three or more at a time. It will now only remain to regulate the growing berries to the required distance apart.

With larger bunches it is frequently desirable to tie up the shoulders, and so spread the bunch out, or to loop them up to the trellis with S-shaped pieces of thin wire of the requisite length, or to prop the shoulders up from underneath with little bits of wood: the berries, as they swell, lift each other up, and the clusters thus remain compact. Care should be taken not to make the bunches too thin. They should be so thinned that, when ripe and cut, the bunch or cluster may remain firm and compact, whilst every berry has been allowed to develop itself freely to its full size. As a general rule, the Vines require to be gone over twice before the stoning period, and once after, during what is termed the "second swelling," in order to remove all small berries, and otherwise regulate the bunches. In the great Vine-growing establishments, the major part of this work is performed by women and young persons.

FORCING. Since the introduction of orchard-houses, ground vineries, and other unheated structures for the cultivation of the Vine, this term, at one time very expressive of a definite condition, has become nearly obsolete. Any means that may be adopted for the forwarding of the growth of a plant to a greater extent than would take place naturally, may be termed forcing. Heat is the motive power. Some Vines are forced in spring, to induce them to commence growth early; others require forcing in autumn, to ripen their fruit. The Vine growing in an unheated orchard-house—that is, not heated artificially—is forced by solar heat to a certain degree.

Vines may be forced into growth, and to bear fruit at any season of the year, provided that the wood is properly ripened. Early-forced Vines of one season force more readily the following year, and established Vines always more easily than young ones. To secure early grapes, say in April, the Vines should be started into growth in November. The time required from the commencement of growth to the ripening of the fruit is, for the Black Hamburgh, about five months. Thus, Vines started in March should have fruit ripe at the end of July, and

Vine—continued.

those coming naturally into growth by the end of March, in August and September. The Muscat of Alexandria, Gros Colman, Alicante, Lady Downes' Seedling, and other late grapes, require nearly six months to ripen thoroughly. If, say on January 1, we take as an example a viney from which ripe grapes are required to be out in the month of June, the management or treatment necessary to secure this end may be stated in general terms, as follows:

Temperature. At the commencement, a night temperature of about 60deg. will be sufficient until the Vines have started growing. The heat should be gradually raised to 70deg. by the time they come into flower. When the grapes are fairly set, a lower temperature may be maintained until after the stoning period, when, if necessary, a rise of a few degrees may be allowed. When the grapes commence to colour, the temperature may be lower, but fire-heat is nearly always required, in order that a bracing atmosphere may be maintained. For day temperatures a rise of 5deg. by fire-heat may be allowed in dull, cold weather, and of 10deg. or more if by sun-heat, up to 80deg. or 90deg., as the season advances. In very cold weather, however, it is better to have a lower temperature than to maintain a high one by overheated pipes.

Ventilation. The object to be attained by ventilation is not merely the maintenance or regulation of the temperature, but also the admission of fresh air. The night temperature is mostly regulated by the amount of artificial heat applied; but the day temperature, or amount of sun-heat, is regulated by ventilation. In Vineries a little air should be admitted by the top ventilators early in the morning, or as soon as it may be observed that the temperature has risen or is rising above the required point, and this air should be gradually increased as the day and the temperature advance; and soon should be reduced in like manner, endeavouring, if possible, to shut up early enough to secure a slight rise in the temperature after doing so. Closing early at all times, and "bottling up," as it were, the sun's warm rays, is desirable. As the grapes begin to colour, air must be freely given, both by day and by night.

Moisture. This, in its relation to the atmosphere, is of great importance to the healthy progress of the Vine. A close, moist atmosphere is necessary to induce the buds to break freely, and afterwards to assist in supplying nutriment to the Vines through the leaves. Again, moisture is requisite to prevent the destruction of the leaves by insects.

From the commencement, then, a humid atmosphere must be maintained: the higher the temperature, the greater the evaporation, and the greater the amount of moisture required. When the Vines are started, they should be syringed regularly several times a day, especially if the weather be bright and warm, beginning as soon as it is perceived that the temperature is rising, and so on, varying as to time according to season, &c. This treatment may be continued until the Vines come into flower, at which period a somewhat drier atmosphere should be maintained until fertilisation has taken place. Syringing must from this time be discontinued: on account of the lime present in almost all water, the berries become spotted and soiled by its use. Every portion of the house and border, however, should be freely watered at all times, and the atmosphere kept well charged with moisture.

When the grapes are beginning to colour, a somewhat drier atmosphere is required; and by the time they are ripe, the air should be kept as dry and bracing as possible. After the grapes are cut, if it be during the growing season, the syringe should be again freely employed to thoroughly cleanse the leaves and wood, and its use continued until they ripen off.

Vine—continued.

POT CULTURE. The growing of Vines in pots is of a twofold character: first, that of producing plants for planting-out, subsequently to be grown as permanent Vines; and secondly, that of producing plants for fruiting in pots. Some cultivators grow the Vines obtained from eyes "struck" in early spring to their "fruiting state" the same season. Others strike the eyes, and grow the plants on so far, and the following year cut down, re-pot, and grow on again, thus occupying two years in producing a similar result. The one-year-old plants, if properly grown, are generally considered the better; but they are only produced under very favourable conditions, requiring an excessive amount of care and attention, and cost, possibly, more than the two-year-old plants, or "cut-backs," as they are familiarly called.

Potting. Liberal pot room must be provided, so as to grow the Vines quickly; therefore, as soon as it is found that the roots have reached the bottom or sides of the pot, re-pot into a 5in. or 48-sized pot, from this, immediately the roots have again reached the bottom, into an 8in., and from this into a 10in. or 12in. pot, which is called the fruiting-pot. This last size will be found quite large enough for all practical purposes. Plants that are intended to be grown the second year need not be potted into larger than 8in. pots. After the last shift, which should not take place later than the beginning of July, when the pots get stored with roots, they should be liberally top-dressed from time to time; this top-dressing will be found to get filled with fibry roots.

Soil. The best, fresh, fibry loam that can be procured, with the admixture of broken charcoal, and a little bone-dust and decayed manure, should be chosen for the first potting; the rougher the condition in which the soil is used, the better. The pots must be carefully and efficiently drained. For the second and third pottings, the soil may be somewhat richer. Top-dressings should consist of half-rotted manure mixed with the soil, together with some horn-shavings or bones. Care must be taken, in potting, to have the soil of the same temperature as that of the houses in which the plants are growing, and the Vines should be potted in the same place if possible, so as to prevent any possibility of chill from exposure, the check to their growth arising therefrom being extremely injurious at this stage.

Watering, &c. Abundance of water is at all times necessary for growing Vines. They should be syringed several times a day, and the atmosphere kept continually charged with moisture. When the fruiting-pots are full of roots, liquid manure should be frequently applied.

Temperature. Vine-eyes, on being struck, should be plunged in a bed having a bottom-heat of 80deg., and an atmospheric temperature by fire-heat of 65deg. or 70deg., which, by sun-heat, may be allowed to rise to 90deg. or 100deg. Too much sun-heat can scarcely be indulged in, if the atmosphere be plentifully charged with moisture. The same regulations as to temperature apply throughout the season, or until the Vines begin to ripen. Bottom-heat is not requisite when the plants attain a large size.

Training, &c. As the young Vines grow, they require to be staked, and to have the tendrils and lateral shoots pinched off as they are put forth. The leading shoot should not be stopped until it has grown to the required length. When the Vines have arrived at their full length, from 6ft. to 10ft. as the case may be, they must be stopped, and the laterals, as they appear, kept closely stopped also to the first leaf, in exactly the same manner as recommended for permanent Vines. When the canes are ripened, which may be in November, they should be at once pruned; that is, all the lateral spurs should be cut off, and the stem cut down to the length required—from 5ft. to 8ft., according to its strength.

Vine—continued.

The young Vines, whilst growing, should be kept as close to the glass as possible; and as they increase in length, a good situation for them is along the front of a low pit or house, training the rods to a trellis against the roof. In this manner the whole of the leaves, &c., are fully exposed to the sun's influence, and well-developed fruiting-buds are produced the entire length of the rod.

Ripening the Canes. The ordinary method, towards the end of the season, when the Vines are fully grown and show signs of ripening off, which they will do naturally, is to give gradually more air and less water, and after a short time to allow them to be fully exposed or removed to the open air. The plants, however, should never be allowed to flag or suffer from want of water.

Production of Fruiting Vines in Two or more Years. The treatment required is practically the same as that recommended for the one-year-old Vines, with this difference, that, instead of beginning with "eyes," young plants have to be dealt with. In winter, these young Vines should be cut down to one or two eyes or buds; and in January or February, the pots should be placed in heat. As soon as the eyes have started, the plants should be re-potted, the old soil being shaken out and new soil applied. The smaller the pot that will contain the roots, the better. The plants should be plunged in bottom-heat, and re-potted as required, and as already directed. These "cut-back" Vines, having somewhat the start of the "eyes," generally form the largest and strongest plants. They may be, and sometimes are, grown to a great size, and potted into the largest pots, when they produce enormous crops, some twenty-five or thirty bunches on a single plant, notable examples of which have been often exhibited by Messrs. Lane and Son, of Berkhamsted. Some of these large Vines may be fruited in pots for several years.

Treatment of Fruiting Vines. The forcing of pot Grapes may commence in November, or at any subsequent period. Those selected for early forcing should be the first ripened, and the canes should have been pruned quite a month before their introduction to heat, otherwise they may bleed. The use of well-ripened canes is a most important matter for early forcing.

A low house or pit is the most suitable for pot Vines. They have simply to be placed on a shelf along the front; or the pots plunged in a slight hotbed. The temperature at first should not exceed 50deg. by artificial heat, but must be increased, as the eyes break and begin to grow, to 60deg., and about the flowering period to 70deg. or thereabouts. With sun-heat the temperature should range much higher; but in this respect the treatment of pot Vines as regards general management, atmospheric conditions, ventilation of the house, &c., is exactly similar to that of plants grown in the ordinary Vinery.

After the Vines are placed in heat, water must be very sparingly applied for some time, until the roots commence growing, otherwise the soil will become sour and the roots will decay: it is better to allow them to be a little dry than otherwise. As the plants come into full leaf, a copious supply of water will be required. Whilst the fruit is ripening, extreme care is necessary—especially if the crop be a heavy one—to maintain the Vines in a thoroughly healthy state. Careless watering will destroy the best of crops; more failures are attributable to this cause than to any other. Liquid manure should be frequently given to the healthy plants.

Re-potting is seldom required. The best time to re-pot is about the period of the setting of the grapes, the roots being then in an active state, so that they soon take to the new soil. Top-dressings of soil mixed with horn or bone shavings, &c., should be freely applied.

As to their cropping capabilities, a strong Black Ham-burgh Vine, in a 12in. pot, may be allowed to bear 8lb. or 10lb. of grapes—from six to eight fair-sized bunches.

Vine—continued.

A Royal Muscadine Vine should bear from ten to twelve bunches; but this is dependent upon the strength and health of the plant.

The ordinary or utilitarian method is to train Pot Vines to a fixed trellis, the plants being placed about 2ft. apart, so that when the side shoots with the fruit, &c., are trained out, the whole trellis may be covered. Another mode is to twist the canes coil fashion round two or three strong



FIG. 184. FRUITING POT VINE.

stakes placed in the pot (as in Fig. 184), thus giving the plants, when fully grown, the appearance of columnar bushes. Another mode is to train the shoots so as to form a sort of umbrella-shaped head, with the bunches hanging round. These latter are all more or less graceful and ornamental.

Varieties. The varieties best suited for fruiting in pots are the free-bearing kinds, such as Alicante, Black Hamburg, all the Chasselas group, Foster's White Seedling, Madresfield Court, Royal Ascot, and Royal Muscadine. The Muscat of Alexandria is difficult to cultivate in pots, and Gros Guillaume scarcely shows any fruit at all.

CULTIVATION ON OPEN WALLS. Grapes were, at one time, much more extensively grown in the open air in this country than they are at present. This may principally be ascribed to the following causes: (1) The introduction of cheap glass, whereby structures for the cultivation of the Grape Vine with a considerable degree of success, may be erected at a moderate cost. In olden times, the seasons were not always propitious and suitable for Vine-growing any more than they are at the present day, although we read accounts of some very fine fruits having been grown on open standards in 1818. (2) The Mildew, the intrusion of which scourge to the Vine, in the year 1847, has rendered its cultivation in the open air in this country extremely precarious. Although sulphur is well known as a remedy, its application to Vines in the open air is not so easy to accomplish, and, therefore, the results are not so effectual as could be desired. It is very seldom now that outdoor grapes entirely escape this malady. (3) A series of cold, sunless seasons, in which the outdoor

Vine—continued.

grapes have seldom ripened, so that their cultivation has gradually come to be nearly abandoned. If a little more attention to the proper culture of the plant, and to the thinning and taking care of the fruit, were given, no doubt better results would follow; and it seems a pity we do not see Vines more frequently adorning the walls of our cottage homes in the more southern parts of the country. There the Grape Vine would be not only ornamental but useful. As a plant it is perfectly hardy, and it grows freely. In spring the young shoots are sometimes injured by late frosts, and in cold seasons the wood does not ripen thoroughly, but it is the fruit that is tender, and that only in so far as it generally requires more heat than our climate affords to ripen it.

Soil. The Vine will grow in any good garden soil which is freely exposed to light and air, and well drained; the more of a loamy character it has, and the fresher it is, the better. Before planting, the soil should be well dug or trenched to a fair depth, and some well-decayed manure, ground bones, &c., applied.

Position. This must be warm and sheltered—a wall facing the south, or a roof sloping in the same direction. Any other aspect is useless.

Planting should be done early in the autumn, so that the roots may get into action before winter.

Pruning and Training must, to a certain extent, be very similar to the practice adopted under glass. Vines to be trained to single stems should be planted about 2ft. apart, and pruned on the spur system. It is preferable, however, to allow Vines on open walls to cover a greater space, and to have many stems or branches. These may be trained in an upright direction, at about 1½ft. apart, and may be pruned on the spur system; another method is that of training the stems in a horizontal direction. Thus, at the first pruning, the Vine is cut down to a height of about 1½ft., and three shoots or stems are trained up the first year. At the winter pruning, one of these stems is trained out horizontally to the right, the other to the left; these, being pruned according to their strength to 4ft. or 5ft. in length, form the first or lower tier of branches on which the fruiting shoots or spurs are to be produced. The third shoot is trained upright; if strong, it may be pruned to 4ft. or 5ft. long, and the following season one or more side branches may be added in a similar manner, the distance apart being 18in. or 20in. The fruit-bearing shoots may be about 1ft. apart, and should be nailed in on the upper side of the stems only. Vines so trained may be extended to any distance, and pruned in winter in the usual manner. Disbudding must be carefully attended to, and the bearing shoots regularly stopped at one leaf beyond the fruit; and all the lateral shoots subsequently produced must be carefully removed.

To secure the best results, the bunches and berries should be carefully thinned, and, in the case of white grapes, fully exposed during the ripening period to the rays of the sun. If long, straggling bunches are produced, it is better to shorten them, as short, compact bunches ripen best.

Varieties. The greater portion of the Sweetwater section, with a few of the smaller Muscats, will be found more or less suitable for cultivation in the open air. In France the variety met with is invariably the Chasselas de Fontainebleau, which in this country is known as the Royal Muscadine. As grown in France, with the beautiful cinnamon-russet colour, it is very rich and pleasant. The Royal Muscadine is, at the present time, the leading grape for outdoor culture. A much better variety, not yet sufficiently well known, is the Chasselas Vibert, which produces larger berries, and ripens about a fortnight earlier, than the Royal Muscadine; Ascot Citronelle, Black July, Espiran, and Grove End Sweetwater, may also be recommended. In some

Vine—continued.

warm seasons, the Black Hamburg ripens its fruit very well.

KEEPING THE FRUIT. Grapes, unlike most other kinds of fruit, will keep in a ripened state, and in a usable condition, on the plant for a long time, a certain amount of nourishment being necessary to the maintenance of the berries in a properly fresh and plump condition. If severed from the Vine, they soon shrivel or decay, unless the stalks be placed in water, or sustenance be provided in some other way. Properly ripened, and placed under favourable circumstances, grapes will keep in excellent condition for a long time. Some varieties possess this keeping property to a greater extent than others. The fact of being thus able to keep ripe grapes prolongs the season of their use, and assists in maintaining a continuous supply.

The cultivation of the Vine in glass-houses is the primary means by which we are enabled thus to keep its fruit. Grapes grown in the open air cannot be preserved for any length of time on account of the weather, but in vineries they are under control. Houses, therefore, that are required for late or keeping grapes should be so constructed as to meet the special requirements of the case; and these are an equable temperature and a dry atmosphere, which are maintained by proper heating powers and thorough ventilation.

Grapes that are required for late use should be ripened by the end of September. When the fruit becomes ripe, the most active period of the growth of the Vine is past; but it is not well, although a very old custom, to keep the borders and the roots dry. The artificial drought is injurious to the roots, which are still in action, and not beneficial to the fruit, for the longer the foliage can be maintained fresh and green, the better the grapes will keep. Constant supervision is necessary, and great care should be taken to remove any decaying berries, keeping the temperature as near 45deg. as possible.

Ripe grapes may be kept in good condition on the Vines until March, or later if carefully shaded from the sun, and a cool, dry atmosphere be maintained. If allowed to hang until the rise of the sap, the operation of pruning is likely to be injurious to the Vines.

Bottling Grapes. Grapes may be cut from the Vines, and, having their stalks placed in bottles of water, may be kept in a fruit-room, or other suitable apartment, in almost as perfect a condition as those that are allowed to hang on the Vines; and where the quantity is limited, this can be done at much less expense. Further, they may thus be preserved to a later period than it is possible to keep them on the Vines. This is a method of keeping grapes that has been for some time adopted in France, although it was scarcely known in this country until brought under notice by Mr. Robinson, in his "Parks, Promenades, and Gardens of Paris," in 1869. It is now, however, adopted, with modifications, in many establishments in this country. The originator of the system was M. Rose-Charmeux, of Thomery, who had a small room in his house fitted for the purpose, from which light and air were, as far as possible, excluded.

One of the best examples of this method is that used at Ferrières, near Paris, the seat of Baron Alphonse de Rothschild, where M. Bergmann, the excellent gardener, has a grape-room specially fitted for the purpose, and in this all the grapes are placed as they become ripe. Fig. 185 is an illustration of his mode of fixing the bottles, and Fig. 186 shows the arrangement of screens or partitions adopted within the room for the convenient stowage of the bottles when in use.

The ordinary fruit-room will not answer for this purpose; the grapes cannot be kept with other fruits,

Vine—continued.

as they require special provision made for them. A thoroughly dry, close, dark room, wherein an equable temperature of 40deg. to 45deg. can be maintained, is what is required. Dryness is the first consideration, so, if a separate room has to be constructed, it should be built with hollow walls and a double set of doors, in order to counteract the effects of fluctuations in temperature and moisture. The grapes intended to be thus kept should be cut with a considerable portion of the shoot attached, and the end of the shoot placed in a

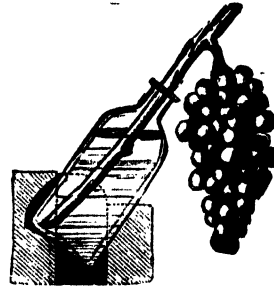


FIG. 185. MODE OF FIXING BOTTLES FOR GRAPES.

bottle filled with pure water. Opinions differ as to whether the fruit is deteriorated in quality by being thus kept. It is obvious that support is derived from the water, and this subsequent absorption of water can scarcely act otherwise than to reduce the amount of saccharine properties in the fruit.

The best late-keeping Grapes are those varieties having thick skins, viz.: Alwick Seedling, Gros Colman, Gros Guillaume, Lady Downes' Seedling, Muscat of Alexandria, Trebbiano, West's St. Peter's, and White Tokay. It is



FIG. 186. SECTION OF PORTION OF UPRIGHT FOR SUPPORTING BOTTLE-RACKS.

difficult to keep Black Hamburg Grapes in good condition on the Vines after Christmas; but if cut before that time, and placed in bottles, they may be had in a sound state during the month of January.

DISEASES, &c. These have been far more studied in France and in other Continental countries, than they have been in England, since in the latter country Vines are more especially luxuries, grown in greenhouses; while on the Continent they are among the most valuable of cultivated plants, and their destruction from any cause may mean ruin to their cultivators. Hence, the greater part of our information with regard to the diseases of Vines,

Vine—continued.

and the appropriate treatment for each, is due to the researches of French and German biologists. The causes of disease are various, including excess or defect of warmth, moisture, exposure to light, and food, defective ventilation of vineries, attacks of Fungi and of insects and other animals. Two diseases to which Vines are liable have been already treated of under **Shrivelling** and **Sun-burning**. The former is due to insufficient supply of water, either because of its deficiency in the soil, or because of the roots failing to transmit a proper amount to the leaves and fruit. The latter may be due to the roots being too few for the necessities of the plant, or to coldness of the soil after the air of the vinery has induced active growth in the young shoots and leaves. The plants may also suffer, in ill-ventilated vineries, from "sun-burning" of the leaves, small portions becoming brown and dry, in the manner described under **Sun-burning**.

Bleeding. A term applied to an overflow or outpouring of watery sap, although there is no real analogy between this flow of water and the efflux of blood in animals. The Vine is furnished with an enormous supply of this watery sap, which flows very freely, and with great force, shortly after growth commences, until the plant gets into full leaf. The cause of bleeding is late pruning or otherwise cutting the Vine at this period. This loss of sap is sometimes excessive, and is then injurious to the Vine. There is no ready means of arresting the flow when once it has commenced. To avoid its occurrence, Vines should be pruned early.

Shanking. One of the most perplexing maladies that affect the Vine. The term is used to denote the drying-up or withering of the stalks of the bunches or berries; the berries that thus shank, or lose the vitality of their stalks, become intensely sour, and never ripen. Sometimes, it is only a few berries; in other cases, it is the whole bunch, or maybe the entire crop. Many and varied opinions as to the causes of shanking have been advanced. In a broad sense, it is, no doubt, the result of some overstrain, some bad condition of, or injury to, the feeding or respiratory organs of the plant—either the foliage has been in some way injured or prevented from performing its proper functions, or the roots have got into bad condition, and cannot perform theirs; or it may be due to a combination of both these causes. As to the more immediate causes, we note the following: **Over-cropping**; the destruction of the foliage by Red Spider or other agency; the stripping-off of a great quantity of leaves at one time, as is frequently done by those who neglect timely stopping; chills, or sudden changes of the temperature of the house; the roots getting into a cold subsoil, or the border becoming wet and soddened, &c.; planting in borders composed of too rich materials; excessive dryness at the roots, such as to cause injury to these organs, &c.—all of which should be avoided.

Adventitious or Air Roots. These are so called from their being produced on the stem of the Vine, and suspended in the air like so many threads. They are of the same character as the proper roots, only requiring to be brought into contact with the soil to become such. Air roots are sometimes produced in great profusion from every part of the stem, frequently attaining 1ft. or more in length, and so give the Vine a strange appearance. There is no particular harm in these adventitious roots, *per se*, but their presence betokens a want of proper action on the part of the true roots running naturally in the soil. They are a sign of bad health, and are frequently the precursors of shanking; they give evidence that the proper roots are not in a condition to supply the great demands of a large expanse of foliage, &c., and that, aided by a warm, moist atmosphere within the house, Nature is trying to supply this want. Close warmth and moisture will induce the formation of such roots from Vine-stems

Vine—continued.

at any time; but if the true roots in the border are in a perfectly congenial condition, no air or adventitious roots will be produced in any ordinarily well-managed vinery. They are, in short, mainly the result of the roots being in a cold, wet border. To prevent their formation, or to recover Vines subject to this evil, the amelioration of the borders must be effected, by taking up the Vines, examining the condition of the drainage, renewing it if found necessary, and adding fresh soil. Some varieties of Vines, such as those of the Frontignan class, being of a tenderer constitution, are more subject to the formation of air roots than others. When such roots are produced, they need not be cut off, except for appearance's sake, for they will wither and die as the wood ripens.

FUNGI as causes of disease are treated of under **Vine Fungi**.

ANIMAL PESTS. The animals, &c., destructive to Vines are numerous, and the number recorded as hurtful is being added to almost every year in Europe and elsewhere; especially is this the case in America, on which continent animal pests are even more abundant and varied than in Europe. By far the most dangerous insect-foe is the *Phylloxera vastatrix*, of which a full account is given (with a statement of the appropriate remedies to be employed against it) under **Grape or Vine Louse**. This insect has destroyed the contents of many vineries in Britain, and has devastated extensive vineyards in many parts of the Continent. It has been peculiarly destructive in France. Its galls on the leaves are usually very numerous and very conspicuous; but the less prominent root-galls are even more fatal to the Vines. In mid-Europe, a Gall-midge (*Cecidomyia onophila*) produces galls on the leaves not unlike those of *Phylloxera*; but an examination of a gall will disclose the Midge larva in the central cavity. This Midge has not been recorded as British. The stems and branches are liable to be infested by certain species of **Scale Insects** (which see) on the American and European continents, but none have yet been recorded from Britain. Several kinds of Beetles, besides Weevils (see **Vine Weevils**), do considerable injury to the leaves and the young twigs, the more noteworthy being *Anomala Frischii* and *A. Vitis*. They resemble Cockchafer's a good deal in form, but are only about $\frac{1}{2}$ in. long, and are usually satiny or metallic green or blue, with a clay-yellow band round the sides of the thorax. Both they and the Weevils are found more or less frequently in England, and may prove injurious in vineries. When hurtful, their numbers may be reduced by the methods detailed under the headings quoted. Many species of *Lepidoptera* feed on Vines; they are discussed, and remedies are given, under **Vine Moths**. *Aphis (Hyalopterus) Pruni* is recorded in Buckton's "British Aphides" as living on Vines, as well as on other plants. For appropriate treatment, see **Aphides**.

Among Mites, the worst foe to Vines is the Red Spider (see **Tetranychus telarius**), which sometimes seriously injures the plants at the period of setting of the fruit, when the supply of water is limited, to improve the flavour. When the attack is severe, the leaves may be so seriously injured that the fruit cannot be properly matured. The Mites may be destroyed by the methods detailed under **Tetranychus telarius**. It is important, as a preventive of attacks, to allow the roots a good supply of water, and to keep the atmosphere of the house sufficiently moist while the grapes are forming, the amount of water being reduced only after they are beginning to colour. Another Mite that does harm on the Continent of Europe is *Phytoptus Vitis* (see **Mites**), which causes a dense growth of pale hairs to appear on the lower surface of the leaves, either in isolated patches, or almost covering the whole surface. This growth was formerly regarded as a Fungus, and was

Vine—continued.

named *Erineum Vitis*, or *Phylloxera Vitis*. The plants may be only slightly weakened by these growths; but in bad attacks the leaves are unable to do their work in the nutrition of the Vines, which suffer in consequence. The best remedy is picking off, and burning, the diseased leaves.

The last animal to which we shall refer as causing diseases in Vines, is a Nematoid Worm (*Heterodera radicola*) This is nearly related to *H. Schachtii* (mentioned under **Nematoid Worms**); and, like that species, it produces small swellings on the roots of very many kinds of plants, including Vines, which become much weakened, or are killed by them. The only remedy, so far as is known, is to carefully remove, and to burn, the diseased plants, so as to prevent the evil from spreading.

SORTS. The varieties of Grapes, like those of all other cultivated fruits, are extremely numerous. In its wild state, the Vine exhibits considerable variation, and under cultivation, in the different climates and countries, sorts obtained from seed have been selected as suited to special conditions and requirements. Thus, in some parts thin-skinned, fleshy grapes prevail, and in others, possessing a warmer and drier climate, the thick-skinned varieties preponderate. In the various wine-growing countries distinct classes of grapes seem to exist, whilst those of America belong to a distinct species, *Vitis Labrusca*. It is altogether impossible to estimate the number of varieties existing. In this country, grapes being exclusively grown for dessert, the number of varieties in general cultivation is comparatively limited. Miller, in 1768, describes 18 sorts; Speechly, in 1791, records 50 sorts; Forsyth, in 1810, 53 sorts; Thompson, in the Horticultural Society's Fruit Catalogue, in 1831, records 182 names; Dr. Hogg, in the "Fruit Manual," 1875, describes 143 varieties; and in Barron's "Vines and Vine Culture," 100 varieties are fully described, and mostly illustrated, all of which have fruited in the Royal Horticultural Society's Gardens, Chiswick, and from which the following selection has been made, comprising nearly every variety that is worthy of cultivation:

Varieties of European Grapes
(*Vitis vinifera*).

Until a few years ago, the Grapes grown in this country were entirely selected from other countries, but of late years several remarkably fine varieties have been raised in Britain, by careful hybridisation, and are now being introduced in the wine-growing districts.

Aleppo. Fruit variously coloured, some being black, others green or striped with black, small, round, having a singular appearance; flesh soft, sweet, watery; bunches small, loose. An early Sweetwater Grape.

Alicante. Fruit quite black, with a thick bloom, large, of a true ovate shape; flesh squasy; flavour somewhat earthy, unless well ripened; skin thick and leathery; bunches large, averaging from 2lb. to 6lb. in weight, very broadly shouldered, conical and regular, closely set; stalk very stout. Late. Very handsome, and easily cultivated.

Alwick Seedling. Fruit black, covered with a thick bloom, large, roundish-oval; flesh firm; flavour strong, sparkling, tolerably rich and sweet; skin thick and tough; bunches large, broadly shouldered, bluntly conical, shy setting. A good, useful, very free-fruited, late Grape, which keeps well.

Anger's Frontignan. Fruit purplish-black, with a thick bloom, small, round; flesh firm yet tender, juicy, very sweet and rich, having a strong Muscat flavour; bunches small, tapering, very compact, closely set. Early.

Aramon. Fruit purplish-black, medium-sized, round; flesh firm, having a fine, brisk flavour; bunches long-tapering; stalk extremely brittle. Late. Second quality.

Vine—continued.



FIG. 187. BLACK CORINTH GRAPES.
Bunch, one-third natural size; Berries, full size.

Ascot Citronella. Fruit pale greenish-yellow, small, roundish-ovate; flesh soft, juicy, very sweet, and richly flavoured. An early Muscat Grape, ripening several weeks before the BLACK HAMBURGH.



FIG. 188. BLACK HAMBURGH GRAPES.
About one-fourth natural size.

Ascot Frontignan. Fruit pale greenish-white, small, round; flesh firm, sweet, and with a strong Muscat flavour; bunches small, somewhat loose and straggling. Early.

Vine—continued.

Auvergne Frontignan. Fruit clear white, changing to amber when fully ripe, medium-sized, round; flesh firm; flavour extremely rich and pleasant; bunches long-cylindrical, closely set. An excellent, early Muscat Grape for growing in cold houses.

Barbarossa. See Gros Guillaume.

Black Corinth. Fruit purplish-red, quite small, round; flesh sweet, juicy, and without seeds; bunches small, tapering. This interesting variety is the Sweetwater Grape producing the currants of commerce, and is largely cultivated in several parts of Greece. It is also known as the CURRANT GRAPE, ZANTE CURRANT, &c. See Fig. 187.

Black Frontignan. Fruit purplish-black, small, round; flesh very firm, with a fine, brisk, rich, sparkling flavour; bunches small, cylindrical, close and compact. An early Muscat Grape, useful for growing in cool houses.

Black Hamburgh, or Frankenthal. Fruit deep bluish-black, covered with a fine bloom, large, roundish-ovate; flesh firm, yet tender, juicy, and with a pleasant, rich flavour; bunches medium, ovate, with broad shoulders, compact. A mid-season Sweetwater. This is the chief Grape in cultivation. See Fig. 188.

Black July. Fruit deep purple, small, round; flesh sweet, juicy, not rich; bunches small, loose. An early Sweetwater Grape.

Black Monukka. Fruit purplish-red, small, long-ovate, or in shape like an acorn; flesh firm, tender, seedless, very sweet and pleasant to the taste; bunches very large, long-tapering. A distinct Sweetwater variety, of Indian origin. See Fig. 189.

Black Morocco. Fruit purplish-red, large, long-ovate; flesh very firm, juicy, with a rich, sparkling flavour; bunches large, long-tapering, generally badly set. A handsome, late Grape.

Black Prince. Fruit deep bluish-black, with a thick bloom, medium-sized, ovate, always well set; flesh dark, juicy and sweet, but not rich; bunches very long-tapering. A handsome, early, free-fruiting Sweetwater Grape.

Buckland Sweetwater. Fruit pale green, becoming almost white when over-ripe, large, round; flesh juicy and watery, with a pleasant, sweet flavour; bunches medium, short, broadly-shouldered. A free-fruiting, mid-season Grape, which sets well.

Canon Hall Muscat. Fruit pale straw-coloured, large, round; flesh firm, yet very juicy, with a strong Muscat flavour; bunches large, straggling, very frequently badly set. An extremely handsome, mid-season Grape, but somewhat difficult to cultivate.

Chaouch. Fruit clear straw-yellow, medium-sized, ovate; flesh tender, juicy, very sweet and rich; skin thin; bunches of medium size, somewhat loose, often badly set. An early Sweetwater Grape. This is the favourite Grape at Constantinople.

Chaptal. Fruit greenish-white, small, round; flesh firm, sweet, watery; bunches long-tapering, rather loose. A very free-growing, mid-season Sweetwater variety, resembling a large form of ROYAL MUSCADINE.

Chasselas de Florence. Fruit pale straw or nearly white, a great many of them assuming a violet hue, and others a cinnamon-brown, small, round; flesh firm, sweet, and pleasant; bunches long, medium-sized, well set. An early Sweetwater Grape.

Chasselas Musqué. Fruit pale greenish-white, changing to amber, small, round; flesh very firm, juicy, and with an extremely rich flavour; skin tender, very liable to crack when approaching maturity—so much so that the bunch becomes a mere skeleton; bunches long-tapering, setting freely. An early Muscat.

Chasselas Rose. Fruit clear rosy-red, small, round; flesh firm, juicy, sweet, and pleasant; bunches long-cylindrical, well set. An early Sweetwater; a pretty variety of the ROYAL MUSCADINE.

Chasselas Vibert. Fruit clear greenish-white, medium, round; flesh firm, tender, sweet, and pleasant; bunches small, compact, well set. A very early Sweetwater Grape.

Ciotal. Fruit clear greenish-white, small, round; flesh firm, sweet, and pleasant; bunches small, compact. Leaves very much cut or lacinated (hence the name PARSLEY-LEAVED GRAPE, sometimes used). An early Sweetwater Grape.

Dr. Hogg. Fruit clear greenish-white, medium, round; flesh firm, very sweet, and with a rich, Muscat aroma; bunches long-tapering, setting well. Mid-season.

Duchess of Buccleuch. Fruit greenish-white, changing to yellow when highly ripened, small, round; flesh tender, juicy, exceedingly rich, and with a strong Muscat flavour; bunches very long, cylindrical, well-set. A mid-season Grape.

Duke of Buccleuch. Fruit greenish-yellow, very large, round; flesh tender, very juicy, sweet, and exceedingly rich; bunches medium, short-ovate. An early Sweetwater Grape, somewhat difficult to cultivate.

Dutch Hamburgh. Fruit deep purplish-black, with dense bloom, very large, round; flesh coarse, and harsh in flavour; bunches medium, short, broadly shouldered, often setting imperfectly. A handsome, mid-season, vinous variety.

Dutch Sweetwater. Fruit clear greenish-white, medium-sized, round; flesh firm, juicy, sweet, and pleasant; bunches short, small, often badly set. An old, early Sweetwater sort, suitable for open-air culture.

Vine—continued.

Espiran. Fruit deep purplish-black, medium, round; flesh firm, somewhat harsh; bunches small, tapering, well-set. A good, mid-season, open-air Grape.

Ferdinand de Lesseps. Fruit clear greenish-yellow, translucent, small, ovate; flesh very tender, melting, juicy, and sweet, with a strong aroma of ripe strawberries; bunches small, tapering. An early Muscat Grape.



FIG. 189. BLACK MONUKKA GRAPES.

Bunch, one-third natural size; Berries, full size.

Foster's Seedling. Fruit clear greenish-yellow, medium, oval; flesh tender and melting, sweet and pleasant; bunches medium, shouldered, well set. An early Sweetwater Grape.

Frankenthal. See Black Hamburgh.

Golden Hamburgh. Fruit greenish-yellow, large, round; flesh soft, melting, watery; bunches medium, broadly shouldered. A mid-season Sweetwater Grape.

Vine—continued.

Golden Queen. Fruit greenish-yellow, golden when highly ripened, large, long-ovate; flesh soft, squashy, with a faint trace of Muscat; bunches medium, long-tapering, well set. A late Grape.

Vine—continued.

Gros Guillaume. Fruit deep black, with fine bloom, medium, round; flesh tender, juicy, with little flavour; bunches very large (sometimes exceeding 20lb.), long, regularly tapering, well set. A late, vinous Grape, generally known as BARBAROSSA.



FIG. 190. GROS COLMAN GRAPES.

Bunch, one-third natural size; Berries, full size.

Grizzly Frontignan. Fruit of a dull red or grizzly colour, small, round; flesh firm, sweet, and with a rich Muscat flavour; bunches small, cylindrical, close, and compact. A mid-season Muscat Grape.

Gros Colman. Fruit black, with a thick bloom, large, round; flesh thick, coarse, with a poor, watery flavour; bunches medium, broadly shouldered, well set. An extremely handsome and excellent keeping, late, vinous Grape. See Fig. 190.

Gros Maroc. Fruit nearly jet-black, with a fine bloom, large, truly ovate in shape; flesh firm, juicy, with a brisk, rich flavour; bunches medium, well set. A handsome, late, vinous Grape.

Grove End Sweetwater. Fruit greenish-white, small, oval; flesh tender, melting, with a rich, sweet flavour; bunches small, well set. An early Sweetwater Grape.

Lady Downes' Seedling. Fruit black, large, round; flesh exceedingly firm, juicy with a somewhat harsh flavour; bunches

Vine—continued.

- medium, long-tapering, always well set. A good, late-keeping, vinous Grape.**
- Lombardy.** Fruit red or grizzly, medium, round; flesh tender, with a pleasant, sweet flavour; bunches large, broadly shouldered, well set. A mid-season Sweetwater Grape.

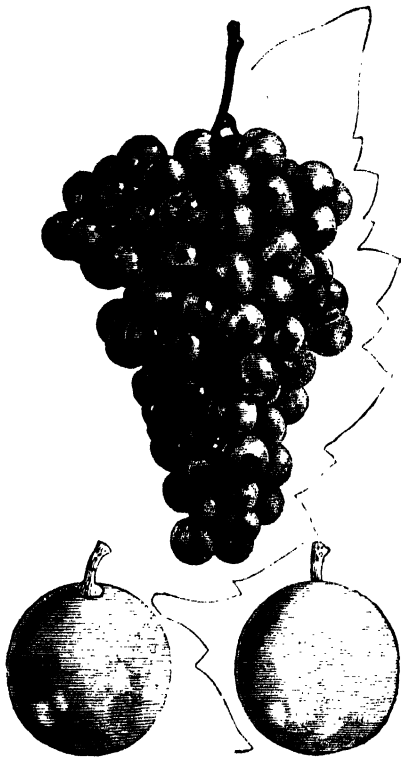


FIG. 191. ROYAL MUSCADINE GRAPES.

Bunch, one-third natural size; Berries, full size.

- Madeleine Royale.** Fruit clear greenish-yellow, medium, oval; flesh tender, juicy, sweet, and pleasant; bunches small, broadly shouldered, well set. An early Sweetwater Grape.
- Madresfield Court.** Fruit purplish-black, with a fine, grey bloom, large, ovate; flesh firm, yet juicy, sweet, and rich, having a strong Muscat flavour; bunches large, long-tapering, well set. A very handsome and excellent, mid-season Grape.
- Miller's Burgundy.** Fruit jet-black with a thick bloom, small; flesh dark, juicy, with a pleasant, sweet, watery flavour; bunches quite small, cylindrical, compact and close. Leaves extremely downy on under surface (hence the name MILLER GRAPE, sometimes used). An early Sweetwater Grape.
- Mill Hill Hamburgh.** Fruit reddish-black, very large; flesh melting, juicy, sweet and rich; skin thin; bunches medium, broadly shouldered. An excellent, early Sweetwater Grape.
- Mrs. Pearson.** Fruit greenish-white, medium, round; flesh very firm, yet juicy, sweet, and with a rich Muscat flavour; bunches medium, well set. A mid-season Grape.
- Mrs. Pince.** Fruit purplish-black, coated with bloom, large, ovate; flesh exceedingly firm, very rich and sweet, with a strong Muscat flavour; bunches large, long-tapering, often badly set. A late Grape, which keeps well.
- Muscat Champion.** Fruit red or grizzly, large, round; flesh firm, yet juicy, rich, and with a strong Muscat flavour; bunches short, broadly shouldered. A mid-season Grape.
- Muscat Hamburgh.** Fruit purplish-black, large, long-ovate; flesh firm, yet juicy, rich, and with a decided Muscat flavour; bunches medium-sized, loose, broadly shouldered, often badly set. A mid-season Grape.
- Muscat of Alexandria.** Fruit greenish-yellow, golden when highly ripened, large, long-ovate; flesh firm, juicy, sweet, and rich, with a high Muscat flavour; bunches large, long-tapering. A very handsome and excellent, late Grape.

- Muscat of Hungary.** Fruit greenish-yellow, small, short-ovate; flesh firm, sweet, and having a decided Muscat flavour; bunches small, tapering. An early Grape.
- Ocellade Noire.** Fruit deep black, with a fine bloom, large, long-ovate; flesh very tender and juicy, with a pleasant, rich flavour; bunches long, loose, and straggling. A mid-season Sweetwater Grape.
- Raisin de Calabre.** Fruit white, medium-sized, round; flesh firm, and possessing little flavour; bunches long-tapering. A late, vinous Grape, which keeps well.
- Royal Ascot.** Fruit purplish-black, large, ovate; flesh very firm, with a strong, piquant, plum-like flavour; bunches small, short, compact, well set. A mid-season vinous Grape.
- Royal Muscadine.** Fruit greenish-white, small, round; flesh firm, juicy, sweet, and exceedingly pleasant, bunches small, long-tapering, compact, well set. A good, open-air, early Sweetwater Grape, also known as WHITE CHASSELAS. See Fig. 191.
- Syrian.** Fruit greenish-white, large, ovate; flesh firm, juicy, sweet, and moderately rich. A late, vinous Grape, which keeps well.
- Trebbiano.** Fruit greenish-white, changing to pale amber when fully ripe, large, ovate; flesh firm, sweetly flavoured, but not rich; bunches very large (one example weighing 2½ lb. has been grown), broadly shouldered, well set. A late, vinous Grape.
- Trentham Black.** Fruit jet-black, large, ovate; flesh extremely tender and juicy, with a sweet, rich, and very pleasant flavour; bunches large, loose, and straggling, often badly set. An early Sweetwater Grape.
- Trovoren Frontignan.** Fruit, some greenish-yellow, others deep amber tinged with dirty-brown, small, round; flesh firm, crackling, very rich, and highly flavoured; bunches long-tapering, compact, well set. A mid-season Muscat Grape.



FIG. 192. STRAWBERRY GRAPES.

Bunch, one-third natural size; Berries, full size.

- West's St. Peter's.** Fruit deep purplish-black, medium, round; flesh firm, juicy, sweet, and at all times remarkably fresh; bunches medium-sized, tapering, well set. A late, vinous Grape, which keeps well.
- White Chasselas.** See Royal Muscadine.
- White Frontignan.** Fruit greenish-white, small, round; flesh firm, yet juicy, and very richly flavoured; bunches medium, long-cylindrical, well set. A mid-season Muscat Grape.

Vine—continued.

White Nise. Fruit pale greenish-white, medium-sized, round; flesh moderately firm, juicy, sweet, but not rich; bunches very large, somewhat loose and straggling. A late, vinous Grape.

White Tokay. Fruit greenish-white, large, ovate; flesh firm, with a sweet, pleasant flavour when well ripened; bunches large, broadly shouldered, well set. A late, vinous Grape.

Varieties of American Grapes (*Vitis*)

These form quite a distinct class from the European Grapes. The American Vine is of a remarkably free and vigorous growth. The berries are small; flesh greenish, having a mucilaginous texture, and a strong musky perfume, with a peculiar "foxy," sweetish flavour; bunches small, produced in great abundance. The leaves are large, thick and leathery, very downy or pubescent on the under surface, and but slightly lobed. The varieties existing in America are extremely numerous, and are better adapted to that country than the European Grapes. The Strawberry Grape has been for many years cultivated in this country and in Germany, and by some persons is greatly esteemed. Those here described have been fruited at Chiswick.

Brighton. Fruit black, small; flesh tender, of a peculiarly sweet flavour; bunches small.

Duchess. Fruit white, medium; flesh brisk, sweet, and pleasant; bunches long, loose.

Eldorado. Fruit deep yellow, small, round, having a strong musky flavour; bunches small.

Golden Pocklington. Fruit clear yellow, round, small, juicy and sweet; bunches medium-sized, compact.

Jefferson. Fruit grizzly-red, large, roundish; flesh melting, of a brisk, sweet, pleasant flavour; bunches small.

Lady. Fruit deep yellow, small, round; flesh melting, musky, rich; bunches small, thinly set.

Moore's Early. Fruit purplish-black, with a fine bloom, small, round; flesh melting, sweet; bunches small, compact.

Strawberry. Fruit purplish-red, small, roundish-ovate; flesh dark, thick or mucilaginous; bunches small, compact, closely set. The ripe fruit emits a strong perfume of ripe strawberries or raspberries. See Fig. 192.

VINE. Any trailing or climbing stem.

VINE, CONDOE. A name given to *Marsdenia Cundurango* (which see).

VINE FUNGI. Many species of Fungi have been recorded as living on Vines in Europe and in North America, and there exists almost a special literature upon these parasites. They vary greatly in their destructive powers; and some species have ravaged the vineyards of both Continents. Inquiry into the best methods of contending with the parasites, and of saving the Vines from complete destruction, has thus been powerfully stimulated. In vineries in the British Islands, these pests have not caused so great harm as where the Vines are cultivated on a large scale; yet, even in Britain, the harm done is sufficient to render some notice of them desirable in this work. Of the hundred or more species that have been recorded as growing on Vines, only those that give rise to serious disease are mentioned below.

Vine Mildew is the name given when the leaves and stems become covered with a whitish or greyish coating, either in patches, or over large portions of the plants. Such an appearance is caused by more than one Fungus. The best-known are *Oidium Tuckeri* (which has long been known in Europe, and which was at one time most injurious in the vineyards of France, and also in those of Madeira), and *Peronospora viticola*, the latter a Fungus brought in recent years from America to France, on imported Vines.

Oidium Tuckeri was first described by the well-known botanist, Rev. M. J. Berkeley, from specimens sent to him, in 1847, by Mr. Tucker, a gardener in Ramsgate. It was detected in France in 1848. By 1851 it had spread to all the vineyards in Europe; and in the next year it was observed in Madeira. The Fungus shows itself as a thin, pale layer or coat on the leaves and on the young

Vine Fungi—continued.

twigs, and even occurs on the fruits. The diseased parts often become pale, and more or less distorted; the coat becomes thicker; then the spots become brown, and the parts die. An examination with the microscope shows that the surface of the part is covered with the filaments of the Fungus creeping over the epiderm cells of the diseased spots, and that from the side of each filament of the Fungus little suckers are pushed into the epiderm-cells, and absorb food from them for the Fungus. From the other side of the filaments erect branches arise, each formed of a row of cells, of which those at the ends of the branches (conidia) are oval, and break away, to produce the Fungus again when they fall on suitable situations on the Vine leaves or branches. No other mode of reproduction has yet been detected in this Fungus, though it undoubtedly belongs to a more fully-developed form, such as is described under *Mildew* and *Oidium*. Mr. Berkeley has suggested that it may belong to the very common *Erysiphe communis*. Plants suffering from its attacks have a mouldy, disagreeable smell. Another *Oidium* (*O. Balsamii*), with more slender conidia, sometimes occurs on Vines. The Fungus spreads rapidly in a moist, warm atmosphere, and is greatly checked in dry air, and also by very heavy rain, which washes away the spores.

All dead leaves and stems should be removed

form a complete and thorough cure, as they destroy the parasite without injuring the Vines. The sulphur should be dusted on the Vines in early spring, after the stems have begun to push forth, then again when the blossoms have opened, and lastly, when the grapes are beginning to ripen. To prevent any taste of sulphur being perceptible in the ripe fruits, the third dusting must not be too late. The green organs to which sulphur is to be applied should be moistened, to make the powder adhere.

Peronospora viticola had been known, from 1834, as a parasite on almost all the Vines of North America; but it was imported into Europe only in 1878, on plants brought to replace the European Vines destroyed by *Phylloxera*. It has now spread widely through France and Algeria. The diseased leaves, about August, show patches of irregular form, and whitish in colour, which soon become brown and dry. The tissues of the leaf are traversed by mycelium, furnished with small haustoria, or suckers, for taking food from the cells; and the white spots bear myriads of erect, fruiting branches of the Fungus (see *Peronospora*), each repeatedly divided into three, less often into two, branches. The terminal branches are short, and on the tip of each is an egg-shaped spore. In the spore there grow five or six smaller spores (zoospores), which escape by the bursting of the cell-wall of the spore, and can swim about in dew-drops and moisture of any kind; and at last the zoospores settle down on the leaves, push a slender tube through the epiderm, and give rise to a new plant. The diseased plants produce defective crops of fruit. The grapes also may be attacked. The resting, or sexual, spores of the Fungus have been found in *Vitis aestivalis*; they have a thick, smooth, yellow coat.

Vines grow more healthily in well-watered than in dry soil, and are therefore better able to resist the attacks of the parasite; but a close, moist atmosphere is hurtful, as it encourages the growth of Moulds. The fruiting threads may be destroyed by dusting the plants with a mixture of sulphur and quicklime; but the internal mycelium renders a thorough cure very difficult. Probably the best preventive of the disease is burning dead leaves, stems, prunings, &c.

Several other species of Fungi have been recorded as very destructive in the vineyards of France, Germany, and Italy; but they have not been observed to be hurtful

Vine Fungi—continued.

in England, and therefore require but brief notice here. The roots have been found destroyed by four different Fungi, viz., the *Rhizomorpha* stage of *Agaricus melleus*



FIG. 193. MASS OF *AGARICUS MELLEUS* ON ROOT OF YOUNG PINE.—*a, a, a*, Mycelium in form known as *Rhizomorpha fragilis*; *b*, Very young Spore-bearers produced on *Rhizomorpha fragilis*; *c*, Older Spore-bearers (*Agaricus melleus*) produced by Mycelium of form known as *Rhizomorpha subcorticalis*.

(Figs. 193 and 194) (see **PINUS**, FUNGI), *Dermatophora* ~~—~~ *Roestleria hypogæa*, and an imperfect mycelium enveloping the lateral roots, and called by Persoon

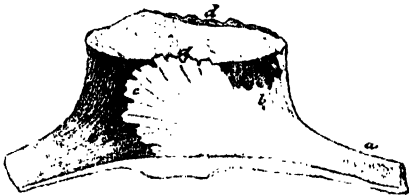


FIG. 194. *RHIZOMORPHA FRAGILIS* var. *SUBCORTICALIS*. Mycelium of *Agaricus melleus*, in the form it assumes when growing between the Bark and the Wood—*a*, Form intermediate between *fragilis* and *subcorticalis* expanding into the latter on the left; *b*, Portion where growth is slower; *c*, Lobed Margin; *d, d*, Margin that has reached cut surface of Stump; *e*, Wood of Stump of Fir-tree.

Fibrillaria xylotricha. These Fungi differ in details of their attacks on the Vine roots; but they all kill the roots, usually beginning with the younger ones; the leaves turn yellow and fall off; and the Vines perish, though some continue to exist in a sickly state for one or two years, if left untouched. Against these root-parasites, the only effectual remedy is to remove and burn the diseased plants, taking the utmost care to remove all fragments of wood, &c., from the soil, to prevent the disease from reaching healthy subjects. No cure is known for plants already attacked by any of these Fungi.

Another disease very fatal in European vineyards assumes the form of dark spots on the young shoots and leaves, on the flower-stalks, and on immature fruits. At first the spots are round, brownish pustules; but they soon extend, and often become confluent. The centre becomes ashy-grey or pinkish-grey, owing to the outpouring of minute, oval conidia through the torn epidermis; but the rest of the spot becomes nearly black. It is surrounded by a narrow, brown border. All the surface tissues of the

Vine Fungi—continued.

spot are hardened, and are full of the mycelium of the Fungus; and the conidia or spores are produced on the surface of the mycelium, but below the epidermis, through a toar in which they escape when mature. This Fungus is known as *Glaeosporium ampelophagum*. Those parts of the Vines on which it grows are killed or seriously stunted, and even the plants themselves may be killed in bad attacks. When it grows on the flower-stalks, the entire clusters of fruit are destroyed. When it occurs on the grapes, they seldom come to ripeness. The disease has attracted much attention; and it is said that an effectual cure for it has been found in the employment of a solution of sulphate of iron (10 to 15 per cent.) in water, applied in winter, with a pretty large brush, to all parts of the branches. This solution destroys all spores of Fungi, but does not seem to injure the bark of the Vines. As a preventive measure, all prunings and dead leaves should be carefully removed from the surface of the soil, lest they might spread infection among the healthy plants in the following spring.

In Saccardo's great work, the "Sylloge Fungorum," many other Fungi are noted as parasitic on Vines, some of which (*Fusarium Zavianum*, *Pionnotes Buisolettiana*, &c.) are occasionally more or less hurtful. Probably one or other of the remedies indicated above would prove suitable against these parasites, as well as against any others that may in future be met with in vinerias in Great Britain.

VINE GALLS. Of these, by far the most to be dreaded are the Galls produced on stems and leaves by *Phylloxera vastatrix* (see **GRAPE OR VINE LOUSE**). The only other Galls on Vines in Europe worth mention are pale, hairy growths (*Erineum Vitis*) caused by Mites (*Phytolopus*), in patches on the lower surface of the leaves, and two produced by Gall-midges. Of these, one is a swelling of the twigs, and is the work of an undetermined species of Midge (*Cecidomyia*); it occurs in the South of France, and in the South of Russia. The other produces swellings, not unlike those of *Phylloxera*, on the leaves. They are about $\frac{1}{10}$ in. in diameter, conical on the upper surface, and more rounded below. Several grow in each leaf. This Gall has been found in Austria.

The North American Vine Galls are far more varied in size and form than the European, and several of them attain considerable size. All that will be referred to here are the work of Gall-midges (*Cecidomyia*). The "Kilbert Gall" is developed from a bud, and forms a mass $\frac{1}{4}$ in. to $\frac{1}{2}$ in. in diameter, made up of from ten to forty woolly, greenish, juicy Galls, each tenanted by one orange-yellow larva. The "Tomato Gall" consists of an irregular mass of juicy, yellowish-green or red swellings, each occupied by four or five larval chambers, with one orange-yellow larva of *Lasioptera Vitis* in each. The whole mass may reach from $\frac{1}{2}$ in. to $\frac{1}{4}$ in. across.

The "Apple Gall" is attached to the stem, and is like a hazel-nut in form. It is nearly $\frac{1}{2}$ in. in diameter. There are eight or nine furrows down the surface, which correspond to chambers in the interior, in an upper and a lower series. Each is occupied by a bright yellow larva of a *Cecidomyia*. The gall is juicy, and the surface is covered with short, downy hairs. The "Trumpet Gall" rises from the upper (rarely the lower) surface of the leaf. As a rule, many stand on each leaf, two or three often being united at the base. These Galls are about $\frac{1}{2}$ in. long by $\frac{1}{8}$ in. broad in the widest part; they taper a little towards the base, and the other end is sharp. Their colour varies from bright red to green.

Remedy. None of the above Galls have yet been recorded from England. Should any of them be introduced with European or American Vines, they should be removed from the plants while still young and soft: no further remedy is needed.

VINEGAR PLANT. When fluids containing sugar in solution are allowed to stand exposed to the atmosphere, their composition undergoes considerable chemical changes in a short time. The microscopic spores of various kinds of Fungi fall into them, germinate, and feed upon the sugar, which they break up into simpler combinations. Carbonic Acid gas is given off; and a quantity of Alcohol is formed at the expense of the sugar. If the fluid is allowed to stand undisturbed for some time, the Alcohol also is attacked, and is changed, by the addition of Oxygen to it, into Vinegar. These changes are accompanied by the formation, on the surface of the fluid, of a tough, slimy layer, usually covering the whole surface, but not extending to a great depth. On examining a portion of the mass, it will be found to form layer on layer, separable from one another, the lower layers hanging in a flocculent web into the fluid. The microscope shows that the mass is made up chiefly of the translucent filaments of a Fungus, consisting of short, rod-like cells, end to end, imbedded in a gelatinous substance. Some of the cells are swollen at intervals. All are very minute; but they are capable of growing and reproducing themselves, if broken off the filaments. Intermixed with these are various other forms of cells, belonging to other kinds of Fungi that grow in the fluid, since many kinds of spores usually fall into it. In fact, it is impossible to obtain an unmixed culture of such small Fungi, except by the exercise of the utmost care. Trustworthy observations and experiments prove that the production of Vinegar from Alcohol goes on only when this mass of Fungus is present (except when artificially effected by chemical agencies); hence the mass is usually known as the Vinegar Plant. Various species of Fungi have been detected in it; but there is reason to believe that the species which effects the formation of Vinegar is a member of the great group of *Bacteria*. It has received various names; those most commonly used are *Mycoderma Aceti*, Pasteur, and *Bacterium Aceti*, Knetz. It forms the greater part of the Vinegar Plant, and its cells vary greatly in shape, being globular and very minute (*Micrococcus*), or like short rods (*Bacterium* form), or longer rods (*Bacillus* form), or filaments, as described above (*Leptothrix* form), all united by the gelatinous slime into what is often called a *Zooglyca*. Intermixed with the *Mycoderma*, or at times forming separate patches, are the filaments and groups of cells of *Saccharomyces Mycoderma*, a Fungus nearly allied to the Yeast of beer. By some botanists this has been regarded as the active agent in the production of Vinegar. *Mycoderma Aceti* has the power of absorbing Oxygen from the atmosphere, and of effecting its union with the Alcohol to form the Vinegar; and such cells of this Fungus as are in immediate contact with the air can even cause the breaking up of the Vinegar into Carbonic Acid and water, by continuing the process of oxidation. In France, *M. Aceti* is employed in the commercial manufacture of Vinegar. Shavings of wood, covered with the Fungus, are put into solutions containing sugary substances, or Alcohol, such as beer, cider, sap of fruits, wines, brandy, &c. A temperature of from 85deg. to 95deg. Fahr. is found to give the most favourable results, both in rapidity and in amount of production of Vinegar. *Mycoderma Aceti* does not thrive in very acid wines or other solutions, and it generally appears in them only after they have been rendered less acid by the growth in them for some time of *Saccharomyces Mycoderma*. If a Vinegar Plant is allowed to remain on the fluid after it has exhausted the sugars available for its nourishment, the surface becomes covered, after a time, with blue, green, or yellow Moulds (*Penicillium glaucum*, &c.), or other minute Fungi. These were at one time believed to be developed as a further stage of the Vinegar plant itself; but they must be regarded as growing at the expense of the latter, when it is weakened by its food being exhausted.

VINEGAR-TREE. A common name for *Rhus glabra* and *R. typhina*.

VINE, GLORY. A common name for *Clianthus* (which see).

VINE, GRANADILLA. See *Pessiflora quadrangularis*.

VINE, GRAPE-FLOWER. See *Wistaria*.

VINE, ICE. A name applied to *Cissampelos Pareira* (which see).

VINE, KANGAROO. See *Vitis antarctica*.

VINE LOUSE. See *Grape* or *Vine Louse*.

VINE MAPLE. A name given to *Acer circinatum* (which see).

VINE, MILK. A name sometimes used for *Peri-locca græca* (which see).

VINE MOTHS. The larvæ of several species of Moths feed on the leaves, twigs, or young fruit of Vines. Some of them are Hawk Moths (see *Sphingidæ*), the Elephant Hawk Moths (*Deilephila Elpenor* and *D. Porcellus*) being the commonest. Others belong to the Night Moths (see *Noctua*). Of the latter may be specially noted the White-line Dart Moth (*Agrotis Tritici*), the Large Yellow Under-wing Moth (*Triphaena pronuba*), and the Gothic Moth (*Nania typica*). All three feed on many plants, the two first-named being almost omnivorous; and all of them destroy the shoots and leaves of Vines, though the larvæ differ a good deal in their habits. Those of *Agrotis Tritici* and of *Triphaena pronuba* hide in the soil by day, but at night they gnaw the young shoots near the ground; and it is thus difficult to detect them. The methods recommended against **Surface Caterpillars** may be employed to lessen their numbers. The larvæ of *Nania typica* feed, in autumn, on the upper surface of the leaves of most kinds of fruit-trees, including Vines. The young larvæ live in companies, packed side by side, almost motionless, but eating away the surface membrane of the leaves steadily forward, and leaving brown, dead patches behind them. When about a fortnight old, they drop to the earth, and thereafter feed on low plants, till the cold weather of winter makes them go under shelter till spring, when they resume their life on the low herbage. They are dull brown, with a darker line down the back and one on each side, and a series of oblique, short, white lines along the lower part of each side. It is easy to remove the companies of larvæ by hand-picking, if they are doing injury to the Vines.

Certain of the smaller Moths belonging to the **Tortricina** (which see) are extremely destructive in the vineyards of France and Germany; but they are seldom the causes of much harm in British vineries, though they occur sparingly in England. *Enectra Pilleriana* (called also *Tortrix Pilleriana*) has been the subject of very exhaustive investigation, by Audouin and other French naturalists, under the name "Pyræle de la Vigne." Its larvæ live in rolled Vine leaves, and are very hurtful on the Continent; but the insect is too rare in England to call for a longer notice here. An allied insect (*Eupacilia ambiguella*) is almost equally hurtful abroad, as the larvæ feed on the flower-buds and on the young grapes, and envelop the clusters in webs, which prevent the growth of the fruit, and promote its early decay. This insect, also, is too rare in England to be dangerous. The fore wings reach a little over $\frac{1}{2}$ in. in span; they are ochreous, with a greyish streak along the basal half of the front margin, and a broad, slanting, dark grey bar about the middle of the wing; the head and thorax are ochreous. *Lobesia reliquana* (also called *Tortrix vitisana* and *Grapholitha botrana*) has very similar habits to the last-named species, devouring the flower-buds, and spinning the clusters of young fruit up in webs. In bad attacks, as much as

Vine Moths—continued.

half the crop has been lost in this way. This insect has been extremely troublesome in Austria. It is not rare in the South of England, though it has done little mischief in this country as yet. It is a little less than $\frac{1}{2}$ in. in span of fore wings, which are chestnut-red, marbled with pale buff, and with two dark brown, white-edged, triangular spots on the hinder margin of each. The change into pupæ occurs in the soil below the Vines. The larvæ may be detected by their webs, and should be removed, either by hand-picking the ravaged clusters, or by shaking or jarring them above a sheet, tarred tray, or any other contrivance for capturing the larvæ shaken off the plants. In the "Gardeners' Chronicle" for Sept. 23, 1882, *Gnecetra Pilleriana* and *Lobesia reliquana* are noticed and figured by Professor Westwood; and, in the same newspaper, a month later, still another insect-foe is added: this is *Ditula angustiorana* (also called *Tortrix angustiorana*). The last-named is nearly related to *Lobesia reliquana*, but is larger. The fore wings measure from $\frac{3}{4}$ in. to $\frac{1}{2}$ in. in span, being ochreous in the males, and reddish-brown in the females; in both sexes, the wings show a darker patch at the base, a chestnut-brown patch slanting from the middle of the wing to the hinder angle, and darker spots irregularly scattered over the outer half of the wing, the most conspicuous of these being a triangular spot on the front border. The larvæ have been found living on most fruit-trees, as well as on Privet, Hawthorn, and other shrubs; and within the past few years they have been discovered in ripened grapes in English vineries. They also feed on the Vine leaves, but not in such numbers as to seriously injure the plants in this way. Though abundant in many parts of England, *Ditula angustiorana* usually feeds on a variety of food-plants in preference to Vines.

Among the *Tineina* (see **Moths**) there are few species that are dangerous to Vines. Of one small Moth (*Antispila Pfeifferella*) the larvæ, which usually feed on the leaves of Dogwood, sometimes mine in the Vine leaves, and, when about to become pupæ, form flat cases composed of two pieces cut out of the leaves, and attach them to the leaves or branches. The pupæ lie protected in the cases till the emergence of the Moths. The fore-wings of the latter reach only about $\frac{1}{4}$ in. in span; they are brown, with a coppery or golden gloss, and near the middle they are crossed by two narrow, yellow bands, the outer of which is broken in the middle. The injury done to the leaves by this species is seldom noticeable, though the Moth is not rare in England.

Treatment. This varies with the habits of the larvæ that are doing the harm. Hand-picking is a sufficient remedy against the larvæ of Hawk Moths, and the groups of larvæ of *Nania typica*. It is the only efficient method against Leaf-miners, such as *Antispila*; and it must also be resorted to against the larvæ of *Tortricina*, which live inside the young or ripe fruits, or in the clusters, inclosed in webs. The larvæ, and the leaves or grapes in which they live, should be destroyed, not merely thrown on the ground. Hand-picking is also of use where the eggs (e.g., of *Gnecetra Pilleriana*) are placed in clusters on the leaves. Those larvæ that conceal themselves in the soil by day, and emerge from their concealment by night to feed on the shoots and leaves, or that gnaw the bark of the stems and roots, should be combated as recommended under **Surface Caterpillars**. Such larvæ as live in rolled leaves may be collected in sheets or trays laid below the branches, which should be shaken or jarred, to cause the larvæ to drop from their concealment. The larvæ of some of the *Tortricina* that injure the Vines and fruits, pass the winter under the loose bark on the stems, and emerge, when the weather becomes milder, to devour the buds, young leaves, and flowers. The pupæ of some are protected during winter in similar retreats. It is, therefore, desirable to remove

Vine Moths—continued.

all loose bark, and this can be done in winter by means of a brush of stiff fibres, e.g., of piassaba. All dead leaves and rubbish should also be removed from the surface of the soil, and either consigned to the compost-heap or burned. In the continental vineyards, the Moths are trapped by fires, or by shallow dishes of water, into which they fly. A solution of potassic sulphate (1 per cent.), sprayed over the flower-buds about the time the first brood of Moths is on the wing, and over the young fruits when the second brood is ready for egg-laying, has been found to materially lessen the injury to the crop.

VINE, MOUNTAIN. See *Viola tricolor lutea*.

VINE, PEPPER. A common name for *Ampelopsis bipinnata* (which see).

VINE, PIPE. A common name for *Aristolochia Siphon* (which see).

VINE, POISON. A name frequently applied to *Rhus Toxicodendron* (which see).

VINE, POTATO. A common name for *Ipomoea pandurata* (which see).

VINERY. See **Vine**.

VINE SCALE INSECTS. Though occurring in France and in Germany, these insects are not native in Britain. The one most frequently found on Vines is *Lecanium Vitis*, also called *Coccus Vitis*. The female is covered with an oval, convex scale, which is a little narrowed in front; the colour is reddish-brown, with black dots; the shield is bordered by the white, cottony secretion in which the red eggs are embedded. The male insects are very small; they are brick-red, with black thorax, brown antennæ, and two transparent wings, each with a thickened and red front border; the body ends in two long bristles. This insect lives on the old stems of Vines, preferring such as are sickly; and it occurs either

in *Mytilaspis Vitis* is another Vine Scale, met with in Germany. It is very like the **Apple Mussel Scale** (which see), and has usually been mistaken for it; but the two species differ in certain minute characteristics. The larvæ live on the young twigs near the buds; and the spots on which they are placed become brown or blackish. The females live on the twigs of the second year's

Remedies are detailed under **Scale Insects**. The branches and stems must be well cleansed from the Scales, by means of a stiff brush and strong lye of wood-ashes, or solution of kerosene or carbolic acid. Good manure should afterwards be applied to the roots.

VINE, SILK. See *Periploca græca*.

VINE, SILVER. A popular name for *Scindapsus argyrea* (which see).

VINE SLUG. The name popularly given, in North America, to the larva of the Grape-vine Sawfly (*Selandria Vitis*), which occasionally almost strips the leaves off the Vines in vineyards in the United States. The perfect insect has four wings, which are smoky-brown, but semi-transparent, with brown veins. The thorax is red, the rest of the body black, and the fore legs and lower side of the other legs pale yellow or whitish. The female is $\frac{1}{4}$ in. long, the male rather shorter. The females lay their eggs in small clusters on the lower surface of the leaves at the tips of the shoots, in the spring and early summer. The larvæ feed side by side, in groups of fifteen to twenty. Beginning at the edge of a leaf, they eat inwards, with great regularity of rank, till they reach the leafstalk; then they eat the next lower leaf, and so on down the shoot. The full-fed larvæ are a little more than $\frac{1}{2}$ in. long, and are thickest a little behind the head, thence tapering

Vine Slug—continued.

backwards. They are pale yellow, with darker or greenish backs. Each ring bears two cross rows of minute, black dots. The head and the tip of the last segment are black. At the last moult they become entirely yellow, and, crawling down to the soil, burrow into it, and form small, oval, earthen cocoons. In a fortnight, the autumn brood of Sawflies emerges, and from their eggs a new brood of larvae is hatched.

Remedies. These insects have not been found in Europe, but may be brought from America with Vines. If introduced, the infested Vines should be sprinkled with Hellebore powder (½oz. in 1 gal. of water) or Paris Green (half-a-teaspoonful in 1 gal. of water).

VINE, WATER. A common name for **Phytocrene** (which see).

VINE WEEVILS. Several species of the great group of Weevils are hurtful to the young twigs and leaves of Vines. They are hence sometimes distinguished as Vine Weevils; but this name is rather misleading, as they are all hurtful also to many other cultivated plants. They belong to the genera *Otiorynchus* and *Rhynchites*. The species of most frequent occurrence on Vines are: *O. ligustici*, black, with greyish scales; *O. picipes* (Clay-coloured Vine Weevil), of a brown or earthy colour, sometimes approaching clay-yellow; *O. sulcatus*, black or dark brown, with tufts of grey hairs on the wing-cases; and *R. betuleti*, shining blue or green, and hairless. A full account of these insects, and of the appropriate remedies against them, will be found under *Otiorynchus* and *Rhynchites*.

VINE, WONGA-WONGA. A common name for **Tecoma australis** (which see).

VINEYARD CANE. A common name for **Arundo Donax** (which see).

VIOLA (the old Latin name used by Virgil, &c., akin to the Greek *Ion*). Heartsease; Pansy; Violet. Including *Erythron*. ORD. *Violariæ*. A large genus (about 100 species) of mostly hardy, perennial herbs, rarely suffrutescent; nearly sixty are found in North temperate regions (seven in Britain), about thirty in South America, two in South or East Africa, and eight in Australia or New Zealand. Flowers often cleistogamous (except in the group of which *V. tricolor* may be taken as a representative)—the large-petaled ones appear first, and often yield no seed; the small-petaled, or apetalous ones, appear late, and are prolific—sepals sub-equal, produced at the base; petals spreading, the lower ones often larger, spurred or saccate at base; anthers connate, the connectives of the two lower ones often spurred at the base; peduncles axillary, one or rarely two-flowered. Leaves alternate; stipules persistent, often leaf-like. Of the large number of species introduced, the best-known are here described; they are mostly dwarf plants—seldom exceeding 6in. in height—adapted for planting on rockwork, in flower borders, and, if sufficiently plentiful, in wild gardens, &c. Some of the species are very dwarf and compact in habit: these should, therefore, particularly if scarce, only be planted in select places where they can receive proper attention. The species may generally be propagated by seeds, by runners, or by divisions.

The numerous varieties of bedding Violas and Pansies are popular and well-known plants, valuable for spring and summer bedding, for mixed borders, and for many other situations; they flower in the greatest profusion, and over a lengthened period, if the weather is not too hot and dry for their well-being. Seedlings may easily be raised, but varieties must be perpetuated by cuttings or by divisions. The treatment recommended under **Pansy** is also applicable to the bedding Violas.

Viola—continued.

Varieties. The following is a selection of floriferous varieties. Perhaps many others are equally as good as those here named.

ALPHA, bluish-purple. BLUE BELL, violet, shaded blue; very floriferous. CANARY, yellow; fine. CRITERION, violet; free. DICKSON'S GOLDEN GEM, golden-yellow; very free. GRIEVELI, yellow. HOLYROOD, indigo-blue; fine. JALACINA, rich lilac. PILGRIM PARK, pure white; large and good. ROYAL VISIT, violet self. SNOWDROP, waxy-white. THE TORY, plum-colour; one of the best.

SWEET VIOLETS (*Viola odorata*). Of these there are several varieties cultivated in gardens, and few flowers are more generally liked, particularly through the winter and spring months. To insure a supply at these periods, a special system of culture must be practised, and frames must be available. Stock plants may be divided—those similarly treated the previous year are preferable—into as many young single crowns as they admit, in April or May, and all the old crowns should be thrown away, unless required for propagating only. The selected crowns should be planted in good ground, and in an open situation, about 9in. apart, allowing 12in. between the rows. A position where Violets generally succeed in summer is a north or north-west border, but much depends on local circumstances and the nature of the soil, whether light or heavy; if light, the north border should be selected, as it would be cooler than elsewhere, and the plants would be less liable to the attacks of Red Spider, which is their greatest enemy. Attention to cleaning, lightly hoeing the surface soil, and watering, if necessary, are important details of summer management. Mulching with spent mushroom beds, or other short manure, is of great advantage if the summer be hot; it keeps the soil cool, and tends to prevent undue evaporation. Syringing, or sprinkling with water from a can, in the evenings, after dry days, is recommended, and most of the young runners which will appear should be cut away when small. Some cultivators save about three runners on each plant, and peg them down; these root and flower well during winter with the parent, and make excellent stock plants for the next year. Towards the middle or end of September, the frames, or pits, should be prepared, and the best specimens lifted and planted in them just close enough to occupy all the space without overcrowding. The frames should have a south aspect, and should be partially filled with well-prepared stable litter and leaves. About 6in. of soil is necessary for planting in, and this should be brought up as near the glass as the foliage will allow, so that full exposure to light and sunshine in winter will be assured. Give a thorough watering, and keep the frames rather close for about a week after planting; plenty of air may then be admitted, on all favourable opportunities, all through the winter, the sashes being entirely removed during sunshine and when there is no frost, and also in very mild weather. Foggy weather is injurious to Violets in frames: it causes damping amongst the leaves, and prevents proper development of the flowers. Marie Louise is one of the best of all Violets for frame culture when treated as described; Comte Brazza and the old Neapolitan are also excellent. The Neapolitan does not generally grow so freely as Marie Louise, and is later in flowering. These three double-flowered varieties are general favourites for frames.

Varieties. There are several varieties, both double and single-flowered; the following selection comprises most of the best:

„ purplish-white, very fragrant. COMTE BRAZZA, white, double, sweet-scented; extra good. CZAR, blue, single, large, and produced in great profusion. MARIE LOUISE, lavender-blue and white, very large flowers, sweet-scented; very floriferous, extra fine. NEAPOLITAN, pale lavender; an old and well-known double variety, very sweet-scented. OBOBATA ALBA, white, single; dwarf and distinct. QUEEN OF VIOLETS, white, flushed with pink, double. RUSSIAN, blue, single, large, very free; an old variety. VICTORIA REGINA, blue, double, large, fragrant. WHITE CZAR, a white form of Czar.

Viola—continued.

- V. altaica** (Altai). *f.* yellow, large; sepals acute, denticulate; spur scarcely as long as the appendages of the sepals; stigma urceolate. March to June. *l.* oval; stipules cuneate, with acute teeth. Stem short. Root creeping, slender, hard. Altai Mountains, 1805. (B. M. 1776; B. R. 54; R. G. 1071.)
- V. arenaria** (sand-loving). *f.* pale blue, on short, axillary branches from a compact rosette; sepals acute; petals broad; spur short. May and June. *l.* orbicular-ovate, obtuse. Europe (Britain), &c. Plant small, tufted, pubescent, 2in. to 6in. in diameter. (Sy. En. B. 174 bis.)
- V. biflora** (two-flowered). *f.* yellow, the lip streaked with black, small; sepals linear; petals smooth; spur very short; stigma bifid. April and May. *l.* reniform, serrated, smooth; stipules ovate. Stem erect, about two-flowered. Roots creeping. Europe, Siberia, &c., 1752. (B. M. 2089; F. D. 46.)
- V. blanda** (charming). *f.* white, small, faintly sweet-scented; petals mostly beardless, the lateral ones veined with lilac; spur short. Early spring. *l.* round-cordate or reniform, minutely pubescent. Rootstock creeping. North America, 1802.
- V. calcarata** (spurred). *f.* blue or white; sepals oblong, glandularly denticulate; spur awl-shaped, longer than the calyx. March to July. *l.* spatulate-roundish or elongated, crenate; stipules palmatifid or trifid. Stems short, simple, tufted. Root fibrous, diffuse. Austria, 1752. A very variable species.
- V. c. albiflora** (white-flowered). *f.* white, large. *l.*, stipules cut, scarcely ciliated. Stem short. (R. G. 1028.)
- V. c. Halleri** (Haller's). *f.* blue, large. Otherwise like *V. c. albiflora*. (R. G. 1028.)
- V. canadensis** (Canadian). *f.*, petals white or whitish inside, the upper ones mostly tinged with violet beneath, the lateral ones bearded; spur very short; stigma beakless. May to August. *l.* cordate, pointed, serrated; stipules ovate-lanceolate, entire. *h.* 1ft. to 2ft. North America, 1785. (S. B. F. G. ser. ii. 62.)
- V. canina** (canine). Dog Violet. *f.* blue, lilac, grey, or white, ½in. to 1½in. in diameter; sepals narrow, acuminate; spur obtuse; style clavate, hooked. April to August. *l.* long-petiolate, crenate-serrate, narrow ovate-cordate. Europe (Britain), &c. Very variable in size, habit, and colour of flower. (F. D. 2646.)
- V. c. lactea** (milky). *f.* grey; petals narrow, the spur very short. *l.* ovate-lanceolate, rounded or cuneate at base. Rootstock short, without runners. Plant very slender. (Sy. En. B. 176, under name of *V. lactea*.)
- V. c. persicifolia** (Peach-leaved). *f.* pale lilac or white; spur very short. *l.* oblong-lanceolate, truncate at base; upper ones narrower. Rootstock long, with runners.
- V. capillaris** (capillary). *f.* pale blue; lateral petals densely bearded; spur short, obtuse, greenish; pedicels axillary, solitary, slender, four to six times as long as the leaves. May to August. *l.* petiolate, ovate or ovate-oblong, ½in. to ¾in. long, obtuse at base, cuneate-decurrent, slightly acute at apex, the margins remotely glandular-serrated. Stems many, tufted, decumbent, leafy. Chili. (F. d. S. 983.)



FIG. 195. VIOLA CORNUTA.

- V. cornuta** (horned).* *f.* pale blue; sepals awl-shaped; spur awl-shaped, elongated and abrupt at the base. May to July. *l.* cordate-ovate, crenate, ciliated; stipules obliquely cordate, toothed, ciliated. Stems ascending, diffuse. Root fibrous. Switzerland and Pyrenees, 1776. Plant tufted. See Figs. 195 and 196. (B. M. 791.) B. H. 1871, 9, represents one of the numerous large-flowered garden forms, called PERFECTION.
- V. ocellata** (hooded).* *f.* deep or pale violet-blue or purple, sometimes nearly white or variegated with white; lateral, and often the lower, petals bearded; spur short and thick; stigma slightly beaked or beakless; scapes 3in. to 10in. high. Early spring. *l.* long-petiolate, erect, cordate, with a broad sinus, varying to reniform and dilated-triangular, smooth or more or less pubescent, the sides at the base rolled inwards when young, obtusely serrated. Rootstocks thickly toothed. North America, 1762. A very variable species. See Fig. 197. (B. M. 1785; S. B. F. G. ser. ii. 298.) There is a variegated form in cultivation.

Viola—continued.

- V. c. palmata** (palmate-leaved). *l.* variously three to seven-cleft or parted, or the earlier ones entire on the same plant. (B. M. 555, under name of *V. palmata*.)
- V. dentata** (toothed). A synonym of *V. sagittata*.
- V. eriocarpa** (woolly-fruited). A form of *V. pubescens*.
- V. fiabellata** (fan-like). A synonym of *V. pedata*.
- V. fiabellifolia** (fan-leaved). A synonym of *V. pedata*.



FIG. 196. FLOWERS OF VIOLA CORNUTA.

- V. hederacea** (ivy-like).* *f.* blue, rarely white, usually small, but sometimes ½in. broad; petals glabrous, or the lateral ones slightly pubescent inside; spur reduced to a slight concavity. July. *l.* reniform, orbicular, or spatulate, usually less than ½in., but in very luxuriant specimens 1in. to 1½in., broad, entire or toothed. Australia, 1823. Plant tufted, half hardy. (H. E. F. iii. 225; L. B. C. 1153.) SYNS. *Erpetion hederaceum*, *R. reniforme* (S. B. F. G. 170).
- V. hirta** (hairy). *f.* inodorous or faintly scented; spur long and hooked; bracts lower on the peduncle; anther spurs eucalyte. April to June. *l.* narrower and more triangular, with deeper crenatures and a shallower sinus; hairs of petiole more spreading. Otherwise like *V. odorata*. Europe (Britain), &c. (Sy. En. B. 172.)
- V. lactea** (milky). A form of *V. canina*.
- V. lanceolata** (lance-leaved). *f.* white, small; petals beardless, the lower ones veined with lilac. Early spring. *l.* lanceolate, erect, blunt, tapering into a long margined petiole, almost entire. Rootstock creeping. North America, 1759. (L. B. C. 211; S. B. F. G. 174.)
- V. montana** (mountain-loving). *f.* white, at length bluish; spur conical, truncate, straight, greenish, shorter than the sepals; stigma papillose, slightly reflexed. May to July. *l.* lower ones cordate, upper ones ovate, acute; petioles margined; stipules oblong, toothed or incised. Stem simple, erect. *h.* 1ft. Europe and Siberia, 1683. (B. M. 1595.)
- V. m. Ruppii** (Ruppin's). *l.* cordate or lanceolate. Stems procumbent. (A. F. P. iii. 26 and L. B. C. 686, under name of *V. Ruppii*.)
- V. Munbyana** (Munby's).* *f.* violet or yellow, large, one to three from the lower axils; spur straight, nearly twice exceeding the calyx; peduncle erect, long-exceeding the leaves. Spring. *l.* ovate-cordate, obtuse, obtusely crenate, glabrous, or the margins slightly ciliated. Stems procumbent. Algiers. A pretty species. *lutea* is a yellow-flowered form.
- V. odorata** (odorous).* Sweet Violet. *f.* blue, white, or red-purple, fragrant; lateral petals with or without a tuft of hairs; spur nearly straight, short, obtuse; anther spurs linear-oblong; style hooked; stigma oblique; bracts about the middle of the peduncle. March to May. *l.* deeply cordate at base, the sinus 3-lobed; stipules glandular; petioles deflexed-hairy. Rootstock short, scarred, with very long runners. Europe (Britain), &c. (B. M. Pl. 25; Sy. En. B. 171.)
- V. o. alba** (white). *f.* white.
- V. o. pallida-plena** (pale double). Neapolitan Violet. *f.* pale lavender, double, very sweet-scented.
- V. o. permixta** (confused). *f.* pale, scentless. Runners not rooting.
- V. o. septincola** (hedge-loving). *f.* dark, scentless. Runners rooting. More hairy than the type.

Viola—continued.

- V. palmata** (palmate). A variety of *V. cucullata*.
- V. palustris** (marsh-loving). *f.* white or lilac, jin. in diameter, scentless; sepals obtuse; lateral petals almost glabrous; spur short, obtuse; stigma obliquely truncate. April to July. *l.* cordate-reniform, slightly crenate, enlarging after flowering; stipules glandular. Rootstock white, scaly, subterranean, creeping; runners short, leafless. Europe (Britain), &c. (Sy. En. B. 170.)
- V. pedata** (pedate-leaved).* *f.* usually bright blue, sometimes pale or even white, very large; petals all glabrous, the spur very short; stigma large and thick, margined, obliquely truncate. May and June. *l.* pedately about seven-parted, firm; leaflets linear-lanceolate, entire or incisedly three-toothed at the summit, some-

Viola—continued.

- abruptly narrowed at base. California, 1856. Half-hardy (B. M. 5004; F. d. S. 2426.)
- V. præmorsus** (bitten). *f.* yellow, rather large; lower petal veined with brown, emarginate; spur very short; peduncles mostly shorter than the leaves. Spring. *l.* ovate-lanceolate, repantly denticulate or nearly entire; stipules entire. Stems erect, short. North America, 1828. Plant usually densely hirsute. (S. R. 1254.)
- V. pubescens** (downy). *f.* yellow, the lower petals veined with purple; spur extremely short. Spring and early summer. *l.* very broadly cordate, toothed, somewhat pointed; stipules large, ovate or ovate-lanceolate. Stems simple, erect, naked below, two



FIG. 197. LEAVES AND FLOWERS OF VIOLA CUCULLATA.

times very narrow and lacinate; stipules ciliated. Rhizome thick. North America, 1769. See Fig. 198. (A. B. R. 153; B. M. 89; F. M. 360; L. B. C. 536; S. B. F. G. 69.) SYNS. *V. flabellifolia* (L. B. C. 777), *V. flabellata* (S. B. F. G. ser. II. 247).

V. p. atropurpurea (dark purple). *f.* dark purple; pistil pubescent. *l.*, segments cuneate, incised. (F. d. S. 1361; R. G. 1110, f. a.)

V. p. bicolor (two-coloured).* A very handsome variety, with the two upper petals deep violet, and, as it were, velvety, like a Pansy.

V. pedunculata (pedunculate).* *f.* deep yellow, large; petals broadly obovate, the two upper ones with conspicuous claws, the lateral ones bearded at the base; spur very short; peduncles twice or thrice as long as the leaves. Spring. *l.* rhombic-ovate, scarcely lin. long, rather thick, coarsely and obtusely toothed,

to four-leaved above. *h.* 6in. to 12in. North America, 1772. Plant softly pubescent. (L. R. C. 1249; S. B. F. G. 223.)

V. p. eriocarpa (woolly-fruited). A stout and more pubescent variety, 1ft. to 2ft. high, with woolly pods. (B. E. 330; S. B. F. G. 102, under name of *V. eriocarpa*.)

V. pyrolæfolia (Pyrola-leaved). *f.* yellow; sepals acuminate; petals densely bearded within; spur short, obtuse; stamens emarginate at apex. January. *l.* ovate, sometimes loosely cordate; stipules fringed at apex. Patagonia, 1851. (F. d. S. 665.)

V. Riviniana (Rivinus').* A form of *V. sylvatica*.

V. rothomagensis (Rouen).* *f.* bright blue, the side petals and lip striped with black; spur tubular, obtuse, shorter than the sepals; bracts near the flower, lanceolate, with a tooth on each

Viola—*continued*.

side. April to August. *l.* ovate, the lower ones somewhat cordate, crenate, fringed; stipules pinnatifid, rather lyrate. Stems zigzag, branched, diffuse. Root rather fusiform. France and Belgium, 1781. Plant hispid or pilose. (B. M. 1498.)

V. rotundifolia (round-leaved). *f.* yellow; lateral petals bearded and marked with brown lines; spur very short. Early spring. *l.* round-ovate, cordate, slightly crenate, lin. broad at flowering time, increasing in the summer to 3in. or 4in., then lying flat on the ground, shining above. Rootstock creeping. North America, 1800.

V. Ruppi (Ruppius'). A variety of *V. montana*.

V. sagittata (arrow-leaved). *f.* purple-blue, rather large; lateral, or occasionally all, petals bearded; spur short and thick; stigma beaked. Spring and early summer. *l.* on small and margined, or the later ones on naked, petioles, varying from oblong-cordate to hastate, sagittate, oblong-lanceolate, or ovate, denticulate, sometimes cut-toothed near the base. North America, 1775. Plant smoothish or hairy. (L. B. C. 1471.) *SYN.* *V. dentata* (L. B. C. 1485).

V. s. emarginata (emarginate). *f.*, petals emarginate or bidentate. *l.* almost triangular, lacerate-toothed near the base.

V. Selkirkii (Selkirk's). *f.* pale violet; spur very large, almost as long as the petals, thickened at the end. Spring and early summer. *l.* round-cordate, crenate, ½in. to 1½in. long, minutely hairy above, and having a deep, narrow sinus; petioles (and scapes) 1in. to 2in. long. Rootstock filiform, fibrous-rooted. North America, 1873. A small and delicate plant. (R. G. 752.) *SYN.* *V. umbrosa*.

V. striata (striated). *f.* cream-coloured or white; lateral petals bearded, the lower ones striped with purplish lines; spur rather thick, much shorter than the petals; stigma beaked. April to October. *l.* cordate, finely serrated, often acute; stipules large, oblong-lanceolate, strongly fringed-toothed. Stems angular, ascending, 6in. to 10in. high. North America, 1772.

V. suavis (sweet). Russian Violet. *f.* pale blue, white at the base, sweet-scented; sepals obtuse; four upper petals narrowest, the lower one emarginate, the two lateral ones with a hairy line; stigma hooked, naked. March to May. *l.* reniform-cordate, crenate, pubescent. Stolons long, creeping and rooting. Taurin, 1820. (S. B. F. G. ser. ii. 125.)



FIG. 198. VIOLA PEDATA.

V. sylvatica (sylvan). Wood Violet. *f.* bluish-purple or lilac, on axillary branches from a radical rosette; base of sepals much produced in fruit; spur short, broad, compressed, furrowed, usually pale. March to July. *l.* broadly ovate-cordate; stipules lanceolate, acute, fimbriated or toothed. Rootstock short. Europe (Britain). Plant glabrous.

V. s. Reichenbachiana (Reichenbach's). *f.* paler, smaller, and earlier than in the species; spur longer; sepals scarcely produced in fruit. (Sy. En. B. 174.)

V. s. Riviniana (Rivinus'). *f.* bluish-purple or lilac, scentless, ½in. to 1in. across; petals obovate-oblong, the lowest much broader than the others; peduncles long, with two small bracts. Late summer. *l.*, lower ones as broad as (or broader than) long; upper ones a little narrower than long. (Sy. En. B. 173, under name of *V. Riviniana*.)

V. tricolor (three-coloured).* Heartease; Pansy. *f.* ½in. to 1½in. in diameter; sepals with large auricles; petals purple,

Viola—*continued*.

whitish, or golden-yellow, sometimes particoloured; stigma capitate, excavated. May to September. *l.* long-petiolate, ovate-oblong or lanceolate, ½in. to 1½in. long, lyrate, coarsely and remotely crenate-serrate; stipules ½in. to ¾in. broad. Stem 4in. to 18in. long, branched, erect or ascending, angular,



FIG. 199. VIOLA TRICOLOR.

Rootstock none. Europe (Britain), &c. See Fig. 199. (Sy. En. B. 178.) In addition to the two most popular names above mentioned, the following are applied to this species: Call-me-to-you, Fancy, Flamy, Garden Gate, Herb Trinity, Jump-up-and-kiss-me, Kiss-me, Kiss-me-at-the-garden-gate, Live-in-illness, Love-in-illness, Pink-of-my-Join, Three-faces-under-a-hood, Tickle-my-fancy.

V. t. arvensis (field-loving). *f.* white or yellowish; petals usually shorter than the sepals, or wanting. Stem elongated, branched. (Sy. En. B. 179.)

V. t. Curtisi (Curtis'). *f.* blue, purple, or yellow; petals spreading, rather longer than the sepals. Rootstock branched, stoloniferous, tufted. (Sy. Kn. B. 180.)

V. t. lutea (yellow). Mountain Vine. *f.* blue, purple, or yellow; petals spreading, much longer than the sepals. Rootstock branched. Branches slender, with short stems and underground runners. (Sy. En. B. 181.)

V. umbrosa (shade-loving). A synonym of *V. Selkirkii*.

V. variegata (variegated-leaved). *f.* pale violet; spur cylindrical, straight, as long as the sepals. May and June. *l.* cordate-ovate or roundish, violaceous below, obscurely green above, white at the veins, and rather hispid (in fruit-bearing plants large and almost glabrous); stipules lanceolate, denticulate. Root rather hard, sub-divided. Dahuria, 1817. (R. G. 1852, 20.)

VIOLACEOUS. Violet-coloured.

VIOLARIEÆ. A natural order of broadly-dispersed herbs or shrubs, the former plentiful in temperate regions, the latter more numerous in the tropics. Flowers hermaphrodite, rarely polygamous, axillary, solitary or in cymes, racemes, or panicles; sepals five, imbricated, rarely persistent; petals five, hypogynous or slightly perigynous, unequal or sub-equal, imbricated, often twisted; perfect stamens five; anthers erect; pedicels usually bibracteolate. Fruit a capsule, often opening elastically by as many seed-bearing valves as there are placentas; or an indehiscent berry. Leaves alternate or rarely opposite, simple, entire or rarely lacinate; stipules leafy or small, in the shrubby species generally deciduous. The order embraces twenty-one genera, and about 240 species, many of which are well known in gardens. Examples: *Hymenanthera*, *Sauvagesia*, *Viola*.

VIOLET. See *Viola*.

VIOLET, ADDER'S. A name applied to *Goodyera pubescens* (which see).

VIOLET, BOG. A name given to the species of *Pinguicula*.

VIOLET, CANATHIAN. A common name for *Gentiana Pneumonanthe* (which see).

VIOLET, CAPE. A name frequently applied to *Ionidium capense* (which see).

VIOLET, CORN. See *Specularia hybrida*.

VIOLET, DAME'S. See *Hesperis matronalis*.

VIOLET, DOG. See *Viola canina*.

VIOLET, DOG'S-TOOTH. See *Erythronium dens-canis*.

VIOLET, FALSE. A common name for *Dalibarda repens* (now included under *Rubus* as *R. Dalibarda*).

VIOLET, FOREIGN. See *Schweiggera*.

VIOLET, FRINGED. See *Thysanotus*.

VIOLET FUNGI. Violets are liable to the attacks of several species of Fungi, which grow on the stems and leaves, and on the sepals and petals of the flowers. *Urocystis Viola* causes the stems and leaves of *Viola odorata*, and of other Violets, to become greatly thickened and distorted. After a time, the epiderm on the swellings torn here and there, and displays the dark masses of spores. Each spore consists of a large central cell (which, on germinating, forms a slender mycelium tube), and an outer layer or coat of smaller cells.

Puccinia Viola is of very frequent occurrence on the leaves and petioles of many Violets, including the common wild species and most of the cultivated ones. It appears, in early summer, in the form of Cluster Cups (*Ecidium Viola*), and is then easily recognisable by the small, yellow cups thickly dotted over reddish-orange, swollen patches. Each cup has a nearly white margin of little teeth, formed by the torn edges of the burst outer coat (peridium), which incloses a multitude of minute, orange-yellow spores. Afterwards, the cups are replaced by small, brown, powdery masses, irregularly scattered, or in circles, composed of rounded or oval, prickly, brown, one-celled, stalked spores, and of the true *Puccinia* spores, each on a rather long stalk, brown, and made up of two cells end to end.

Another *Puccinia* that grows on Violets is *P. agræ*. This species greatly weakens or kills *V. cornuta*, and has also been found on *V. lutea*. Its *Ecidium* has been named *Æ. depauperans*, from its weakening (or depauperating) effect on the host-plants. It may be distinguished from *Æ. Viola* by the cups being scattered, and not grouped on thickened spots. The two also differ in microscopic peculiarities of their spores.

It grows on the leaf-stalks and leaves of *V. palustris*, producing thickenings of the tissues, overgrown by the brown, two-celled spores. This Fungus is not known to have more than this single form of spore.

Not unfrequently, the leaves of Violets show discoloured spots, which, on examination with the microscope, are found to be due to the presence of species of *Ramularia* (*R. agræstis* and *R. lactea*), or of *Cerospora* (*C. Viola*), &c. These are minute Moulds, and bear elongated, multicellular, transparent or brown spores, on the tips of slender stalks. Or such spots may be dotted over with the small, dark perithecia of *Lustadia Viola*, one of the *Sphæriaceæ*, which has eight oval, unicellular spores in each ascus.

Of all the Fungi that occur on Violets, the most destructive are *Puccinia agræ*, *P. Viola*, and *Urocystis Viola*; though the others also may cause considerable disfigurement. These all grow within the tissues of the plants, the only parts pushed to the surface being the organs of reproduction. It is therefore of little use to attempt to cure diseased plants, the interior of which must be full of the Fungi; and it is advisable to remove and burn the plants, to prevent the spread of disease to previously healthy specimens.

VIOLET, MERCURY'S. An old name for *Campanula Medium*.

VIOLET, SPURLESS. See *Erpetion hederacea*.

VIOLET, TONGUE. A common name for *Schweiggeria* (which see).

VIOLET, WATER. See *Hottonia palustris*.

VIORNA. See *Clematis Viorna*.

VIPER GOULD. See *Trichosanthes anguina*.

VIPER'S BUGLOSS. See *Echium*.

VIPER'S GRASS. See *Scorzonera hispanica*.

VIRAYA. A synonym of *Waitzia* (which see).

VIREYA. Included under *Rhododendron*.

VIRGATE. Twiggy; producing many weak branches; wand-shaped; slender, straight, and erect.

VIRGILIA (named in honour of the poet Virgil). ORD. *Leguminosæ*. A monotypic genus. The species is a greenhouse tree, requiring culture similar to that recommended for *Viminaria*.

V. capensis (Cape). *fl.* rosy-purple, $\frac{1}{2}$ in. long; calyx silky, widely campanulate, shortly two-lipped; standard orbicular, strongly reflexed; racemes lateral, longer than the leaves, many-flowered. July. *l.* six to ten-jugate, ex-stipulate; leaflets linear-oblong, mucronate, nearly lin. long, with slightly revolute margins, the young ones silky on both sides, the old ones glabrous and glossy above. South Africa, 1767. (B. M. 1590.) SYN. *Podalyria capensis* (A. B. R. 377).

V. lutea (yellow). A synonym of *Cladrastis tinctoria*.

VIRGINIAN COWSLIP. See *Mertensia virginica*.

VIRGINIAN CREEPER. See *Ampelopsis quinquefolia*.

VIRGINIAN DATE PALM. See *Diospyros virginiana*.

VIRGINIAN SILK. A common name for *Perioploca græca* (which see).

VIRGINIAN STOCK. See *Malcolmia maritima*.

VIRGIN'S BOWER. See *Clematis*.

VIRGULARIA. A synonym of *Gerardia* (which see).

VIRIDESCENT. Greenish; turning green.

VIROLA. Included under

VISCARIA. Included under *Lychnis* (which see).

VISCID, VISCIOUS. Clammy; sticky from a tenacious coating or secretion.

VISCUM (the old Latin name used by Virgil and Pliny, akin to the Greek *Isos*). Mistletoe. ORD. *Loranthaceæ*. A genus comprising nearly thirty species of stove, greenhouse, or hardy shrubs, parasitic on trees, inhabiting the temperate and warmer regions of the globe. Flowers dioecious or monoecious, at the axils or nodes, or at the tips of the branches, three to five in a fascicle or rarely solitary, the fascicles sessile or rarely on short peduncles; perianth tube in the male flowers very short and solid, in the females adnate with the ovary, the limb three or four-parted; bracts often small. Berry one-seeded, naked or crowned with the perianth. Leaves sometimes flat and rather thick, sometimes reduced to minute teeth or scales. *V. album*, the common Mistletoe, has been associated with many superstitions from the most ancient times, and has been highly extolled for its medicinal virtues. It is, however, now excluded from the Pharmacopœias. "The origin of the modern custom connected with Mistletoe is not very clear. Like many other customs, its original significance is only guessed at. If known, perhaps the innocent merriment now associated

Viscum—continued.

with the plant would be exchanged for a feeling of stern disapproval, and the Mistletoe would be banished from our homes. . . . Mistletoe may be made to grow on the Apple and other trees, by cutting a notch in the bark on the under-surface of a branch, and carefully inserting the seed therein. Two precautions are especially needed—one is to place the seed in such a position that the embryo shall be directed towards the trunk of the tree, and the other is to avoid crushing the seed. The Apple is the tree on which the Mistletoe grows most abundantly. The orchards in Herefordshire are greatly infested with this parasite, which, however, has a value of its own, for it appears that upwards of one hundred tons of Mistletoe are annually forwarded to London and other large towns from that county alone, for Christmas decorations. Some sorts of Apples are preferred to others for its growth, and, singularly enough, it is rarely, if ever, found on the Pear-tree. Next in frequency to the Apple, the Mistletoe prefers the Poplars, though it is not found on the Lombardy Poplar. Hawthorns, Limes, Maples, and the Mountain Ash, are all favourite habitats for the plant. It has been found on the Cedar of Lebanon and on the Larch, but rarely upon the Oak. Dr. Bull, in a paper in the 'Journal of Botany' (ii. 73), only mentions seven authentic instances of the growth of Mistletoe on the Oak in this country" (Dr. Masters). The ripe fruits may be crushed on young branches of Apple or Thorn trees, and the viscid pulp soon hardens and affords protection to the seed, as well as sufficient resistance to allow it, when germinating, to pierce the bark. To prevent birds from disturbing the seeds after being placed in position, it is necessary to cover with thin canvas, or some such material.

V. album (white). Common Mistletoe. *fl.* green, ternate, inconspicuous. March to May. *fr.* white, nearly 1 in. in diameter, ovoid or globose, viscid. *l.* opposite or in whorls of three, 1 in. to 2 in. long, obovate-lanceolate, obtuse, five to seven-nerved. Branches terete, dichotomous, knotted. *h.* 1 ft. to 4 ft. Europe (Britain), &c. Shrub yellowish-green, glabrous. (F. D. x. 1657; Sy. Kn. B. 635.)

VISIANIA. A synonym of **Ligustrum** (which *see*).

VISMIA (named in honour of M. de Visme, a merchant of Lisbon). *Syn.* *Acrossanthes.* *ORD.* *Hypericinea.* A genus embracing upwards of twenty species of stove trees or shrubs, mostly tropical American, four being found in Western tropical Africa. Flowers yellow or whitish; sepals five; petals five, often villous above; stamens in five groups; cymes terminal, sometimes few-flowered, sometimes paniculately many-flowered. Berry indehiscent. Leaves entire, often ample and tomentose or anescent beneath, gland-dotted, rarely highly glabrous. The under-mentioned species, which are all that call for mention in this work, thrive in a compost of loam and peat, and may be increased by cuttings, inserted in sand, under a bell glass, in heat. All are shrubs.

V. glabra (smooth). *fl.*, calyx ovate-oblong, obtuse, glabrous; panicle loose. July. *l.* elliptic-lanceolate, glabrous, on short, compressed petioles. *h.* 6 ft. Peru, 1824.

Vismia—continued.

V. guianensis (Guiana). American (Gamboge or Gutta-Gum) Tree. *fl.* corymbose; calyx villous. August. *l.* ovate-lanceolate, acuminate, dilated at base, glabrous above, rufescent beneath; petioles short. Stems quadrangular. *h.* 8 ft. Guiana, 1824.

V. guineensis (Guinea). *fl.*, calyx ovate-lanceolate; corolla glabrous; panicle spreading. May. *l.* ovate-lanceolate, acute, softly dotted beneath; petioles slender. Stems terete; branches divaricate. *h.* 6 ft. Guinea, 1823.

VISNEA (called after a Lisbon merchant named Visne, who was interested in botany). *ORD.* *Ternströmiacea.* A monotypic genus. The species is a greenhouse, ever-green tree, with the habit and inflorescence of **Eurya** (which *see* for culture).



FIG. 200. FLOWERING BRANCHLET OF **VISMIA** **MOCANERA.**

V. Mocanera (so named by Linneus on account of the fruit being supposed by some authors to have been the Mocan, which was made into a kind of syrup, and largely employed by the aboriginal inhabitants of the Canary Islands). *fl.* rather small, sub sessile; sepals much imbricated; petals connate at base; stamens numerous. March. *fr.* baccate, indehiscent. *l.* smooth, alternate, elliptic or lanceolate. Canary Islands and Madeira, 1815. See Fig. 200. (It. H. 1822, p. 212.)

VITELLARIA. A synonym of **Lucuma** (which

VITEX (the old Latin name used by Pliny for this or some similar shrub). **SYNS.** *Limia*, *Nephandra*, *Psilogue*, *Walrothia* (of Roth). **ORD.** *Verbenaceae*. A genus comprising about sixty species of stove, greenhouse, or hardy trees or shrubs, broadly dispersed over the warmer regions of the globe, a few extending to temperate Asia and South Europe. Flowers white, blue, violet, or yellowish, in variously-disposed cymes; calyx five-toothed or cleft, or rarely three-cleft; corolla tube straight or slightly incurved, usually short, the limb oblique, spreading, sub-bilabiate, five-cleft, the lower lobe largest; stamens four, didynamous; bracts small or rarely longer than the calyx. Leaves opposite, often digitately compound, rarely one-foliolate or simple; leaflets three to seven, petiolulate, entire or toothed. A selection of the best-known species is given below. *V. Agnus-castus* succeeds in any common, tolerably dry soil, and may be increased by cuttings, inserted in similar soil, under a glass, in autumn. A compost of loam and peat is most suitable for the stove and greenhouse species, which may be multiplied by cuttings, inserted in sand, under a glass, those of the stove kinds in heat.



FIG. 201. FLOWER OF VITEX AGNUS-CASTUS.

V. Agnus-castus (classical name).* Chaste-tree; Hemp-tree; Monk's Pepper-tree; Tree of Chastity. *f.* pale lilac; cymes sub-sessile, in glomerate whorls; panicles terminal or axillary. August. *l.* long-petiolate, mostly five-foliolate; leaflets lanceolate, acuminate, attenuated at base, entire or sometimes cut-serrate, whitish beneath. *h.* 6ft. South Europe, 1670. Shrub, hardy in the South of England. See Fig. 201. (S. F. t. 608.)

V. bicolor (two-coloured). A synonym of *V. Negundo*.

V. bignonioides (Bignonia-like). *f.* blue; cymes somewhat head-like, on peduncles 2in. to 3in. long. June. *l.* petiolate, five-foliolate; leaflets oblong, acuminate-cuspidate, narrowed at base, entire, 2in. or more long, glabrous, sub-equal; common petiole 1½in. or more long. *h.* 8ft. Venezuela, 1826. Stove tree.

V. Doniana (Don's). Black Plum. *f.* disposed in a moderate-sized panicle. *l.* five-foliolate, obovate. Sierra Leone. A large, stove tree.

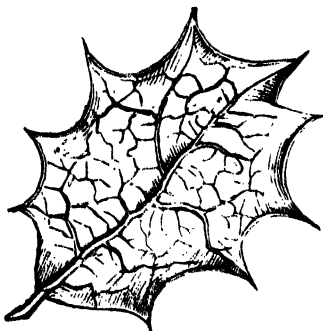


FIG. 202. LEAF OF VITEX ILCIFOLIA.

V. ilicifolia (Holly-leaved). *f.* in axillary cymes, longer than the leaves, on long peduncles, trichotomously branched, rusty-pubescent. Summer. *l.* simple, very shortly petiolate, broadly oval, sub-acute at apex, acute or cordate-emarginate at base, very slenderly reticulate-veined; margins sinuate-toothed, the teeth spiny. West Indies. Stove shrub. See Fig. 202.

Vitex—continued.

V. Lindeni (Linden's).* *f.* pale lilac, streaked with red in the tube, shortly pedicellate or sessile, in three to six-flowered, pedunculate, axillary cymes; corolla tube three exceeding the calyx, the limb flat, two-lipped, the upper lip of two smaller, the lower of three larger, rounded lobes. May. *l.* digitately three to five-foliolate, on slender petioles; leaflets sessile, elliptic or elliptic-obovate, abruptly acuminate, pale green, glabrous. Branches spreading; branchlets and inflorescence hoary-pubescent. Columbia, 1876. Stove shrub or small tree. (B. M. 6230.)

V. Negundo (Negundo). *f.* purple; corolla 1in. to 1½in. long; panicles terminal, closely white tomentose. June. *l.* three to five-foliolate; leaflets lanceolate, entire or crenate, glabrate above, white-tomentose beneath. *h.* 4ft. India, 1812. Stove shrub or small tree, closely allied to *V. trifolia*. **SYN.** *V. bicolor*.

V. N. incisa (cut-leaved). *l.* leaflets crenate-serrate or sub-pinnatifid. India, China, &c. Greenhouse. (B. M. 364, under name of *V. Negundo*.)

V. trifolia (three-leafleted). Indian Wild Pepper. *f.* varying from lavender to blue; corolla tomentose, ½in. to ¾in. long; panicles 1in. to 4in. long, oblong, white-tomentose, often leafy at base. July. *l.* simple and trifoliolate; leaflets sessile, obovate or obovate-oblong, entire, 1in. to 3in. long, sub-obtuse, glabrate above, clothed beneath with matted, scarcely stellate hairs. *h.* 4ft. India, Polynesia, &c., 1739. Stove shrub or small tree. (B. M. 2187.)

V. t. variegata (variegated). *f.* violet-purple. *l.* opposite, with white margins. South Sea Islands, 1876. A slender, greenhouse shrub, with downy branches.

VITICASTRUM. A synonym of **Sphenodesma** (which see).

VITICELLA. A common name for **Clematis** *Viticella* (which see).

VITICULOSE. Sarmentaceous; furnished with vine-like twigs or suckers (viticulae).

VITIS (the old Latin name used by Virgil, &c., perhaps from *vica*, to bind; in allusion to its clinging character). Vine. *Ampelopsis* and *Cissus* are here included by Bentham and Hooker, but for garden purposes these are kept distinct in this work. **ORD.** *Ampelideae*. A vast genus (about 230 species) of stove, greenhouse, or hardy, tendrilled, sarmentose, often tall-climbing shrubs, mostly found in tropical and sub-tropical regions, but rare in tropical America. Flowers small, umbellate, cymose, paniculate, racemose or spicate, ebracteate, sometimes polygamous; calyx four or five-toothed or lobed; petals and stamens four or five; peduncles leaf-opposed or very rarely axillary, often near the tips of the branchlets. Berries ovoid or globose, one or two-celled; cells one or two-seeded. Leaves simple or compound, very rarely bipinnate; leaflets entire, serrated or dentate, sometimes pellucid-dotted. The Grape Vine (*V. vinifera*) has been cultivated since the days of Noah, and is supposed to have been introduced into this country by the Romans. Its principal products are: Wine, vinegar, brandy, raisins, and currants. The hardy species of *Vitis* are admirably suited for covering trellis-work or walls; also for trailing over massive rockwork, or along on the ground. They usually grow strong in good, loamy soil, and, consequently, require considerable space. The foliage is very ornamental at all times, particularly when changing colour in autumn. Vines requiring indoor treatment may be planted out, or grown in large pots, and trained to rafters, or a trellis. Propagation is easily effected by cuttings, inserted in pots, and placed in a close propagating-frame. Ripened wood of the previous year's growth, will, in most, if not all, cases, root in a similar way to the Grape Vine; and, as the plants are gross feeders, they do best in a rich, loamy soil, with some manure intermixed. See also **Vine**.

V. cestivalis (summer).* American Summer Grape. *f.* with a Mignonette-like scent. May and June. *fr.* black, with a bloom, small, pleasant, ripe in October; fertile panicles long and slender, compound. *l.* simple, rounded and cordate, often variously lobed, woolly beneath, smoothish when old. *h.* 20ft. North America, 1656. Hardy climber.

Vitis—continued.

V. albo-nitens (shining white). *l.* oval-oblong, acuminate, cordiform at the base, shining on the upper side and suffused with a brilliant, silvery-white tone of colour. Brazil, 1871. Stove climber. SYN. *Cissus alto-nitens*.

V. amazonica (Amazon). *l.* large, oval, acuminate, smooth, glaucous, red beneath, with the veins silvery above; young ones almost linear, their veins very strongly marked. Amazon, 1866. A pretty, stove climber. SYN. *Cissus amazonica*.

V. antarctica (Antarctic). Kangaroo Vine. *fl.* tomentose-pubescent; cymes dense, broadly corymbose, shorter than the petioles. July. *fr.* globular. *l.* simple, petiolate, ovate or oblong, mostly acuminate and slightly cordate, 3in. to 4in. by 1½in. to 2in., entire, sinuate or irregularly toothed, rather firm or almost coriaceous. Australia, 1790. Tall, greenhouse climber. SYN. *Cissus antarctica* (B. M. 2488).

V. Bainesii (Baines'). *fl.* on glandular pedicels, cymose; peduncles terminal, as long as the stem. July. *l.* ternate, rather shortly petiolate (the lower ones sometimes simple); leaflets ovate or oblong, unequally serrated, penniveined; stipules twin. Trunk turnip-like, 1½ft. in circumference. *h.* 4½ft. Western tropical Africa, 1864. A dwarf, glaucous, succulent, stove tree. (B. M. 5472.)



FIG. 203. BRANCHLET OF VITIS DAVIDIANA.

V. capriolata (tendrilled). *fl.* on pedicels ½in. to ¾in. long; cymes axillary or terminating in short, lateral branches, pedunculate; peduncles conspicuously bracteate. *fr.* black, globose, two to four-seeded, the size of a currant. *l.* five-foliolate; petioles 1½in. to 2½in. long; leaflets 1½in. to 3in. by ½in. to 1½in., lanceolate or narrowly ovate or sub-ovate, acute or sub-acuminate, bristly-serrate in the notches. Temperate Himalayas. Hardy, with the protection of a wall, in the South of England.

V. chontalensis (Chontales). *fl.* scarlet, disposed in compound cymes. December. *l.* trifoliolate, of a lovely green; lateral leaflets obliquely ovate, acuminate, terminal one elliptic, all toothed. Branchlets angular. Chontales Mountains, Nicaragua, 1869. An elegant, glabrous, stove climber. SYN. *Cissus chontalensis*.

V. cirrhosa (tendrilled). *fl.* minute, in dense cymes. *l.* digitately three to seven-foliolate; leaflets succulent, sub-sessile, obovate, remotely dentate-serrate, quite glabrous in cultivation. Stems long, weak, brittle, fleshy, furnished with long, bifid tendrils. South Africa, 1866. A straggling, glabrescent or pilose, greenhouse shrub.

Vitis—continued.

V. cordifolia (cordate-leaved). Chicken, Frost, or Winter Grape. *fl.* very sweet-scented. May and June. *fr.* blue or black, with a bloom, small, very acerb, ripening after frosts; panicles compound, long and loose. *l.* thin, not shining, cordate, acuminate, sharply and coarsely toothed, obscurely three-lobed, smooth or nearly so, and bright green on both sides. *h.* 12ft. North America, 1806. Hardy climber. *V. riparia* (B. M. 2429) is a mere form of this, with broader, cut-lobed leaves.

V. Davidiana (David's). *fl.* small. *fr.* violet, not edible. *l.* palmately lobed, the margins of the broad lobes toothed; petioles red, long. China. A vigorous-growing, hardy climber, speedily covering a large surface. See Fig. 203. SYN. *Cissus Davidiana* (R. H. 1868, p. 29, t. 2), *C. platanifolia*, *C. rubricaulis*.

V. Endresii (Endres'). *l.* cordate, deep velvety-green, the veins being of a deep purplish-brown. Costa Rica, 1875. A strong-growing, stove climber.

V. gongyloides (rounded). A synonym of *V. pterophora*.

V. heterophylla humulifolia (variable-leaved Hop-leaved). Turquoise-berried Vine. *fl.* minute, sub-umbellate; cymes on slender peduncles, sparingly divided. *fr.* of a fine, pale, china-blue colour, dotted with black, globular. *l.* on slender, red petioles, three to five-lobed, with a broad sinus at base; lobes acutely serrated, dark green and rugose above, pale beneath, with pubescent veins. Stems 2ft. to 5ft. long. North China and Japan, 1868. Hardy climber. (B. M. 5622.)

V. hypoglauca (glaucous beneath). *fl.* yellow, minute, but pretty, freely produced in axillary cymes. *l.* digitately five-foliolate, oval or oblong, light green above, beautifully glaucous beneath when young. Tendrils wanting. Australia. Greenhouse or conservatory shrub.

V. japonica (Japanese). *fl.* green, disposed in panicles. *l.* compound; leaflets five, petiolate, the four lower ones bijugate, glabrous, roundish-oval, denticulate, the odd or terminal one larger, oval-elliptic, acuminate. Japan, 1875. A half-hardy climber, of vigorous, quick-growing habit. SYN. *Cissus japonica*. A variety called *maruorata*, with broad, yellow blotches on the leaves, has sported from this.

V. javalensis (Javali Vine). *fl.* bright scarlet, in compound cymes. *l.* much handsomer than those of *V. chontalensis*, simple, cordate, acuminate, mucronate-toothed, above green and beautifully velvety-pubescent, the midrib and veins purplish, below glabrous and purplish. Chontales Mountains, Nicaragua, 1869. A highly ornamental plant.



FIG. 204. FRUITING BRANCHLET OF VITIS LABRUSCA

V. Labrusca (classical name).* American Plum Grape; Isabella Grape; Northern Fox Grape. *fl.* Mignonette-scented. June.

Vitis—continued.

fr. dark purple or amber-coloured, large, with a tough, musky pulp, ripe in September or October; fertile panicles compact. *l.* simple, rounded and cordate, variably lobed, rusty-woolly



FIG. 205. FRUITS OF VITIS LABRUSCA.

beneath. Branchlets (and young leaves) very woolly. *h.* 12ft. North America, 1656. Hardy climber. See Figs. 204 and 205. (R. G. 765, 1.) SYN. *V. Thunbergii* (R. G. 424).

V. lanata (woolly).* *fl.* green, small, forming a thyrsoid, paniculate cyme. May. *fr.* purple, four-seeded, round, the size of a large pea. *l.* cordate-ovate, shortly acuminate, usually 2in. to 6in. by 1½in. to 3in., sometimes larger, usually softy pubescent, but occasionally felted beneath or nearly glabrous. Himalayas, 1824. Hardy. The leaves of this species assume a beautiful scarlet colour in autumn.

V. Lindeni (Linden's). *l.* bright green, freely mottled with white between the veins. Branches terete, tendrilled. United States of Colombia, 1871. A smooth, shrubby, greenhouse climber. SYN. *Cissus Lindeni* (L. H. ser. iii. 2).

V. macropus (gouty-stemmed). *fl.* four-parted, disposed in a rather broad corymb. April and May. *fr.* reddish-violet, the size of a pea. *l.* (at first plicate and white-tomentose), long-petiolate, the lowest one on the branch tri-, the rest five-foliate; leaflets ovate-elliptic or obovate, shortly stalked, toothed, cobwebby-pubescent. Trunk forming a large bulb, bi-trifurcate, covered with smooth, green bark. *h.* 1ft. to 2½ft. South Bengal, 1864. A dwarf, stove tree, more curious than beautiful. (B. M. 5479.)

V. planicoalis (flat-stemmed). *fl.* four-parted; cymes sub-corymbosae, with divaricate branches. May and June. *fr.* red (?), the size of a cherry. *l.* on petioles 4in. to 7in. long; leaflets 6in. to 8in. long, on stalks ½in. to 1½in. long, oblong-lanceolate, slightly acuminate, obtusely serrated. India, &c. A vast, stove, glabrous climber. (B. M. 5685.)

V. pterophora (wing-bearing).* *fl.* cymes pedunculate, with thick, divaricate branchlets. Autumn. *l.* long-petiolate, trifoliate; leaflets ample, sessile, rugose-undulated, trapezoid- or rhomboid-obovate, acuminate, serrated, with impressed, reticulated nerves, the terminal one somewhat three-lobed, the lateral ones oblique or dimidiate-ovate, with the lower margin produced in a lobe; stipules fuscous-purple, ample. Each branch bears at its extremity (after ceasing to grow for the season) an elongated, fleshy tuber, 5in. to 6in. long, which finally drops off, and, on reaching the ground, under favourable circumstances, forms a new plant. Brazil. A unique, tall-climbing, villous, stove plant (B. M. 6803.) SYN. *V. pongyloides* (G. C. n. s., xix., p. 53).

V. quadrangularis (four-angled). *fl.* green, in small, shortly-stalked, glabrous cymes. Summer. *fr.* berry globose, red, the size of a pea, very acid. *l.* when present, small, broadly cordate or reniform. Stems glabrous, four-winged, very thick and fleshy, greatly contracted at the nodes, generally leafless. India, Java, &c. A curious and interesting, quick-growing, warm house climber.

V. riparia (river-bank). A form of *V. cordifolia*.

V. striata (striped). *fl.* greenish, inconspicuous, in cymes opposite the leaves. *fr.* reddish, the size of small peas. *l.* rather thick, dark green, digitate; leaflets sessile, oblanceolate, serrated, cuneate at base. Stems and tendrils glabrous. South Brazil and Uruguay, 1881. A beautiful, hardy, evergreen climber.

V. Thunbergii (Thunberg's). A synonym of *V. Labrusca*.

V. vinifera (wine-bearing). Common Grape Vine. *fl.* in loose or crowded, ovate or cylindrical racemes. June and July.

Vitis—continued.

fr. purple varying to white and green, watery or fleshy, sweet musky, or sour. *l.* lobed, sinuately toothed, naked or downy. South of the Caspian. Hardy climber. (B. M. Pl. 66; S. F. G. 242.) See also **Vine**.

V. v. amurensis (Amur). *l.* entire or three to five lobed; young leaves woolly on both sides. (R. G. 359.)

V. vulpina (Fox Grape). Bullace; Muscadine. *fl.* densely disposed in small panicles. May. *fr.* purplish, without bloom, musky, ½in. to ¾in. in diameter, with a thick and tough skin, ripening early in autumn. *l.* shining on both sides, small, rounded, cordate at base, coarsely broad and blunt toothed, seldom lobed. Branchlets minutely warty. North America. Hardy climber.

VITTARIA (from *vitta*, a riband; alluding to the narrow fronds). Including *Taniopsis*. ORD. *Filices*. A genus comprising about thirteen species of tropical, stove Ferns. Fronds grass-like, sub-coriaceous, with free veins. Sori in continuous marginal or slightly intra-marginal lines. The species known in gardens are here described. For general culture, see **Ferns**.

V. elongata (lengthened). Fronds 6in. to 18in. long, ½in. to ¾in. broad, the point acute or rather blunt, the lower part very gradually narrowed to the base; midrib faint or distinct; veins simple, immersed. *sori* quite sunk in a marginal groove, with
Himalayas, Australia, &c. SYN. *V. ensiformis*, *V. zosteræfolia*.

V. ensiformis (sword-shaped). A synonym of *V. elongata*.

V. lineata (lined). Florida Ribbon Fern. Fronds 6in. to 18in. long, ½in. to ¾in. broad, gradually narrowed downwards to a stout, compressed stem which passes gradually into the frond, the edges often reflexed; midrib distinct, raised; veins immersed, parallel. *sori* in a broad, slightly intra-marginal line in a slight furrow, the edge of the frond at first wrapped over it. West Indies, Guinea Coast, &c., 1793. SYN. *Taniopsis lineata*.

V. scolopendrina (Scolopendrium-like). Fronds 1ft. to 1½ft. long, ½in. to ¾in. broad, the point acute, the edge entire, the lower part very gradually narrowed to the base; midrib blackish, thick, grooved in front below; veins oblique, fine, parallel. *sori* in broad, continuous, sub-marginal lines, the firm, unaltered edge of the frond at first wrapped over it. New Guinea, Ceylon, &c. SYN. *Taniopsis scolopendrina*.

V. zosteræfolia (Zostera-fronded). A synonym of *V. elongata*.

VITTATE. Longitudinally striped.

VITTMANNIA. A synonym of *Willemetia* (which see).

VIVIANIA (named in honour of Domenico Viviani, 1772-1840, a professor and botanist of Genoa, &c.) SYN. *Macraa*. ORD. *Geraniaceae*. A genus embracing about eight species of stove or greenhouse herbs, sub-shrubs, or small shrubs, inhabiting extra-tropical or sub-tropical South America. Flowers regular, sub-fusculate or corymbose-paniculate in the upper axils; calyx of five, rarely four, valvate lobes; petals five, rarely four, hypogynous, twisted; stamens ten, rarely eight, free, all bearing anthers. Leaves opposite, entire or often crenately or deeply toothed, usually snowy-tomentose beneath. It is doubtful whether the under-mentioned species are now in cultivation. They are, however, pretty, greenhouse shrubs, and thrive in a compost of loam, peat, and sand. Propagation may be effected by young cuttings, inserted in sand, under a glass.

V. grandifolia (large-leaved). *fl.* white or red; peduncles shorter than the leaves. July. *l.* grey and glandular beneath, with prominent veins. Branches pubescent. *h.* 1ft. to 2ft. Chili, 1832.

V. parvifolia (small-leaved). *fl.* rose-coloured; peduncles shorter than the leaves. July. *l.* snowy beneath, obscurely veined. Branches cobwebby. *h.* 1ft. to 2ft. Chili, 1832.

VIVIANIÆ. A tribe of *Geraniaceae*.

VOANDZEIA (*Voandzou* is said to be the name of the plant in Madagascar). SYN. *Cryptolobus*. ORD. *Leguminosæ*. A monotypic genus. The species is a shortly-creeping, stove herb. Its flower-stalks, like those of *Arachis hypogæa*, bend down after flowering, and increase in length, so that the young pods are pushed into the earth, beneath which they ripen. For culture, see **Arachis**.

Voandzeia—*continued*.

V. subterranea (underground). Bombarra Ground Nut; Under-ground Bean. *fl.* pale yellow, partly unisexual, partly perfect; two upper calyx teeth or lobes connate; standard orbicular; short, axillary, few-flowered. July. *fr.*, pods irregularly sub-globose, two-valved. *l.* long-petiolate, pinnately trifoliate, stipellate. *h.* 3 in. Tropics, 1823.

VOCHISIA. See **Vochysia**.

VOCHYA. A synonym of **Vochysia** (which see).

VOCHYSIA (*Vochy* is the Guiana name of *V. guianensis*). Sometimes spelt *Vochisia*. **SYNS.** *Cucullaria*, *Strukeria*, *Vochya*. **ORD.** *Vochysiaceæ*. A genus embracing about forty species of stove shrubs or often tall trees, inhabiting Brazil, Guiana, Eastern Peru, and New Grenada. Flowers yellow, odorous, rather large, in compound, elongated racemes or panicles; sepals five, connate at base, the posterior one large and often spurred; petals one to three, linear or spatulate, two of them smaller than the other; fertile stamen one; staminodia two; pedicels bibracteolate. Leaves decussately opposite or whorled, often coriaceous, sometimes prettily veined, as in *Calophyllum*; stipules small, subulate. Only a couple of the species have been introduced. Both are trees, thriving in a mixture of loam and peat. They may be increased by ripened cuttings, inserted in sand, under a glass, in heat.

V. guianensis (Guiana). Copai-yé-wood. *fl.*, spur spreading; racemes simple, erect, terminal, dense-flowered. August. *l.* opposite, obovate-oblong, shortly acuminate, glabrous on both sides. *h.* 12ft. and upwards. Guiana, 1822. (A. G. i. 6.)

V. tomentosa (tomentose). *fl.*, racemes terminal, loose, slightly nodding. August. *l.* opposite, oval-oblong, long-acuminate, attenuated at base, glabrous above, ferruginous-tomentose beneath. *h.* 25ft. Guiana, 1826.

VOCHYSIACEÆ. A small natural order of trees, often gigantic, with copious, resinous juice, rarely erect, armentose, or climbing shrubs, confined to tropical America. Flowers irregular, hermaphrodite, often large; sepals five, free or connate at base, or rarely adnate to the ovary, the two outer ones often smaller, the two anterior larger, the posterior often largest, spurred or gibbous at base; petals hypogynous, or inserted on the top of the calyx tube, one, three, or rarely five, when one is protruded between the blade of the anterior sepals, clawed; stamens inserted with the petals, usually fertile, the rest imperfect; filaments usually thick, excrecent, subulate; pedicels jointed and bracteate; inflorescence variable. Fruit usually capsular, rarely a winged samara. Leaves opposite, whorled, or alternate, shortly petiolate, coriaceous, quite entire; stipules small, reduced to glands, or wanting. Branches usually opposite or whorled. The order embraces seven genera, and about 100 species. Examples: *Qualea*, *Trigonía*, *Vochysia*.

VOHIRIA. A synonym of **Voyria** (which see).

VOLKAMERIA. A synonym of **Clerodendron** (which see).

VOLKMANNIA. A synonym of **Clerodendron** (which see).

VOLUBLE. Twining round some support.

VOUPA (the Guiana name). **ORD.** *Leguminosæ*. A small genus (about three species) of stove, evergreen trees, native of Guiana, now included, by Bentham and Hooker, under *Macrolobium*. Flowers racemose; calyx four-cleft, with two opposite, stipitate bracteoles at the base; petal one, flat; stamens three. Leaves unijugate. Only one species has been introduced. It thrives in a compost of sandy loam and a little peat. Propagation may be effected by ripened cuttings, inserted in sand, under a glass, in heat.

V. bifolia (two-leaved). *fl.* violet; calyx lobes spreading; stamens nearly equalling the corolla; bracts elevated-uninerved. May. *l.* leaflets sessile, ovate, acuminate, oblique. *h.* 10ft. 1823. The proper name of this plant is now *Macrolobium*.

VOUAY. A synonym of **Geonoma** (which

VOYRIA. (*Voyra* is the Guiana name of one of the species). **SYNS.** *Humboldtia* (of Necker), *Leipheimos*, *Lata*, *Vohiria*. **ORD.** *Gentianeæ*. A genus comprising about sixteen species of dwarf, leafless, stove herbs, found growing on putrid wood and leaves in tropical America and (one species) Africa. Flowers white, yellow, orange, or rarely blue or pink, solitary or few in a cymose cluster; calyx tubular or campanulate, four or five-toothed or lobed; corolla salver-shaped, with an elongated tube and four or five twisted, spreading lobes; stamens four or five, included; filaments filiform or very short. Scales minute, opposite or the lower ones rarely alternate. The species are probably not now in cultivation.

VRIESIA. Included under **Tillandsia** (which see).

VULPIA. Included under *Festuca*.

WAAHOO. See **Euonymus atropurpureus**.

WACHENDORFIA (named after E. J. Wachendorf, 1702-1758, a Dutch botanist, professor at Utrecht). **SYN.** *Pedilonia*. **ORD.** *Hamadoracæ*. A small genus (seven



FIG. 206. WACHENDORFIA THYRSIFLORA

Wachendorfia—*continued*.

species have been enumerated, but probably not more than three are truly distinct as such) of greenhouse or half-hardy, tuberous-rooted, perennial herbs, confined to South Africa. Flowers in terminal panicles, often villous; perianth yellow, oblique, the tube wanting; segments narrow or obovate-oblong, the outer ones, especially the back one, dissimilar to the rest, decurrent to the pedicels; stamens three. Leaves few, ensiform or rarely linear, sometimes large, more or less plicate-veined. Stem erect, sometimes thickened at base. A mixture of very sandy loam and a little peat is well suited to the requirements of *Wachendorfia*. If planted out in a pit or frame, where protection from frost can be ensured, they will flower much stronger than if kept in pots. Little or no water should be given during the resting season. Propagation may be effected by off-sets, or by seeds. Some of the species will thrive in the open air in the South of England if planted in a sheltered position.

W. brevifolia (short-leaved). *fl.* nodding; perianth crimson, intermixed with tawny-yellow, softly hairy outside; raceme loose. April. *l.* lanceolate, five-nerved, plicate, villous, distichous about 6 in. long, falcately diverging. Stem 1 ft. high, green, hairy. 1765. (B. M. 1166.)

W. hirsuta (hairy). *fl.* drooping; perianth red in bud, golden-yellow when expanded; peduncles four or five-flowered, secund; panicle spreading; bracts villous. April. *l.* linear-ensiform, three-nerved, villous. Stem 1½ ft. high, villous. 1687. (B. M. 614.) *syn. W. villosa* (A. B. R. 398).

W. paniculata (paniculate). *fl.*, perianth golden-yellow, the segments pubescent outside, rubicund, obovate; pedicels racemose, secund, pubescent; peduncles spreading, three to five-flowered. April. *l.* ensiform, three-nerved, bifarious, one-third the length of those of *W. thyrsoiflora*. Stem greenish, corymbose-paniculate. *h.* 1½ ft. 1700. (B. M. 615.) *pallida* is a form with a pale yellow perianth. (B. M. 2610.)

W. thyrsoiflora (thyrsoid-flowered).* *fl.* in a terminal spike, the rachis angular; perianth yellow, the lobes cuneate-lanceolate; lower branchlets of the spike three or four-flowered. May. *l.* ensiform, five-nerved, glabrous. Stem nearly simple. *h.* 2 ft. 1789. See Fig. 205. (B. M. 1060.)

W. villosa (villous). A synonym of *W. hirsuta*.

WAFER ASH. A common name for *Ptelea trifoliata* (which *see*).

WAHLBOMIA. A synonym of *Tetracera* (which *see*).

WAHLENBERGIA (named after George Wahlenberg, of Upsala, 1780-1851, author of "Flora Lapponica," &c.). *syn. Schultesia* (of Roth). Including *Cerricoma* and *Edraianthus*. *ORD. Campanulaceae*. A large genus (nearly eighty species) of greenhouse or hardy, annual, perennial, or woody-stemmed herbs, mostly natives of the Southern hemisphere, especially South Africa; a few inhabit the tropics of America and the Old World, and the Mediterranean region; and one species is broadly distributed over Western Europe. Flowers often blue and nodding; calyx tube adnate, hemispherical, turbinate, or obovate-oblong, the limb five, rarely three or four-parted; corolla campanulate, tubular, sub-rotate, or funnel-shaped, the limb shortly or rarely deeply five-cleft, very rarely three or four-cleft; stamens free of the corolla; inflorescence often irregularly centrifugal; peduncles terminal, lateral, or axillary, solitary or variously paniculate. Capsules erect, inferior or half-superior. Leaves alternate or rarely opposite. The best-known species are here described. For culture, *see Campanula*.

W. albo-marginata (white-margined). A synonym of *W. saxicola*.

W. capensis (Cape). *fl.* at first drooping, but at length nearly erect; corolla bluish-green outside, dark blue inside at the bottom, greenish at the origin of the violaceous lobes, spotted with black within the lobes at the recesses; peduncles elongated, one-flowered. July. *l.* ovate-lanceolate or lanceolate, pilose, irregularly toothed, 1 in. to 2 in. long. Stem 1 ft. to 1½ ft. high. Cape of Good Hope, 1819. Half-hardy annual. *syns. Campanula capensis* (B. M. 7c2), *Koelia decurrens* (A. B. R. 238).

W. capillaris (capillary). *fl.* in a terminal, leafless panicle, on pedicels; corolla blue, ½ in. long, funnel-shaped. May. *l.* numerous, alternate, fascicled, linear-elliptic, entire, ½ in. to

Wahlenbergia—*continued*.

½ in. long. Stems erect, 1 ft. to 1½ ft. high. South Africa, 1822. (Greenhouse perennial.)

W. dalmatica (Dalmatian). A synonym of *W. tenuifolia*.

W. gracilis (slender). Australian Harebell. *fl.* very variable in size and form; calyx three to five-lobed; corolla blue, purplish, or white, ½ in. to ¾ in. long, three to five-lobed. April. *l.* ½ in. to 2 in. long; radical ones spatulate, petiolate, toothed; cauline ones sessile, linear-oblong, entire, toothed, or sinuate, acute or acuminate, rarely spatulate. Stem 6 in. to 2½ in. high. New Zealand, &c., 1794. A slender, greenhouse annual. *syns. Campanula capillaris* (L. B. C. 1406), *C. gracilis* (B. M. 691; S. E. B. 45).

W. hederacea (Ivy-like).* *fl.* one to a peduncle, leaf-opposed; corolla pale blue, ½ in. long, the lobes recurved. July and August. *l.* all petiolate, orbicular or cordate, angled or obscurely lobed, ½ in. to ¾ in. in diameter, the upper ones often opposite. Stems filiform, creeping. Europe (Britain). Annual. *syn. Campanula hederacea* (S). *Kn. B. 87b*.

W. Kitabelii (Kitabel's).* *fl.* disposed in terminal, bracteate groups; corolla blue, with a tinge of purple; bracts acuminate, dentately sub-serrated. Summer. *l.* radical ones crowded, linear-subulate, remotely denticulate. Stems purplish, beset with soft pili. *h.* 6 in. Transylvania. A tufted, hardy perennial. (B. M. 6188.)

W. saxicola (rock-loving).* New Zealand Bluebell. *fl.* pale blue, erect; corolla campanulate, thrice exceeding the calyx; scape solitary, long, one-flowered. June. *l.* all radical, usually late, spatulate, long-attenuated to a flat, ciliated petiole, above usually hairy, entire or crenate-serrated, white and thickened on the margins. *h.* 2 in. to 6 in. New Zealand. Greenhouse perennial. (B. M. 6015.) *syns. W. albo-marginata* *W. vincoflora* (L. & P. F. G. ii., fig. 142).

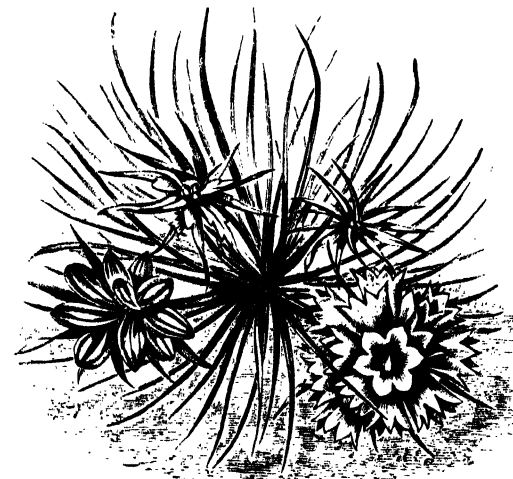


FIG. 207. WAHLENBERGIA TENUIFOLIA

W. tenuifolia (slender-leaved).* *fl.* six to ten in a dense, terminal, bracteate tuft; calyx lobes bristly-ciliate; corolla violet-blue, white at the base. June and July. *l.* linear, entire, with bristly margins. Stems pilose, purplish, tufted. *h.* 3 in. to 6 in. Dalmatia, 1879. Hardy perennial. See Fig. 207. (B. M. 6482.) *syns. W. dalmatica, Edraianthus tenuifolius*.

W. tuberosa (tuberous-rooted).* *fl.* white, marked on the outside with bright rose-red bands, numerous at the tips of the paniculate branches. ½ in. long, campanulate, erect. Summer. *l.* linear, acute, spreading, 1 in. long, one-nerved. Stems slender, erect, 6 in. to 2 ft. high, loosely branched. Juan Fernandez, 1875. A remarkably floriferous, tuberous-rooted, greenhouse perennial. (B. M. 6165; R. G. 1877, p. 213.)

W. vincoflora (Periwinkle-flowered). A synonym of *W. saxicola*.

WAHLENBERGIA (of Blume). A synonym of *Webera* (which *see*).

WAHOO. See *Ulmus alata*.

WAILIESIA (named in honour of G. Wailies, a great collector of Orchids). *syns. Dipodium* (now the correct name), *Leopardanthus*. *ORD. Orchidaceae*. A small genus (about six species) of stove, terrestrial Orchids, natives

Wailesia—continued.

of the Malayan Peninsula and Archipelago, the Pacific Islands, and Australia. Flowers frequently dotted, rather large, in simple racemes; sepals and petals sub-equal, free, spreading; lip erect, adnate to the column, slightly gibbous or very shortly saccate at base, three-lobed to the middle, the lateral lobes narrow or triangular, the middle one longer; column erect, semi-terete; pollen masses two. Leaves, when present, narrow, coriaceous. Stems leafy at base, or the floriferous ones leafless. Only two species have been introduced. For culture, see **Bletia**.

W. picta (painted). *f.*, sepals and petals pale ochre within, externally yellow, with reddish-brown spots, oblong, acute; lip extended in a sac, trifold, white at base, the rest pale purple, obscurely striated; peduncle above 9in. long, with a few distant sheaths, racemose at apex; bracts very short. *l.* oblong-lanceolate, acuminate. Adventitious roots ascending. Java, 1849. *SYNS.* *W. rosea* (P. M. B. xvi., p. 321), *Dipodium pictum* (R. X. O. 107, ii. iv.).

W. punctata (dotted). *f.*, more or less red, usually spotted with purple; sepals and petals six to eight lines long; lip as long or rather longer, the basal pouch or gibbosity very short, the middle lobe obovate-oblong, twice as long as the erect lateral ones; raceme sometimes very short, occupying one-third of the stem. Stem erect, 1ft. to 2ft. high, leafless, with a few sheathing, loosely imbricated scales. Australia 1822. *SYNS.* *punctatum* (S. E. B. i. 12), *Dipodium* (B. R. 1:30).

W. rosea (rose-coloured). A synonym of *W. picta*.



FIG. 208. UPPER PORTION OF PLANT OF WAITZIA AUREA.

WAITZIA (named in honour of F. A. C. Waitz, who travelled in Java, and wrote on the plants of that island). *SYN.* *Viraya*. Including *Morna*. *ORD.* *Compositæ*. A genus comprising half-a-dozen species of pretty, greenhouse, annual, Australian herbs. Flower-heads ("ever-lasting") in terminal corymbs, or rarely in oblong, leafy

Waitzia—continued.

racemes; involucrel bracts all coloured and petal-like, imbricated in many rows; receptacle without florets numerous, all hermaphrodite, tubular, five-toothed; achenes terminating in a slender beak. Leaves alternate, linear. The best-known species are here described. For culture, see **Celosia**.

W. acuminata (taper-pointed). A synonym of *W. corymbosa*.

W. aurea (golden).* *f.*-heads rather larger, fewer, and in a looser corymb, than in *W. corymbosa*; involucre golden-yellow with brown, the bracts distinctly exceeding the florets. Summer. *l.* resembling those of *W. corymbosa*. *h.* 1ft. to 2ft. 1835. See Fig. 203. *SYN.* *Morna nitida* (B. R. 1941).

W. corymbosa (corymbosa). *f.*-heads usually numerous, in a dense, terminal corymb; involucre pale or dark yellow, white, or light pink, the outer bracts passing into small scales. Summer. *l.* linear, the lower ones often 2in. to 3in. long, stem-clasping at base, the margins revolute. *h.* 1ft. to 2ft. 1864. Plant scabrous-pubescent or hoary. (B. M. 5443.) *SYN.* *W. acuminata* (B. G. 401).

W. grandiflora (large-flowered). *f.*-heads bright yellow, much larger than those of *W. aurea*. Summer. *l.* much resembling those of *W. aurea*, but less hairy. *h.* 1ft. to 2ft. 1853.

W. nivea (snowy).* *f.*-heads rather large, usually few in a loose corymb; involucrel bracts pure white or pink, or very rarely pale yellowish, not exceeding the florets. Summer. *l.* linear, scabrous-pubescent or almost glabrous. *h.* 1½ft. 1836. *SYN.* *Morna nivea* (B. R. 1838, 9).

W. Steetziana (Steetz). *f.*-heads solitary or in loose corymbs, smaller than in *W. nivea*; involucre varying from a pure white to a pale or bright yellow, hemispherical, about ¼in. in diameter. Summer. *l.* linear. *h.* less than 1ft. 1861. *SYN.* *W. tenella* (B. M. 5342).

W. tonella (tender). A synonym of *W. Steetziana*.

WAITZIA (of Reichenbach). A synonym of **Tritionia** (which see).

WAKE ROBIN. A common name for *Arum maculatum* and *Trillium grandiflorum*.

WALDSCHMIDIA. A synonym of **Limnanthemum** (which see).

WALDSTEINIA (named in honour of Count Francis von Waldstein, 1759-1823, a German botanist and author). Including *Comaropsis* (in part). *ORD.* *Rosaceæ*. A small genus (four species) of hardy, creeping, perennial herbs, with the habit of *Fragaria*, natives of Central and Eastern Europe, Northern Asia, and Eastern temperate America. Flowers yellow, rather large; calyx persistent, with or without five minute bracteoles; petals five, obovate; stamens numerous; pedicels often curved; scapes bracteate, two to five-flowered. Leaves alternate, long-petiolate, entire, lobed, three to five-cleft, or three to five-foliolate with crenate or incised leaflets; stipules rather large, membranous. Only three species call for description here, the North American *W. lobata* probably not being in cultivation. They are rather pretty plants, thriving in ordinary soil. Propagation may be effected by divisions, or by seeds.

W. fragarioides (Strawberry-like).* Barren Strawberry. *f.*, petals longer than the calyx. June. *l.* trifoliolate; leaflets broadly wedge-shaped, cut-toothed. North America, 1803. *SYNS.* *Comaropsis fragarioides*, *Dalibarda fragarioides* (B. M. 1367; L. B. C. 408).

W. geoides (Geum-like). *f.*, smaller than those of *Potentilla veris*. June. *l.* palmately three to five lobed; lobes acutely toothed. Hungary, &c., 1804. (B. M. 2535.)

W. trifolia (three-leaved). *f.*, petals rounded at the base, without auricles; ovary silky-villous. April and May. *l.* smaller than those of *W. geoides*; leaflets very shortly stalked, beset with long hairs. *h.* 4in. to 6in. Eastern Europe.

WALKING LEAF. A common name for **Scolopendrium rhiphyllum** (which see).

WALKS. Few things contribute more to the appearance of a garden than good, properly-proportioned Walks. Those that are to last in good condition must be properly made at first, as it is not an easy matter to keep repairing them, and, besides, it is seldom satisfactory. Various kinds of material are used, as much depends on what can be most readily procured. To make Walks in a proper

Walks—continued.

manner, and provide all the material, is rather an expensive proceeding, particularly on a large scale. Where gravel of a binding nature is procurable, it is generally preferred to other materials for the surface, as being most appropriate, and best suited for garden paths. One of the principal objects is to make Walks so that they can be used in all weathers without discomfort; but this is often somewhat difficult, for although the gravel may be of a nature which is in good condition in wet weather, it will often be rough and stony during continued drought. The amount of traffic which a Walk is likely to have over it will prove of assistance as a guide in its formation. Besides gravel, asphalt, concrete, burnt ballast, and other substances, are sometimes used for the surface. Something may generally be said in favour of Walks formed of the two first-named—*v.g.*, absence of weeds, durability when once made properly, and cleanliness at all times. Where it is necessary to have a hard, dry Walk, it may be preferable to make the surface of asphalt or concrete; but, as a rule, this is neither practicable nor desirable for garden paths where gravel is procurable in sufficient quantity. The question as to what the surface of a Walk shall be composed of, need not be further discussed, but left for settlement by individuals who have often to be guided by what materials they can procure.

Passing on to the formation of Walks, such materials as are best adapted will be referred to. One of the most important considerations is efficient drainage; this may be readily insured where the ground is undulated, but not so easily on a flat surface. Sometimes, Walks will drain themselves naturally without pipes, if the sub-soil is composed of gravel; but wherever they are sufficiently wide to be of importance, and there is clay beneath, a proper system of drainage is necessary. A good plan is to lay a row of ordinary 3in. drain-pipes the full length, either beneath the centre or near one side of the Walk, and conduct the water to the best available outlet. Catch-pits, with iron gratings on the top, should be placed on both sides near the edges, and these should be connected with the drain, so that any quantity of water may run away as fast as it enters. The width to be determined upon will vary, sometimes according to the length of the Walk, and at others to the extent of the space or inclosure through which it passes. In a large, walled-in kitchen-garden, for instance, it is usually found most convenient to have a Walk running parallel with the wall all round, allowing a space of 10ft. or 12ft. between for a border, on which vegetables, &c., may be cultivated, and two others intersecting each other in the centre of the inclosure, where it is very convenient to have a water basin for a constant supply. The intersecting Walks in this arrangement may be a little wider—2ft. or 3ft.—than those running parallel with the walls; this will distinguish them as being the principal ones. In very large gardens, it may be necessary to have more divisions than these, and, in addition, small, narrow paths, for subdividing the ground, are requisite; these latter are not usually gravelled. Flower-gardens, pleasure-grounds, terraces, &c., have Walks which vary greatly in width, as a matter of course; but the system of making may be carried out similarly in all.

The nearer the two edges are to a level or an equal incline, the easier is it to proceed. When laying out a new garden or grounds, some fixed points have to be made from which the levels are taken, and their positions must correspond somewhat to the natural disposition of the ground. Assuming that the width is determined, and a new Walk is to be made, the edges, of whatever description they are, must be first levelled and prepared. The level, or an equal fall from two fixed points, may be ascertained by the use of boring-rods; a straight-edge, 10ft. to 12ft. long, and a good spirit-level, are also requisite.

Walks—continued.

Edges require to be finished before the Walk is made, as they are a guide for gravelling, which it should not be necessary to alter afterwards. The mode of levelling with boring-rods for the edges and the Walk is similar; the highest and lowest points at the ends of any given length are fixed by pegs driven into the ground, and from these the proper height can be readily found throughout the intervening space. To insure firm edges, they should be made up with soil that is in a workable condition, and rendered firm by thorough ramming. New Walks, that are to be 10ft. or more wide, require excavating to a depth of from 9in. to 12in., the lowest point being made in the centre or wherever the drain-pipes are intended to be laid. When these are inserted, about 6in. of rough material, such as clinkers or old bricks, should be placed above them; then a layer of something in the way of rough ballast, which should be well rammed, and the surface left in the shape which it should present when finished; and then 2in. or 3in. of fine gravel should be laid over the top. This will become much less in bulk so soon as it is trodden over and the roller applied.

The proper height of the Walk, when finished, may best be indicated by driving in wooden pegs down its centre, about 10ft. apart: the positions of these may be obtained by the levelling instruments in the same way as for the edges, and the pegs can be pulled up as the finishing coat of gravel is put on. All Walks should be kept higher in the centre than at the edges, in order that rain-water may pass readily into the gratings, and efficient surface drainage be insured. The height at which it is advisable to fix the centre of a Walk above the edges depends on the width. Walks less than 8ft. wide, and with a fall lengthways, will generally be sure to drain if the centre is kept on the same level as the verge or edging, provided the surface is made that the gravel at the edges is about 2in. lower when the work is completed. The iron gratings may be placed 2in. below the level of the edges in almost all walks. The centres of 8ft. or 10ft. walks should be raised 1in. above the edge level, and, as a general rule, $\frac{1}{2}$ in. more may be added for every 2ft. width, so that a walk 28ft. or 30ft. wide would require its centre up 4in. to 6in. above the edges, to prevent water accumulating there instead of passing to the gratings. These heights will not be found too great a proportion for the widths; this always needs consideration, or the surface will not be comfortable to walk upon.

Before proceeding to put on the finishing coat of gravel, the rough material beneath must be rammed quite firm, and consolidated about equally throughout. The top gravel should be levelled with a wooden rake, used by a workman who, from experience, is able to do it properly. The want of a spit may cause a hollow place in the surface, and improper levelling has an equally objectionable effect, which will be readily apparent when rain comes. As the person levelling proceeds, another should be treading the surface crossways, and removing the levelling pegs, which, by this time, have served their purpose. A second rake must then follow, to remove any stones and inequalities caused by treading. A light roller may then be used, and afterwards a heavy one, if the Walk will carry it without the gravel clinging. It is advisable to get new gravel firmly rolled, if possible, before rain comes, as if water gets into it when loose, it often takes a long time to get a solid surface. To keep gravel Walks in good order, they must be rolled frequently when the weather allows, both in summer and winter. If the surface is too dry, but little good would result from rolling, and if too wet it might cling, or be positively injured; some judgment must, therefore, be exercised in selecting the proper times when rolling may be beneficially practised.

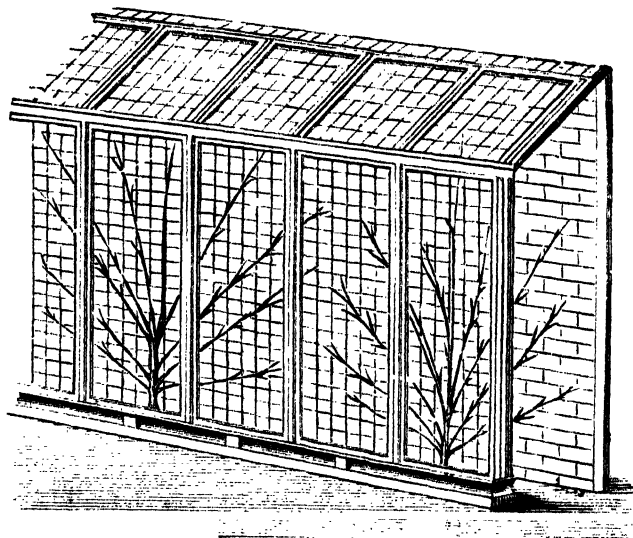


FIG. 209. WALL CASE.

WALL CASE OR FRAME. A general term applied to a glass protection sometimes put over such fruit-trees

Apricots, Peaches, and Nectarines, in unfavourable localities, where the fruits cannot be depended upon to ripen outside. A Wall Case or Frame (see Fig. 209) is, practically, an unheated, narrow house; but if glass protection without heat is unsafe against the injury caused by spring frosts, it would be preferable to incur the further expense of having a house which, for erecting, would, in many cases, not cost very much more, when the wall was already at command, and insert sufficient hot-water pipes to keep out frost. The interior would then be available, so far as space permitted, for accommodating many other plants in winter which merely require a slight protection.

WALL CRESS. See *Arabis*.

WALL FERN. See *Polypodium vulgare*.

WALLFLOWER. See *Cheiranthus Cheiri*.

WALLFLOWER, ALPINE. A common name for *Erysimum ochroleucum* (which see).

WALLICHIA (named after Dr. Nathaniel Wallich, 1786-1854, a Danish botanist, and author of several valuable works on Indian plants). *SYNS.* *Harina*, *Wrightia* (of Roxburgh). *ORD.* *Palme*. A small genus (two or three species) of East Indian, dwarf, tufted, stove Palms. Flowers yellowish, mediocre, monoecious or rarely polygamous, bract-ate and bibracteolate; spathe very numerous, slenderly coriaceous, the lower ones narrower, tubular, the upper ones boat-shaped, complete, imbricated; spadices shortly pedunculate, the males drooping or decurved, ovoid, much-branched, dense-flowered, the females looser, erect. Fruit reddish or purple, ovoid-oblong, one or rarely two-celled and seeded. Leaves densely fasciated, in one species terminal and distichous, furfuraceous, unequally pinnatisect; segments solitary or the lower ones fasciated, cuneate at base, oblong, obovate, or oblanceolate, erose-toothed, the terminal one cuneate; petioles slender, laterally compressed; sheaths short, cut at the margins and furnished with long

Wallichia—continued.

hairs. The species require to be grown in a strong, rich soil. Propagation may be effected by seeds, when procurable; or by gradually separating the suckers, so as to allow them to make sufficient root before they are quite detached.

W. caryotoides (Caryota-like).* *fl.*, males yellowish-white, covering the spadix branches; females few, amongst the males near the bases of the branches. July. *fr.* ovate-oblong, the size of a nutmeg. *l.* few, alternate, petiolate, 3ft. to 8ft. long; leaflets sessile, 1ft. to 1½ft. long, the lower ones in opposite fascicles, the upper ones mostly solitary and alternate, all wedge-shaped, premorse at apex, deep shining green above, whitish beneath. India, 1825. See Fig. 210.

W. densiflora (dense-flowered). *fl.*, male spadices enveloped in large, imbricated spathe, of a dark purple, streaked with yellow; these separate, and then a dense cluster of nearly white female spadices, with violet-coloured ovaries, appears. *l.*, lower pinne bimely fasciated, whitish below, the rest solitary, sinuate-lobed or toothed. Plant stemless. *h.* 12ft. Assam, 1840. (H. M. 4:84.)

WALLISIA (of Regel). Included under *Tillandsia* (which see).

WALLISIA PRINCEPS (of Regel). A synonym of *Lisianthus princeps* (which see).

WALL PENNYWORT. A common name for *Cotyledon Umbilicus* (which see).



FIG. 210. WALLICHIA CARYOTOIDES.

WALL PEPPER. See *Sedum acre*.

WALL PLANTS. These are very numerous, if the whole of the subjects requiring or benefiting by wall accommodation is considered. Kitchen-garden walls are requisite for the cultivation of fruit-trees that will not succeed in the open; and these are rarely given up to other plants, excepting such as Tomatoes, which, in favourable aspects, succeed during summer in any intervening spaces. The term Wall Plants is usually meant to have reference to those subjects which, from their natural habit of growth, require a wall; but it may also include very many others that, from their quick-growing nature, may be utilised for rapidly covering a large surface, or, from being more or less tender, are cultivated with greater certainty, and brought to greater perfection, by the shelter which a wall affords. Walls in greenhouses, stoves, and most other glass structures, may also be utilised for the production of some crop, or covered with some plant to impart a much better appearance than would otherwise be the case. Of hardy plants that succeed admirably on walls, the following, amongst many others, may be mentioned: *Aristolochia Siph*, *Chimonanthus fragrans*, many species and hybrids of *Clematis*, *Cotonaster*, *Crataegus Pyracantha*, *Escallonia*, *Euonymus*, *Foraythia suspensa*, *Garrya elliptica*, *Ivy*, *Jasminum officinale* and *J. revolutum*, *Lonicera*, *Magnolias*, *Pyrus japonica*, *Roses*, *Tecoma radicans*, hardy Vines, Virginian *Croepers*, *Wistaria sinensis*, &c. Camellias are sometimes grown very successfully as Wall Plants in greenhouses; and apart from their flowers, the foliage is always attractive. Strong-growing kinds of Tea *Roses* do well on walls in any cool house, or on the back wall in a peach-house. *Fuchsias*, *Heliotropes*, *Jasminums*, *Passifloras*, &c., are well-known wall-furnishing plants. *Ficus stipulata* will cover a wall in a cool house or stove with green verdure as dense as Ivy does outside; it is, therefore, a very desirable subject.

WALLROTHIA (of Roth). A synonym of *Vitex* (which see).

WALLROTHIA (of Sprengel). Included under *Seseli* (which see).

WALL RUE. See *Asplenium Ruta-muraria*.

WALLS. These are requisite for the proper cultivation of fruit-trees and numerous other subjects which require shelter and a warm situation; and the less favourable aspects which must of necessity be presented by one, or sometimes even both of the surfaces, may also be utilised for some purpose. In a kitchen garden the Walls serve as a boundary for the inclosure; and as, during sunshine, they accumulate a considerable amount of heat, which is given off when the air becomes cooled, most of the trees on southern aspects, at any rate, are in a warmer temperature even at night than they would be in the open ground. Amongst the principal fruits which in nearly every locality require Wall protection are Apricots, Figs, Nectarines, and Peaches. Morello and dessert Cherries, dessert Pears, and Plums, are also best, as a rule, on Walls; the Morello succeeds well in a north aspect, which is a great advantage.

The actual work of construction does not usually come within a gardener's province, but he has, not unfrequently, to propose the dimensions or give instructions how the work is to be executed. In a large garden, the Walls should be 10ft. to 12ft. high—the top of anything less than this would soon be reached by any of the fruit-trees named above. For a small garden, these heights might be too much for the inclosed area to be proportionate, and 8ft. would then be sufficient, but high Walls are always far superior to low ones. The materials commonly used are bricks (the dimensions of which are fairly uniform in all localities) and mortar. It is most important

Walls—continued.

that garden Walls be substantially built, and the foundations made to rest on a solid bottom; the weight will, in course of time, cause settlements, if any portion of the ground is of a different character, and the base is, consequently, not of an equally solid description throughout. The foundations should be, at the base, quite double the width of the wall that they are intended to support. The proper thickness depends considerably on the height. Walls that are only to be carried 6ft. or 8ft. high may be constructed, if the material and workmanship are good, in 9in. work—that is, the length of one brick. Higher Walls than these should not be less than 14in. thick, while 18in. is much more substantial, and better in all ways. These dimensions are readily obtained by using bricks: 14in. allows the length of one and the width of another, and 18in. the length of two, for the total thickness. Walls are sometimes constructed with less solidity than this, and supported by occasional buttresses on one or both of the sides; these are objectionable unless really needed, because of their interference with the proper training of trees, and it may be pointed out that they swallow up a considerable quantity of bricks that would help to build a thicker and more substantial Wall, and one which would be more satisfactory in the long run. All kitchen-garden Walls should be provided with a coping projecting over from 2½in. to 3in. on each side, and grooved beneath the under side of the projection for drip. Stone, if not too expensive, is the best material for copings; the entire part at the top should be slightly higher than the sides, so that water may pass off readily. For the protection of tender fruit-blossoms in spring, when this is necessary, it is better to put up a temporary board coping from 6in. to 9in. wide, on brackets fixed to the Wall, than to make the permanent one too wide. This can easily be removed when no longer required; and if the edge of the board is placed beneath the stone, and the brackets are of triangular shape, there will be no danger of drip on the blossoms. Walls should always be kept in good repair: the holes caused by nailing in the mortar, and larger ones often caused by the action of frost, are invariably harbours for insects. Where insects are very numerous, as is often the case in old Walls, a dressing of fresh lime and sulphur, thickened with a little clay, and made a dark colour by the addition of sufficient soot, may be annually used, if desired. It should be applied during the time the trees are bare, when a little falling on them will seldom do any harm. See also *Garden*.

WALLWOERT. An old name for *Sambucus Ebulus* (which see).

WALNUT (*Juglans regia*). The common Walnut is a well-known tree, fine in foliage as an ornamental subject for planting in parks, paddocks, &c., and useful for its fruits, both in the young and ripened state, and for the timber, which is largely employed by cabinet-makers and others, and for the purpose of making gun-stocks. Propagation is effected by seeds; also by budding, grafting, and inarching for perpetuating varieties. Seeds of Walnuts designed for timber-trees, are best sown where the trees are intended to develop, if this is practicable; or they may be stratified through winter, and planted in nursery rows, about 2ft. apart, in February or March following. The young trees may either be transplanted in the autumn, or allowed to remain a year longer; they each form a long tap-root, which proceeds straight down, and if transplanting is intended, it must not be too long deferred in the first place. Ring-budding and shield-budding, with a pushing eye, and also whip and cleft grafting, are successful methods of propagation, and all are performed while the sap is in active circulation. Walnut-trees succeed in any fairly good soil; if of good depth and resting on a gravelly bottom, it is

Walnut—continued.

to be preferred. The delicate young shoots and fruits are liable to be much injured by late spring frosts.

Walnuts for pickling should be gathered when the shell is quite soft, so that a needle will readily pass through.



FIG. 211. FRUITING BRANCH OF WALNUT (*Juglans regia*).

The ripe fruits (see Fig. 211) drop, and their husks open and disclose the nut in a way which is generally familiar. Squirrels will collect large quantities and store them; if there are any of these animals about, the crop must be secured as soon as ripe, or the depredators destroyed. Walnuts may be preserved in several ways for use during winter: dried and packed in clean jars or casks, with alternate layers of sand, they keep well; or placed in jars with close-fitting lids, and buried in the ground. Placing them in jars and sprinkling them with salt, and burying in oak sawdust, are other methods of preservation which have been recommended.

DISEASES, &c. The Walnut is not affected by any disease of sufficient importance to call for special remark; though several insects and Fungi attack the tree and fruit, they do no appreciable harm in England.

SORTS. Small-fruited varieties are best for growing to produce fruit. Besides the common Walnut, which is an abundant bearer, the following are most desirable:

DWARF PROLIFIC, a dwarf-growing variety which bears abundantly when quite small. **HIGHTLYEN**, early, of medium size, thin-shelled. **THIN-SHELLED**, an excellent variety, with a thin, tender shell, well filled; of better quality than the common variety.

WALNUT-TREE, INDIAN. A common name for *Aleurites triloba* (which see).

WALSURA (altered from *Wallursi*, the Telinga name). **ORD.** *Meliaceæ*. A genus comprising about a dozen species of stove, evergreen trees, limited to India and the Indian Archipelago. Flowers small; calyx short, five-cleft or five-parted; petals five, ovate-oblong, spreading; filaments ten or eight; panicles axillary and terminal. Leaves one to five-foliolate; leaflets opposite, quite entire, pale beneath. Perhaps *W. robusta* is not now in cultivation. *W. piscidia* is met with in botanic gardens. They require similar treatment to that recommended for *Chloroxylon*.

W. piscidia (fish-poison). *f.* sordid-yellow; petals imbricated; staminal tube half the length of the petals, equally ten-cleft. June. l. 2in. to 7in. long; leaflets lin. to 4in. long, $\frac{1}{2}$ in. to $\frac{1}{4}$ in.

Walsura—continued.

broad, sub-ternate, elliptic, obtuse, often retuse, glabrous, shining, pale beneath. A. 20ft. India, 1830. The bark acts as a fish-poison.

W. robusta (robust). *f.* white, $\frac{1}{2}$ in. long; panicles nearly as long as the leaves, densely puberulent. June. l. 6in. to 12in. long; leaflets five, sometimes three, ovate or elliptic, acuminate, shining. .A. 20ft. and upwards. India 1827.

WALTHERIA (named in honour of Aug. Fried. Walther, 1688-1746, Professor at Leipzig). **ORD.** *Sterculiaceæ*. A genus embracing about sixteen species of stove, stellate-pubescent herbs, sub-shrubs, or rarely trees; one is broadly dispersed over temperate regions, two are found in Africa, two in Oceania, and the rest are American. Flowers often rather small, glomerate or cymose in the axils, or disposed in terminal heads, racemes, or panicles; calyx five-cleft; petals five. Leaves serrated. The species possess little beauty, and are probably now unknown to cultivation.

WAMPEE-TREE. See *Cookia*.

WANDERING JEW. See *Saxifraga sarmentosa*.

WANGHEE OR WHANGEE CANE. See *Phyllostachys nigra*.

WARATAH-TREE. See *Telopea speciosissima*.

WARDEN. An old name for a variety of Pear used in making "Warden pies."

WARDIAN CASE. Wardian Cases are invaluable for packing pot-plants that have to travel long sea voyages. By their aid many new and rare plants of foreign climates are annually imported into this country, and others which we possess are exported in a similar way. The importation and exportation of plants in Wardian Cases is mostly conducted by some of the principal nurserymen and those in charge of botanic gardens, who usually make special arrangements, so that what they send away or have sent to them shall be of sufficient value and importance to warrant the outlay incurred, which is often somewhat considerable. Certain seasons are also selected for sending plants to particular countries abroad, such as are best calculated to favour a safe voyage in respect of the effect of climatic conditions on the plants during transit. Wardian Cases are made in different sizes to hold small or somewhat large plants, as the case may be. The pots are usually packed in soil or cocoa fibre, and held in position by narrow strips of wood, which are firmly secured by nailing them close down on the top of each inside the Case. The roof, if it may be so called, is made of two frames which fit on the ends and meet together at the top, where they form a ridge. They are glazed, and the glass protected by thin pieces of wood, which are fixed a short distance apart, so as to allow as much light as possible to pass to the plants inside. One or both of these sash-frames is movable, and may be unscrewed and taken off for the purpose of packing or unpacking. When travelling, Wardian Cases are nearly air-tight, so that but little evaporation or change of air can take place, only a small circular hole, covered with perforated zinc, being allowed at each of the ends near the top. The frames in which the glass is embedded are made air-tight by being fitted up with putty before being screwed. Instructions are invariably given as to the part of a ship where Wardian Cases should be placed during the voyage.

Other kinds of Wardian Cases are those used for plant-culture in drawing-rooms, &c., and in ferneries, for the special accommodation of Filmy Ferns, and such as require a very moist atmosphere. The former, with

Wardian Case—*continued*.

the stands on which they are placed, are usually rendered ornamental for associating with the surroundings, and have a fine appearance when filled with green Ferns, small foliage plants, and Lycopods. In Ferneries, such cases may be quite plain externally; they, of course, answer their purpose equally well for preserving moisture inside.

WARENCE. An old name for Madder (*Rubia tinctorum*).

WARMOT. An old name for Wormwood (*Artemisia*).

WARREA (named by Lindley in honour of its discoverer, Frederick Warre, who sent plants to the Loddiges, by whom it was figured under the name of *Maxillaria Warreana*). ORD. *Orchideæ*. A small genus (according to Bentham and Hooker, one or two species) of stove, terrestrial Orchids, natives of Brazil, Peru, Columbia, &c. Flowers showy, shortly pedicellate; sepals and petals broad, concave, the lateral ones oblique at base, adnate to the foot of the rather long, clavate column; lip affixed to the foot of the column, sessile, very shortly contracted towards the base and incumbent, at length erect, broad, and concave, the lateral lobes scarcely prominent, the middle one expanded, entire or bifid, the disk having elevated, fleshy lines; pollen masses four; racemes elongated, loose; scapes leafless, many-sheathed, tall, simple; bracts short. Leaves few, distichous, elongated. Stem leafy. *W. tricolor* and its variety require similar treatment to that recommended for **Phaius**. Several species formerly included here will now be found under **Zygopetalum**.

W. tricolor (three-coloured).* *fl.* rather large, globose, drooping; sepals and petals yellowish-white, the two lateral sepals below ending in a blunt spur; lip yellow and deep purple, white at the edge, obovate, cucullate at base, the disk having three ridges; scapes lateral, purple at the joints, about 2ft. high, bearing an eight to ten-flowered raceme. June and July. *l.* long-petiolate, lanceolate, plicate. Pseudo-bulbs oblong, teretely attenuated, jointed. Brazil, 1843. (R. X. O. 24.) SYN. *Maxillaria Warreana* (R. M. 423); L. B. C. 1884.

W. t. stapelioides (Stapelia-like). *fl.*, sepals and petals barred with brown internally; lip with a broad, purplish-brown stripe in front. New Grenada, 1872.

WARSEWICZELLA. Included under **Zygopetalum** (which *see*).

WARTED GOURD. *See Cucurbita Pepo verrucosa*.

WARTS. Hard or firm excrescences.

WASHINGTONIA (so called after George Washington, the great American patriot). ORD. *Palma*. A small genus (one or two species) of tall, greenhouse Palms, natives of South California and Arizona. Flowers white, hermaphrodite; spathes elongated, membranous, cut, glabrous; spadices elongated, copiously paniculate-branched, the branches slender and flexuous. Fruit black, small, ellipsoid, one-celled, one-seeded. Leaves terminal, ample, spreading, orbicular, flabellately plaited, cut nearly to the middle; the segments induplicate, with filiferous margins; petioles elongated, robust, flat-convex, the margins very spiny. For culture, *see Chamærops*.

W. filifera (thread-bearing).* *fl.* perfect, solitary, nearly sessile upon the slender branches of the panicle. *l.* circular, flabelliform; petioles armed with stout, hooked, marginal spines; ligule large and adpressed, coriaceous, glabrous; rachis short; blade deeply cleft along the upper folds and copiously filiferous. Flowering stems 8ft. to 10ft. long. A tree 20ft. to 40ft. high. California. SYN. *Brabea filamentosa*, *Pritchardia filamentosa*, *P. filifera*.

W. robusta (stout). *l.* sub-orbicular; petioles armed with strong spines, sheathing at the base; limb fan-shaped, plaited, entire to the middle, then divided into narrow, acute rays, bordered with white filaments. *h.* 6ft. to 7ft. California. (R. H. p. 403.)

WASHINGTONIA (of Winslow). A synonym of **Sequoia** (which *see*).

WASHINGTON THORN. *See Cratægus cordata*.

WASPS. These insects are too well known to every one to require any description of their form, colour, markings, or power of stinging. There are, however, several species of Wasps in Britain. Though they agree in so many respects that no one can fail to recognise them as Wasps; and though they are so like one another in form, in colours, and in markings that it is not very easy for any one but an entomologist to distinguish them, yet they differ in the places in which they make their nests, and in the means to be employed against them when they become troublesome in gardens.

The True Wasps, belonging to the genus *Vespa*, are all social insects, like their kindred, the Honey Bees; but, unlike the latter, there is little difference between the



FIG. 212. COMMON WASP (*Vespa vulgaris*).

sexes in outward appearance. The common Wasp (*see* Fig. 212) is a good representative of the whole group, the sexes differing in little but size; and the other species being distinguished chiefly by the forms and sizes of the black markings that are scattered on the yellow ground-colour, and by the presence in some of rusty-brown spots on the sides of the body. The Wasps belong to a division of the **Hymenoptera** (which *see*), which have the fore wings folded lengthwise, like a fan, when at rest, and the hind wings hidden below them. This division, besides the true Wasps, includes a large number of insects, known as Solitary Wasps, that resemble them in general form, and to some extent also in colour; but anyone familiar with the appearance of the common Wasp will find no real difficulty in distinguishing the one from the other; while to state the characteristic distinctions would require more space than is here available, without affording any corresponding advantage. The Solitary Wasps are so named because they do not live in societies like the true Wasps; and each female among them forms the cells or chambers to be occupied by the larvæ hatched from the eggs laid in them, and she stores the cells with the proper food. This frequently consists of larvæ of small Moths, or of other insects; and the Wasps that capture these should be protected by gardeners as far as possible, as they assist in the destruction of noxious insects. The Solitary Wasps make the cells for the protection of their larvæ in the most varied situations. Some females dig burrows in sandy soil, and at the end of each burrow form a cell, which is stocked with provisions, among which an egg is placed. Others tunnel in the pith of dead Rose-twigs, &c., while some take advantage of the burrows of other insects, or of any crevice, or even of empty snail-shells, in which to form the cells; and still others build mud cells, often of peculiar forms, against stones or on plants. It would be impossible to give a full account here of the exceedingly diverse habits observed among the Solitary Wasps. In regard to them it need only be added that none are injurious to gardens, while several are useful, as stated above.

To return to the Social or True Wasps, belonging to the genus *Vespa*. They are of doubtful reputation with gardeners, but are decidedly more hurtful than beneficial in gardens. It is true that they are voracious creatures, and feed largely on other insects, and that they destroy considerable numbers of noxious or troublesome species; but the benefits conferred by them in this way are more than counterbalanced by the injury they do to ripe fruits. They are very partial to apricots and plums; but, where these are not to be obtained, they attack gooseberries,

Wasps—continued.

leaving little but empty skins. They are extremely numerous in some seasons, while in others scarcely a Wasp can be seen. A brief account of their life-history will suggest suitable methods for lessening their numbers.

The Common Wasp (*Vespa vulgaris*) may be selected as representative of the genus in its life-history. Towards the close of autumn by far the greater number of the Wasps die; and only a few females survive the winter. The Wasps one sees in spring, exploring holes and crevices in the ground, in old walls, in heaps of rubbish, or in tree trunks, are females in search of secure retreats in which to form nests; and each one killed at this season prevents the formation of a nest during the summer. Those that find suitable localities enlarge them, if necessary, to the size required for the commencement of the nests. A very favourite locality is a mouse-hole. Each female works by herself for a time in forming her nest, the coverings and cells in which are made of a kind of paper. This substance, it is believed, is prepared from the fibres of wood rasped by the Wasps from the surface of naked trunks or of posts, rails, or other articles, moistened with a fluid from the mouths of the insects, and made into a paste. The Wasp fixes a short pillar of this to some firm body—*e.g.*, the root of a plant, or a stone, in the roof of the hole—and then forms two or three cells, mouth downwards, on the free end of the pillar, and builds an umbrella-like roof above them. In each cell an egg is laid; and, after a short time, the larvæ are hatched, and require to be tended and fed by the parent Wasp. The food given to the larvæ while young is chiefly honey, taken from Bees, or from ripe fruits; but, when the larvæ are older, they are fed on flies and other insects. When Wasps can gain access to grocers' and butchers' shops, they are apt to become troublesome in their efforts to obtain sugar and animal food from the supplies in the shops, instead of from the usual sources. As the larvæ grow, the cells have to be enlarged around them; and at last they become full-fed, spin over the



FIG. 213. PUPA OF WASP.

opening of the cell, and pass into the state of pupæ (see Fig. 213). The female Wasp continues to form new cells, and to feed the young brood; and, as soon as the perfect insects have emerged from the pupæ, they assist her in her work. The Wasps that develop in early summer are incapable of laying eggs, and are called neuters; they are, in reality, females in which the reproductive organs remain undeveloped. As the number of cells is increased, the size of the hole must be enlarged, and the outer coverings of the nest removed and relaid, of a size to permit of the nest in its new dimensions being contained within them. As the number of Wasps is augmented from the young broods, the nest increases more and more rapidly in size, and combs are added, each new one being suspended from its predecessor by numerous supports of the papery material, strengthened by an extra allowance of the gluey secretion from the insects' mouths. Space is left between the combs to permit the Wasps to move about freely, and to gain easy access to every cell. Towards the end of summer, both males and females are developed, in addition to the workers or neuters, to secure the perpetuation of the species. When the winter is near, the Wasps have been observed to tear open the cells containing larvæ, which they then destroy. The instinct to do so is a merciful one, as the larvæ would otherwise perish of starvation, from the pain of which they are saved by this speedy mode of death. Besides *V. vulgaris*, certain other species of the genus make their nests in holes; but others suspend their nests from the branches of trees or bushes (see Fig. 214). Except in situation, the latter nests agree

Wasps—continued.

with those formed in holes, the outer covering being made sufficiently strong to prevent injury from the weather; these nests are entered by a small hole below, or on one side near the bottom.

The Hornet (*V. Crabro*) differs from its congeners in its larger size. It is not scarce in the South of England, where it nests in hollow trees or in outhouses. The material employed by Hornets in making the paper for their nest is usually rotten wood. These insects sting much more severely than Wasps; but they feed almost wholly on other insects, including Wasps, and must be regarded as friends in the garden.

Remedies. In districts where Wasps are very numerous, it is often necessary to destroy them and their nests, in order to protect the fruit, and to prevent annoyance from their entering houses, and using their stings. Prevention is best secured by encouraging the capture of the females in spring, as this prevents them from commencing the nests. The numbers may also be lessened either by capturing the insects, or by destroying the nests. Wasps may be caught in summer and autumn in various simple traps



FIG. 214. NEST OF TREE WASP.

—*e.g.*, a bottle containing a little sweet fluid of any sort suspended in a tree. A good trap is easily prepared by placing a bell glass on three supports, so as to leave space for insects to fly or crawl in below to the bait (sugar, treacle, or other sweet stuff), placed in a plate under the bell glass. The latter should open at the top by a hole, and above it should be placed another glass, closed at the top. The insects, on rising from the bait, fly upwards, pass through the hole in the lower glass, and are trapped in the space between it and the upper one. The glass "fly-catchers," now coming into use, effect the capture of Wasps in a similar way, and deserve a trial by any one troubled with an abundance of the insects. The situations of the nests determine the most likely methods

Wasps—continued.

to insure their destruction. The Wasps do not work at night, hence that time should be chosen for operations against them. Nests in holes may be destroyed by means of squibs of mealed gunpowder and sulphur. One of these should be pushed through a piece of turf about a foot square, and two or three inches thick; the squib should be lighted, and put into the Wasps' burrow, and the turf closely pressed down to keep in the smoke. Wet mud plastered round the turf helps in this object; and some of the mud should be placed over the hole when the squib is driven out by the final explosion. A more difficult method is to flood the nest with hot water. Two Wasps' nests can best be destroyed by placing a pail of water underneath at night, and cutting the support of the nest, so as to allow the nest and its occupants to fall into the water. The pail should have a lid, in case any of the Wasps should climb out of the water. Such nests may also be smoked with sulphur, but with less certain results.

In the article on the **Honey Bee** (*Apis mellifica*), the promise was made that the habits of that insect should be treated of in connection with those of Wasps, with which the former insect agrees in many particulars. Some of the leading features of agreement and of difference between them are, therefore, here briefly indicated.

Like the social Wasps, the honey bees live in large societies, including workers (or neuters), females (or queens), and males (or drones), and form their nests in holes when in the wild state. Bees in domestication live in hives; but not infrequently a swarm, on leaving the parent hive, will select a hole for themselves, from which it is often very difficult to dislodge them. But though Bees agree with Wasps in these respects, they differ from them in many important particulars, and to these points of difference attention must now be given.

Bees form new nests in a different way from Wasps. The females, or queen bees, do not themselves work at the nests; nor do they rear the young grubs or feed them, as is done by the female Wasps in spring. The only duty of the queen bees is to lay eggs, which are at once taken care of by the workers; and the latter alone nurse the grubs, and look after the pupæ. The queens leave the nests to pair; and after they have paired they return very soon, and never again leave the hives, except in swarming, when one queen goes with each new colony. At all other times they remain inside, surrounded by a multitude of workers, which feed their queen, and follow her as she deposits her eggs in the cells prepared for them. Each new nest of honey bees is thus not the work of a single female, but is formed by a colony or swarm from some older nest, the bees in which have become too numerous to remain at home with advantage to the commonwealth. Each swarm consists of a queen and a number of workers.

Among Wasps there is, comparatively, little difference between workers, females, or males; but among honey

Wasps—continued.

of the head; while in the females and neuters the eyes are entirely lateral. The males, or drones, take no part in the work of the hive. They are produced from eggs laid usually in April or May, and assume their perfect condition in summer. They fly during the warmest part of the day, and pair with the newly-emerged queens during flight. If the impregnation of a queen is retarded till twenty-eight days after hatching, she lays only male eggs. In hives where the queen is laying eggs from which workers can be reared (i.e., if impregnation has not been long delayed after she reached maturity), it has been observed that the workers, towards the beginning of autumn, attack the drones, and kill them by stinging them. Where the queen is capable of laying only male eggs, and also when the queen has died, or has been removed from the hive, the males are not killed till a fertile queen has been secured. There is only one queen bee in each hive; but if she is lost, the workers proceed to rear others from worker-larvæ, by enlarging their cells and supplying them with abundance of food. This treatment causes the earlier stages to be passed through in a shorter time, and also produces a marked result in modifying the bodily structure—the bees produced being true females, with all the physical peculiarities that distinguish the latter from the workers. When it is necessary to replace a queen, there are usually from twelve to twenty larvæ reared for the purpose. As soon as the first queen that reaches maturity is able, she goes round the cells containing the others, still in the state of pupæ, and gnaws a hole in each cell. If the cell contains a queen ready to emerge, the latter is stung by her older rival. The workers pull the pupæ or dead bodies of the queens from the cells, and remove them. Should two queens emerge at the same time, it has been observed that one kills the other. So, also, when a stranger queen is introduced into a nest, she and the rightful queen fight till one is killed.

At the periods of swarming, the workers prevent the slaughter of as many young queens as are required for the nest and the swarms. The old queen leads off the first swarm; and the young females that are to go with new swarms are not permitted to emerge from their cells till the swarms are ready to depart. Thus fatal contests are prevented among them.

The workers differ from the queens as follows: They are smaller; the jaws, or mandibles, are more prominent; the maxillæ and tongue are longer, and the upper lip and antennæ are black (in the queens the upper lip is fulvous, and the antennæ are pitchy-brown); the legs are black, with the tarsi brownish; the basal joints of the tarsi, and the tibiæ of the hinder legs, are broader, and hollowed externally, and bear stiff hairs on the sides and across them, so placed as to form a receptacle in which to carry the pollen, or "bee-bread," collected from flowers for the nourishment of the bees and of the larvæ; the abdomen is broader and less pointed, and the three middle segments bear a small wax-pocket on each side near the base. These differences are very considerable; yet the facts that the larvæ of workers can be made by special treatment to produce queens, and that the workers possess (functionless) representatives of ovaries, show that they are indeed females in which the reproductive organs have remained undeveloped, and which are fitted to perform special duties for the good of the community. The workers do all the work of the hive: they build the cells, collect the honey, pollen, and a resinous substance known as "propolis," and feed and attend to the young. These operations are so varied that they are divided between two classes of workers, of which one prepares the wax, and the other attends more especially to building it into cells, collecting the food, and rearing the young.

The makers of wax eat some sugar or honey; and a number of them cling together, in a cluster of festoons,



FIG. 215. HONEY BEES.

bees the differences are evident. Fig. 215 shows that they differ in size and form of body; and also that the eyes of the male are so large as to meet on the top

Wasps—continued.

for about twenty-four hours, without active movement. During this time, the wax is formed in thin plates, one in each of the little pockets mentioned above as occurring on the three middle segments of the abdomen. When the wax is formed, the bee detaches the plates from the pockets, and chews them up, mixed with a liquid from the mouth, into a riband, which is deposited on the place where it is to be made into cells. After the wax-makers have deposited the materials, the other class of workers build it up into the cell walls, making the cells larger or smaller, as required for the females, males, and workers. The edges of the cells are finished with a kind of adhesive varnish, which melts less easily than wax, and is redder in colour. This is the "propolis," which the bees collect from the bud-scales of Horse Chestnuts, Poplars, and other trees possessed of sticky buds. Attention has frequently been called by zoologists and mathematicians to the regularity of form and of size in the cells, and also to the fact that their form secures the greatest possible inclosed space with the smallest possible expenditure of wax.

Many of the cells are occupied by larvæ or pupæ; but others are employed as storehouses for the honey, and often the cells from which young bees have emerged are cleared out and filled with honey. The visits made by bees to flowers, in the course of which they are of so great use in effecting pollination in many plants, have as their object the collection of nectar and of pollen. (see **Nectar, Nectary, Orchid Fertilisation, and Pollination**). The bees swallow the nectar, and continue their visits to flowers till the stomach, or honey-bag, is filled with the sweet fluid. They then collect the pollen, forming little masses of the grains brushed off their bodies; they place them upon the hairy, flattened portions of the hind legs, and they thus form a load of food to be carried back to the hive. In the stomach the nectar undergoes a change by which it is converted into honey, and this is either given at once by the collectors to those bees that have been at work in the hive, as food, or is poured into the cells. Those which contain honey that is soon to be used are not closed; but such as are reserved for food during winter are covered with wax. The pollen is either eaten by the bees themselves, or is given to those that have been at work in the nest, or to the larvæ, or it is stored away in cells for future use. On these stores the bees subsist during winter; hence the nests are not broken up on the approach of cold weather: nor do the bees resemble Wasps in destroying their larvæ in autumn, as they can provide them with food. When the honey is taken from hive bees, it is necessary to supply them with sugar and water, or with other sugary substances, from which they can prepare honey.

It may be mentioned, in conclusion, that there are several kinds of bees in domestication, of which *A. mellifica* is the commonest, and has been specially kept in view above; the other species differ only from it in minor details.

WATER. Water is so indispensable to the very existence of plants, that its use and modes of action deserve to be more fully understood than they are by many gardeners. It is made up of a combination of two gases, Oxygen and Hydrogen, in the proportion of sixteen (by weight) of the former to two of the latter. By volume, the proportion is one of Oxygen to two of Hydrogen, the chemical formula being H_2O . The properties of Water are, for the most part, so well known as to render it needless to dwell upon them. When pure, it has neither colour, taste, nor smell; nor does it leave any solid matter when it is allowed to evaporate by heat or by exposure to the atmosphere. That Water is converted into ice, and rain into snow, at a low temperature (32deg. Fahr.), is a fact familiar to everyone in such a climate as ours. While it is freezing, the

Water—continued.

Water frees itself from by far the greater part of mineral substances that may be dissolved in it; so that ice consists of almost pure Water, even when formed from the salt Water of the sea. Pure Water has the power of dissolving many mineral substances and gases in greater or less amount, the greatest quantity of any particular substance or gas that it can dissolve varying with its temperature. The solutions thus formed are of very great importance in horticulture, since it is in this form that plants absorb the elements found in their ash, and which are mostly essential to their support. These solutions of minerals in the soil are almost always extremely dilute. In such weak solutions minerals can be absorbed with much greater readiness by the root-hairs of plants than they could be were the solutions stronger, so that they are well suited to supply the requirements of plants. Some minerals—e.g., Carbonate of Lime (whether in the form of marble or of chalk)—are scarcely, if at all, soluble in pure Water; but they become dissolved in water which has Carbonic Acid Gas already dissolved in it. Probably, no natural Waters are wholly deficient in this gas, and they can dissolve small quantities of even marble or Phosphates of Lime. The roots of plants can themselves also dissolve these minerals when in close contact with them. In all cases, the minerals necessary for the nutrition of the plants pass into them from the soil in these weak solutions. There is a constant passage of the fluids into the roots, and thence into the leaves, in order to replace the Water that is at all times escaping from all the green parts into the air in the form of invisible vapour.

The amount and nature of the water-supply for a garden is a matter of very great consequence; and it is necessary to inquire a little into the various natural sources from which it can be obtained, and the relative merits of the Water from each. The sources may be grouped under (1) rain, (2) ponds and streams, and (3) springs. Though it is impossible to draw sharply-defined distinctions between the Waters from these sources, yet they differ in several respects.

Rain is, in a sense, the source from which all Waters are derived, and from which all streams are fed; but the term Rain-water, in the ordinary sense, is restricted to that collected from the atmosphere—usually off the roofs of houses—and carried into a tank, in which it is stored till required. Pure Rain-water may contain a small quantity of Nitrates and Ammonia, which it dissolves out of the atmosphere, and carries with it to the earth. But, owing to the dust and impurities on the roofs or other surfaces from which it is usually collected, it always has also an appreciable, though very small, amount of various mineral substances dissolved in it; and is thus able to supply to plants at least a part of the mineral food that they require. It is fitted also to dissolve from the soil in which plants grow such substances as Carbonate of Lime, as it almost always contains a good deal of Carbonic Acid Gas, and also some Oxygen, dissolved while falling through the atmosphere. It is heated to the same average temperature as the air, so that in summer it helps to warm the soil to that temperature; and it thus stimulates the growth and power of absorption of the roots, and fits them to supply Water to the plants as quickly as it evaporates from the leaves. Rain-water is preferred for watering plants on account of its temperature being nearly the same as the air, and of the gases dissolved in it.

The Water in streams and in ponds contains a larger proportion of mineral substances than occurs in pure Rain-water, the gases are often present, only in smaller amount, and the average temperature—except in very shallow streams and ponds—is usually lower than that of the air in summer; and this is especially the case with Water conveyed from a distance in underground pipes.

Spring Water resembles that from streams in the amount

Water—continued.

of mineral substances in it; or it may even contain these substances in such amount, that some of them, especially Carbonate of Lime, may be deposited in a crust on any bodies in the water, owing to evaporation of Carbonic Acid Gas from it, rendering it no longer able to keep them dissolved. Petrifying springs are of this nature. Some springs give Water that is actually injurious, as it contains compounds of Iron, or other substances that are poisonous to plants if present in more than very small amount. The Water from ordinary springs is almost always a good deal colder than the air in summer. If Water from streams, ponds, or springs is to be used in watering plants, it should be kept for some time previously in a tank small enough to allow of its being warmed to the ordinary temperature of the air in summer.

The amount of Water usually present in any soil has a very important influence on its fertility. Light soils with open, sandy subsoil are apt to suffer from want of Water; and a moderate drought may prove very prejudicial, or even fatal, to the plants cultivated in such. On the other hand, clays (and, in a less degree, other soils), over a close, impervious subsoil, retain Water too strongly, so that it stagnates; or they may allow the rain to run off the surface, and, if shallow, may actually suffer from want of Water during continued droughts, after the supply in the surface soil has evaporated. Light soils are much benefited by careful irrigation. Stiff soils, on the contrary, are usually in need of well-considered drainage. The latter operation is of wider utility than is recognised by many agriculturists. That it removes superfluous Water is obvious, and it is admitted by all that stagnant Water in the soil is hurtful to most plants, and in more ways than one. It promotes the formation, from decaying organic remains in the soil, of substances prejudicial to many plants; and where such substances are abundant, only certain weeds will grow. Waterlogged soils are deficient in the Oxygen that is required by roots to permit of the healthy discharge of their functions; the roots are unable to exist under the conditions present a few inches below the surface, or to penetrate deeply; the plants therefore are ill-nourished, as the roots spread less than in more open soils, and they derive their mineral food only from a limited area below the surface. In case of severe drought, the Water may all evaporate down to the depth reached by the roots, while the stiff subsoil prevents the passage of Water from below to take its place; and the plants cultivated on waterlogged land may thus die for lack of Water. Moreover, waterlogged soil is always considerably colder than the average temperature of the air, owing to the heat lost by the constant evaporation of Water from its surface. The crops cultivated on it are thus rendered backward in their growth, and may not reach maturity till a week, or even a fortnight, after those on well-drained soils. All this is changed when drains are well placed and well made, and the impervious subsoil is broken up. The rain no longer runs off the surface, nor does Water stagnate in the soil: it sinks into the subsoil, and there forms a reserve from which the surface soil can obtain supplies as required by the plants in it. The rain, while falling, becomes heated to the temperature of the air, or nearly so, and is thus able to warm the soil in sinking through it, and to supply the roots with Water at nearly the same temperature as the air—a condition most favourable to the due performance of the vital functions, and rapid and healthy growth in plants. Free evaporation from the soil is checked; and, this cause of coldness being removed, the crops are found to ripen earlier. As the rain sinks into the soil, the air follows into the interspaces vacated by the Water: thus the roots are supplied with the gases they require, and, as a result of this, and of the absence of the injurious organic substances formed in

Water—continued.

stagnant Water, they penetrate deep into the subsoils, beyond the reach of ordinary droughts. In this way they, at the same time, obtain a more reliable source of Water, and draw their food from a wider area.

The means by which Water enters plants, to form the crude sap, the changes that this undergoes, and the channels by which it is conveyed through the tissues, are treated of elsewhere in this work. See **Sap**, **Vascular System**, and **Vessels**.

WATER ALOE. A common name for *Stratiotes aloides* (which see).

WATER ANEMONE. A common name for *Ranunculus aquatilis* (which see).

WATER ARCHER. A common name for *Sagittaria sagittifolia* (which see).

WATER ASH, CAROLINA. See *Fraxinus platycarpa*.

WATER AVENS. See *Geum rivale*.

WATER BALSAM. See *Tytonia natans*.

WATER BEAN. See *Nelumbium*.

WATER BETONY. See *Scrophularia aquatica*.

WATER CALTROPS. See *Trapa natans*.

WATER CRESS. See *Cress*, **Water**.

WATER ELDER. See *Viburnum Opulus*.

WATERFALL. See *Cascade*.

WATER FLAG. See *Iris Pseudo-acorus*.

WATER GLADIOLE. A common name for *Butomus umbellatus* (which see).

WATERING. One of the most important operations in connection with the cultivation of plants, particularly those which are grown in pots and planted out in glass structures. It is an operation in daily practice at all seasons, and one which often requires the exercise of much judgment and care on the part of the operator. There are numerous subjects that may easily be injured, or even killed, by receiving either too much water, or an insufficient supply, and there are very few plants which do not suffer more or less by being watered indiscriminately at fixed periods, as their condition must vary according to the amount of evaporation which is taking place, and the quantity of roots that are absorbing the moisture supplied. It is not possible to do more than refer to Watering in somewhat general terms, as individual plants have often to receive special attention in regard to it, and different species in a genus also sometimes require totally different treatment in the matter of watering. As a rule, soft-wooded plants, and all those of quick growth, require more water than others of a slow-growing or hard-wooded nature; but exceptions may not unfrequently be found. Seasons of growth and of rest have also to be dealt with, and the supply of water given accordingly. Soft rain-water is always the best for plants of every description; provision should, therefore, be made for collecting and preserving as much as possible for future use from the roofs of glass and other structures. Water should not be applied to plants at a lower temperature than that to which they are at the time subjected; particularly does this remark apply to such as are grown in heat, or are being subjected to forcing under glass. Even upon plants established in the open ground, cold water has an injurious effect during summer time if applied direct from springs or wells; it becomes efficiently warmed in large, open tanks, streams, &c., exposed to the sun and air, hence one of these sources is most desirable.

Plants in pots, when they require Watering, should be well soaked, not slightly damped; it may not, in every

Watering—*continued.*

instance, be necessary to keep Watering daily, but surface sprinklings are always to be avoided. The amount of water and the frequency of its application are matters which can only be known from personal experience in dealing with various subjects under cultivation: some require it, in summer, two or three times a day, while others would be ruined were they similarly treated. The time when water is likely to be needed should be anticipated somewhat, so as to avoid having to give it more than is really necessary during sunshine in the middle part of a hot day. In summer, Watering should be proceeded with early in the morning if it is known that the plants will require a supply before the afternoon, the general Watering being given when it is nearly time to reduce the air for the day. Should it become necessary to water in the day-time, a supply should be procured of a temperature equally warm to that in which the plants are growing. Occasionally, a specimen will get overlooked, and will show signs of flagging; it should then be stood in a pail of water until well soaked, and kept shaded for the remainder of the day. In winter, it is generally very desirable to have the foliage of most plants dry at night. Watering is, therefore, best done in the morning only: not that it is always necessary to wet the foliage, but because of the moisture that must be caused by waste on the stages, &c.

The necessity for Watering trees, shrubs, &c., outside, of course depends on the seasons and other circumstances, such as recent transplanting, &c. Whenever the operation becomes necessary, it is always best to give copious supplies, and then to mulch the surface with some dry, light material, as this tends to prevent undue evaporation. This method of management is also applicable in summer to fruit-trees, and, indeed, crops of any kind, indoors or out, that are planted in the ground, and require plentiful supplies of water at the roots.

WATERING-POTS. These, in various sizes, are requisite where there are many kinds of plants to be kept watered. For trees of all kinds, shrubs, outside garden crops, &c., the ordinary kind, with coarse rose, is well adapted, but the use of the rose is not always necessary. A pot holding from twelve to sixteen quarts is quite large enough for carrying and managing when full; the latter capacity being an extreme limit. Pots of smaller sizes are necessary for watering indoor plants, and these are better managed when the spouts are made longer in proportion than in the larger sizes. Sizes each holding two, three, four, five, and six quarts of water are adapted for use with long spouts; these prove most serviceable where plants have to be reached at a considerable distance from the person who is watering. It is sometimes an advantage to have the end of the spout bent downwards, at about a right angle, where the rose is fixed, as the water runs without lifting the can up so high. For watering beds, pots, or pans, where small seeds have been sown, a very fine rose is necessary, and it should fit the spout so that all drip is prevented: this is best insured by having the rose made of brass, so that it can be readily screwed on or taken off as desired. If the same thread is used, several roses, perforated to various degrees of fineness to suit the plants or seeds that are watered, can be employed for screwing on a can. Watering-pots specially intended for Strawberries in spring are not furnished with a cross handle over the top; they hold about two quarts of water, and are provided with long spouts for the purpose of watering the plants referred to, when situated rather closely together, and on shelves near the glass. Watering-pots are usually either japanned, painted red or green, or galvanised in a similar way to ordinary cisterns. If the whole surface is properly galvanised inside and out, there is no danger of rusting, and Watering-pots made of galvanised iron are very strong and durable.

WATER LEMON. See *Passiflora laurifolia*.

WATER LENTILS. A common name for *Lemna* (which see).

WATER LETTUCE. See *Pistia Stratiotes*.

WATER LILY. A common name for various species of *Euryale*, *Nuphar*, *Nymphaea*, *Victoria*, and *Vallisneria*.

WATER MELON. See *Citrullus vulgaris*.

WATER MILFOIL. See *Myriophyllum*.

WATER OAK. See *Quercus aquatica*.

WATER PARSNIP. See *Sium*.

WATER PLANTS. A general term applied to all plants which grow in water, both in and outdoors. Perhaps the most familiar of all are Nuphars and Nymphaeas. With these the following, amongst many others, may be associated, but some require a greater depth of water than others: *Acorus Calamus*, *Alisma Plantago*, *Apocynon distachyon*, *Butomus umbellatus*, *Calla palustris*, *Hottonia palustris*, *Limnanthemum nymphaeoides*, *Pontederia cordata*, *Sagittarias*, *Stratiotes aloides*, *Trapa natans*, *Typha angustifolia* and *T. latifolia*, and *Vallisneria spiralis* (indoors).

WATER SOLDIER. See *Stratiotes aloides*.

WATER SPIKE. An old name for *Potamogeton*.

WATER THYME. See *Elodea*.

WATER VIOLET. See *Hottonia palustris*.

WATER WHITE OAK. See *Quercus lyrata*.

WATSONIA (named after W. Watson, 1715-1787, Professor of Botany at Chelsea). Bugle Lily. *SYNS.* *Meriana*, *Neuberia*. *ORD.* *Iridaceae*. A genus comprising according to Klatt twenty-five, according to Baker eleven, species of greenhouse, bulbous plants, confined to South Africa. Flowers one to a spathe, sessile; perianth tube curved or recurved, the lobes sub-equal, ovate, oblong, or lanceolate; stamens adixed within the throat; filaments free, filiform, rather long; spathes lanceolate, oblong, or narrow, often numerous, scattered or somewhat imbricated; spikes long, simple or slightly branched. Leaves long, ensiform, rather rigid, veined, the midrib usually prominent. Stem frequently tall. *Watsonias* are very pretty subjects when in flower. They require a mixture of very sandy loam and a little peat. If planted out in a pit or frame, where protection from frost can be ensured, they will flower much stronger than if kept in pots. Little or no water should be given during the resting season. Propagation may be effected by offsets, or by seeds.

W. aletroides (Aletris-like). *f.* seven to twelve crowded in a spike, drooping; perianth scarlet, the tube 1in. long, the segments acute, 3in. long; spathes ten lines long; scape terete, simple, leafy, 1ft. to 2ft. high. June. *l.* linear-ensiform, thick, acute, shorter than the scape, 3in. broad, margined and ribbed with yellow. 1774. (B. M. 533.) *SYN.* *Antholyza Merianilla* (B. M. 441).

W. angusta (narrow). *f.* eight to twenty-four, densely imbricate-spicate, distichous; perianth brilliant scarlet, 2in. long, the segments oval-oblong, much spreading; spathes purple, scarious, seven lines long; scape simple or branched, erect, terete, spathiform-leafy. June. *l.* distichous, lanceolate-ensiform, acute, 1in. broad, much striated. 1825. *SYNS.* *W. iridifolia fulgens* (B. M. 600; F. d. S. 1077), *Antholyza fulgens* (A. B. H. 192).

W. brevifolia (short-leaved). *f.* eight to fifteen, imbricate-spicate, distichous or secund; perianth scarlet, 1in. long, the tube twisted, curved, the segments regularly spreading, mucronate; spathes unequal-valved, the inner valves bifid at apex; scape erect, simple, 9in. to 15in. high. May. *l.* cauline ones spathe-like; radical ones broadly or narrowly linear-ensiform, distichous, cuspidate, ribbed and margined, two to seven lines broad. 1794. (B. M. 601.) *SYN.* *Antholyza spicata* (A. B. H. 86).

W. densiflora (dense-flowered).* *f.* in a dense, distichous spike; perianth rose-red, the tube 1½in. long, the spreading, lanceolate, acute segments 3in. to 3½in. long; scape as long as the leaves, covered with numerous reduced leaves. June. *l.* erect, linear,

Watsonia—*continued*.

rigid, 1½ ft. to 2 ft. long, ¼ in. broad, with several strong ribs, and a thickened, straw-coloured margin. 1879. A fine, well-marked species. (B. M. 6400.)

W. humilis (dwarf). *f.* five in a distichous spike; perianth rose-coloured, 2 in. long, the segments regular, oblong-ovate, acute; spathe equal-valved, equalling the perianth tube; scape simple, terete-angled, 8 in. to 12 in. high. June. *l.* lanceolate-ensiform, straight, acute, ribbed and margined, distichous, shorter than the scape, one to two lines broad. 1764. (B. M. 631.)

W. iridifolia fulgens (Iris-leaved, brilliant). A synonym of *W. angusta*.

W. marginata (conspicuous-margined). *f.* ten, slightly imbricated, distichous, nodding; perianth pink, 1½ in. long, the segments obovate-elliptic, mucronate; spathe nearly equal-valved, ¼ in. long; spikes several; scape terete, simple, nearly 2 ft. high. July. *l.* lanceolate-ensiform, slightly coriaceous, thickly ribbed and margined, cuspidate, shorter than the scape, ¼ in. broad, glaucescent. (B. M. 608.)

W. m. minor (lesser). *f.* of a beautiful pink; spike solitary. *l.* rather dark green, lucid, obscurely cartilaginous on the margins. (B. M. 1530.)

W. Meriana (Madam Merian's)* *f.* three to nine, distichous; perianth purple or scarlet, somewhat silver-shaped, the throat cucullate-cylindrical, 1 in. long, the segments obovate-oblong, acuminate, 1 in. long; outer spathe valves purple, striated, 1½ in. long, the inner ones bifid, 1½ in. long; scape terete-angled, striated, simple or branched, 9 in. to 2 ft. high. May. *l.* lanceolate-ensiform, thick, much striated, margined, acute, two to six lines broad. 1750. SYN. *Antholyza Meriana* (B. M. 418).

W. M. coccinea (scarlet). *f.* five to eight; perianth scarlet, 2½ in. long; scape 1 ft. to 2 ft. or more high. A splendid variety. (B. M. 1194.)

W. M. iridifolia (Iris-leaved). *f.*, perianth white, funnel-shaped, eleven lines long; scape 3 ft. high. *l.* broadly lanceolate-ensiform, acute, shorter than the scape, 1½ in. broad.

W. M. roseo-alba (pink and white). *f.* twenty-four, densely imbricate-spicate; perianth pink and white, 2½ in. long; scape 2 ft. to 3 ft. high. *l.* broadly linear-ensiform, 1½ in. wide, shorter than the scape. (B. M. 637 and 1193, under names of *W. roseo-alba* and var.)

W. punctata (dotted). *f.*, perianth scarlet or violet, funnel-shaped, 1½ in. long, the tube erect, filiform, the segments ovate-lanceolate, lined; outer spathe valves ferruginous, ¼ in. broad, the inner ones bifid, ¼ in. broad; scape terete, erect, 4 in. to 15 in. high. June. *l.* three, linear-compressed or terete, slightly furrowed, sheathing at base. 1800. SYN. *Ixia punctata* (A. B. R. 177)

W. rosea (rose-coloured)* *f.* crowded in a paniculate, elongated-pyramidal spike; perianth rose-coloured, sub-cumpanulate, nearly 2 in. long, the throat broadly turbinate, the segments mucronate; spathe purple, five lines long; scape terete, simple or branched, nearly 2 ft. high. July. *l.* broadly lanceolate-ensiform, 1 in. broad, cartilaginous-margined, striated, acute. 1803. (B. M. 1072.) SYN. *Gladolus pyramidalis* (A. B. R. 335).

W. strictiflora (straight-flowered). *f.* scentless; perianth cherry-red, about ¾ in. long, the tube quite straight, the opening of the throat marked with a violet-purple star of six rays; scape taller than the leaves, simple. June. *l.* linear-ensiform, rather rigid, 4 in. to 6 in. long, about ¼ in. broad. Bulb the size of a large nutmeg. 1810. (B. M. 1406.)

WATTLE. A name applied to various species of *Acacia* and *Citharexylum*.

WAX DAMMAR. A common name for *Podocarpus nerifolia* (which see).

WAX FLOWER. See *Hoya*.

WAX FLOWER, CLUSTERED. See *Stephanotis floribunda*.

WAX, GRAFTING. See *Grafting Wax*.

WAX MYRTLE. A common name for *Myrica cerifera* (which see).

WAX PALM (of Brazil). See *Copernicia cerifera*.

WAX-PLANT. A common name for *Cerinth major* (which see).

WAX-TREE. A common name for *Vismia guianensis* (which see).

WAY BREAD. An old name for *Plantago*.

WAYFARING-TREE. See *Viburnum Lantana*.

WEASEL (*Mustela vulgaris*). Many persons regard Weasels as noxious animals that should be killed on every possible opportunity; but they are most valuable in gardens by destroying all kinds of mice. The latter are often very hurtful, as they eat peas and other seeds, and gnaw the bark or the roots of choice trees and shrubs. Hence Weasels deserve protection in gardens, although it cannot be denied that they are occasionally destructive where fowls are kept.

WEATHER. The relation of the Weather to gardening, and its effect upon garden crops, are matters often too well known, especially when the results are unsatisfactory. Still, it is important for gardeners to be continually studying the subject, with a view to adapting themselves to circumstances by taking advantage of every help which the Weather affords, and at the same time using precautions, so far as possible, for preventing it from doing injury. Those who would manage gardens successfully must always be looking ahead, and anticipating what is likely to come later on, as well as directing their attention to making provision for the present. Thus, what is likely to occur during the day needs consideration in the morning, and provision for the night must invariably be made the previous evening. The Weather affects outside vegetation and crops according to locality and the nature of soil and subsoil. Where the latter is gravelly, the effects of drought are most readily felt, while a clayey subsoil has naturally a tendency to hold more moisture, and is, consequently, not favoured by very wet seasons. In regard to the important work of transplanting of any kind, the state of the Weather must be the first consideration, coupled with the proper season for performing the work. Very dry Weather is always unfavourable for any transplanting. Watering may be ever so well attended to, yet if there is a constant and rapid evaporation taking place its effects are not much marked. Mild, moist Weather should therefore be selected for this work; it must even be waited for a long time in some seasons before crops can be transplanted and safely re-established. Due advantage should be taken of frosty Weather, when the ground is hard, for executing such work as wheeling manure, &c., into places that cannot be well reached when walks and the ground are loose. In snowy Weather, when outside work has often to be suspended, everything that can be forwarded in sheds should receive full attention. Digging should not be proceeded with while the ground is frosty, neither should snow be buried by the same operation. In garden management, the work must, to a certain extent, be arranged each day according as the Weather allows; the seasons too, which are very variable, will need to be studied, and work managed according as circumstances depending on these, and the changes of Weather, will admit. In the management of glass structures and pot plants generally, attention to the changeableness of the weather is of much more importance than to plants, &c., outside. A properly-constructed glasshouse will quickly be affected by a rise or fall of temperature caused by the Weather outside; and as the inside occupants are frequently very tender, and incapable of bearing with impunity what harder subjects outside can withstand, the conditions necessary for their well-being have to receive constant and daily attention. The chief point to be impressed is that of adopting a system of management which shall utilise every opportunity of forwarding operations, so far as may be practicable, be the climatic conditions whatever they may. To do everything at the proper time, is equally important in this as in all other matters. In gardening, it can only be effected by a considerable amount of forethought on the part of those in charge, coupled with practical experience, to know what cultivated plants require, and by daily attention, which has to be constantly varied to meet exigencies caused by an ever-changing climate.

WEBBIA. Included under *Vernonia* (which see).

WEBBERA (named in honour of George Henry Weber, 1752-1828, Professor at Kiel, and author of various Floras). *Syns.* *Ceriscus*, *Chomelia* (of Linnaeus), *Stylocoryne* (of Wight and Arnott), *Tarenna*, *Wahlenbergia* (of Blume). *ORD.* *Rubiaceæ*. A genus comprising about forty species of stove trees and shrubs, inhabiting tropical Asia, Polynesia, Africa, and (one species) Australia. Flowers in terminal, corymbiform cymes, sessile and bibracteolate at the ovary, or pedicellate and bracteolate on the pedicel; calyx tube ovoid or turbinate, the limb five, rarely four, cleft or parted; corolla funnel- or salver-shaped, with five, rarely four, narrow, spreading or reflexed lobes, twisted in bud; stamens five, rarely four, on the mouth of the corolla; filaments short or wanting. Leaves opposite, petiolate, often oblong-lanceolate; stipules triangular-ovate, usually deciduous. Only one species calls for description here. For culture, see *Vangueria*.

W. corymbosa (corymbos). *f.* white, faintly odorous; corolla $\frac{1}{2}$ in. to $\frac{3}{4}$ in. in diameter, the tube broad, about equalling the lobes; cymes variable in size. Summer. *l.* elliptic or oblong-lanceolate, acute or acuminate, $\frac{3}{4}$ in. to $\frac{5}{8}$ in. long, shining above, often glabrous.

WEB-FORMING CATERPILLARS. Almost all the Caterpillars of Butterflies, Moths, and Sawflies can spin silken threads when required; but many of them hardly do so except to form a cocoon, for the protection of the pupæ; while many do not even spin a cocoon. Many larvae spin together several leaves to form a protection for themselves against birds or other foes, or they draw a leaf into a tubular form, with the same object, keeping it in position by silken threads. The Web-formers are not very numerous, though they belong to widely different groups of *Lepidoptera*. Several of them live on Hawthorn leaves, such as the Black-veined White Butterfly (*Aporia crataegi*), the small Ermine Moths (*Hypocnemata padella*, &c.), and Sawflies of the genus *Lyda* (e.g., *L. punctata*). The larvae of these insects, when young (or during their whole life as larvae), live in webs spun by a number of them in common, sometimes over a whole branch, but usually over several leaves. Some form separate silken tubes for themselves inside the webs; others are contented with the protection afforded by the web alone. An account of the several insects just mentioned is given under the heading **Hawthorn Caterpillars**.

The larvae of various European and exotic Moths form much more striking and conspicuous webs than do the British species—e.g., the Processionary Moth (*Cnethocampa processionea*), which feeds on Oaks in Germany. The larvae spin a web, on which they lie, and, when going to feed, they march in a regular procession—first one, then two, then three, and so on, those in each line moving side by side, till they reach suitable food, when they disperse and eat what they require, and thereafter return to the web in the same regular order. When full-fed, they spin a compact web, under cover of which they form their separate cocoons to protect themselves while they are

Remedies. Web-forming Caterpillars are easily got rid of by tearing down the webs, or cutting off the branches, and destroying the larvae.

WEDELIA (named in compliment to George Wolfgang Wedel, 1645-1721, a German botanist, Professor at Jena). Including *Wollastonia*. *ORD.* *Compositæ*. A genus embracing about forty-five species of stove, greenhouse, or hardy, scabrous-pubescent or hirsute, annual or perennial herbs or sub-shrubs, inhabiting the warmer parts of the globe. Flower-heads yellow, pedunculate, at the tips of the branches or in the upper axils, heterogamous; involucre bracts sub-biseriate, the outer three to five usually herbaceous or leafy, the inner dry; receptacle flat or convex, the pales inclosing the florets; ray florets ligulate,

Wedelia—continued.

entire, or two or three-toothed at apex; disk florets five-toothed or shortly five-cleft; achenes smooth or tubercled. Leaves opposite, often toothed, rarely trifid or entire. The species are mostly interesting from a botanical standpoint only. Those described below thrive in any fairly good soil. *W. hispida* may be increased by seeds or by divisions, and *W. radiosa* by seeds or by cuttings.

W. aurea (golden). A synonym of *Zermeria aurea*.

W. hispida (hispid). *f.*—heads one to a peduncle; outer involucre scales hairy, the inner ones nearly glabrous. June. *l.* lanceolate or somewhat obovate-lanceolate, cuneate at base, acuminate at apex, cut-toothed, hairy. Branches erect, hispid. *h.* 1½ ft. Mexico, &c., 1819. Half-hardy perennial. (B. R. 543.) *SYN.* *Zermeria tezana*.

W. radiosa (rayed). *f.*—heads one to three on peduncles longer than the leaves; involucre scales in three series, the outer ones leafy, the inner membranous. June. *l.* petiolate, ovate- or oblong-lanceolate, acute, serrulated, puberulous. *h.* 2 ft. Brazil, 1820. Greenhouse sub-shrub. (B. R. 610.)

WEDGE-GRAFTING. See *Grafting*.

WEEDS AND WEEDING. Weeds abound in every direction on cultivated land, and wherever there is any kind of soil in which their roots can receive the least encouragement and support. It is sometimes remarked in reference to a piece of land that "Weeds won't grow on it," and this is readily understood as referring to its uselessness for gardening. The length of time during which the seeds of many common Weeds retain their germinative powers is remarkable when, from the removal of ground, or other causes, they become buried too deep to grow until brought again under the more immediate influence of the atmosphere. The rapidity with which soil newly upturned after a long period becomes covered with Weeds will often come under notice, suggesting the existence of seeds which grow only when placed under suitable conditions. Amongst Weeds that, once established, are only with great difficulty eradicated, are Chickweed, Couch Grass, Dandelions, Groundsel, Plantains, and Thistles. The destruction of all these before their seeds ripen, and the frequent use of the hoe during dry weather, are the best plans of preventing their increase. Hand-weeding is the most effectual mode of eradication where there are tap-roots, as in Dandelions, Plantains, and Thistles. The roots of these plants, if left in the ground, will frequently form new crowns in a short time, and grow again. Hand-weeding is also the most certain plan of keeping walks clean; it should be attended to whenever the surface is moist, and everything pulled up should be burned, or put where the seeds are not likely to ripen and sow themselves. Proper Weeding-knives should always be provided along with other garden tools; the work is more readily executed with these than with old knives of other kinds, that are often made to do service. For destroying on a large scale Weeds in walks, salt may be effectually employed, scattered with the hand over the surface, during dry weather, in summer. Smith's Weed-killer, a preparation specially made for walks, has been highly spoken of. Any "destroyer" of Weeds applied to walks must be kept clear of grass and other living edges, and care must also be taken to avoid stepping from a walk on to the grass at the time when a preparation destructive to plant life is being employed.

WEED-WIND, or WITH-WIND. An old name for Bindweed (*Convolvulus*).

WEeping ARBOR-VITE. See *Thuja orientalis pendula*.

WEeping ASH. See *Fraxinus excelsior pendula*.

WEeping BEECH. See *Fagus sylvatica pendula*.

WEeping CHERRY. See *Cerasus sempervirens*.

ELM. See *Ulmus glabra pendula* and *U. montana pendula*.

WEeping MOUNTAIN ASH. See *Pyrus Aucuparia pendula*.

WEeping OAK. See *Quercus pedunculata pendula*.

WEeping POPLAR. See *Populus grandidentata pendula* and *P. Tremula pendula*.

WEeping RED CEDAR. See *Juniperus virginiana pendula*.

WEeping WILLOW. See *Salix babylonica*.

WEEVIL-PLANT. A common name for *Curculligo* (which see).

WEEVILS. The popular name for a large division of Beetles, of very great interest to the gardener and the farmer, because of the injury inflicted by many species on garden and field produce. There has been frequent occasion, in the course of this work, to refer to their ravages under various headings, the more important of which are mentioned below. The scientific name of the Weevils is *Rhynchophora* (from the Greek words *rhynchos*, a snout, and *phero*, I carry). This name bears reference to the most characteristic mark of the Weevils, viz., that the head is prolonged and narrowed forwards into a snout, on which the antennæ are placed. The snout, or beak, in many is short and flattened; but in a few (e.g., Nut-Weevil) it is very long, slender, and curved abruptly downwards. The mouth is at the end of the beak. The antennæ are very generally elbowed—i.e., the basal joint is long and slender, and the others are short, and form a row, attached to the tip of the basal joint at an angle with it. Few Weevils of temperate climates are large; most are very small. The body is very often short, rounded, and very hard, less often slender and elongate, or depressed and flattened. Like other Beetles, they undergo a complete metamorphosis, their larvæ being usually white, fleshy, legless grubs, with the head horny, dark, and furnished with strong jaws. Many of them live in the interior of fruits, or of seeds, but others burrow in leaves, or in the wood or pith of twigs, or in galls. The Beetles themselves are frequently destructive, gnawing the leaves, bark, or fruits of garden herbs and shrubs. The habits of the larvæ and of the Beetles are thus so varied, and the injuries done by them so manifold, that it would exceed our limits to enter into the full details here; but information on these points in regard to the more important species will be found under the following headings: **Apple-blossom Weevil, Bean Beetle, Cabbage Gall Weevil, Nut Weevil, Orchestes, Otiorhynchus, Pea (INSECT PESTS), Pine-bark Beetle, Pine Weevils, Plum (INSECT PESTS), Raspberry (INSECTS), Rhynchites, Scolytids, Sitona, and Turnip-Seed Weevil.**

WEIGELIA (also spelt *Weigela*). This is now regarded, by the authors of the "Genera Plantarum," as synonymous with *Diervilla* (which see). The correct

Weigelia—continued.



FIG. 216. SEEDLING PLANT OF WEIGELIA (DIERVILLA) ROSEA IN FLOWER.

name of *W. rosea* (see Fig. 216) is *Diervilla rosea*, and *W. rosea monstrosa* (see Fig. 217) is now correctly named *D. rosea monstrosa*.



FIG. 217. WEIGELIA (DIERVILLA) ROSEA MONSTROSA.

WEINMANNIA (named after John William Weinmann, apothecary at Ratisbon, author of "Phytanthozaiconographica," 1737). SYN. *Leiospermum*. ORD. *Saxifrageæ*. A genus embracing about fifty species of stove or greenhouse, glabrous or tomentose trees or shrubs, inhabiting the Malayan Peninsula and Islands, the Mascarene and Pacific Islands, Australia, New Zealand, and tropical and temperate South America. Flowers white, small, fascicled or scattered, disposed in simple, terminal and axillary, erect racemes; calyx tube short, the limb four or five-partite; petals four or five, spatulate or ovate, sessile; stamens eight or ten, inserted with the petals. Leaves opposite, coriaceous, petiolate, simple, trifoliate, or imparipinnate; leaflets usually glandular-serrated; rachis often winged; stipules variable, deciduous. Branchlets opposite, often terete. A selection of the introduced species is here given. They

Weinmannia—continued.

all require stove treatment, and thrive in any light, rich soil. Propagation may be effected by cuttings, inserted in sandy soil, under a glass, in heat.

W. glabra (smooth). *f.* white; petals rather longer than the calyx segments; pedicels twin, shortly hirsute. January. Highly glabrous on both sides, shortly petiolate, imparipinnate; leaflets three to five pairs, oblong-elliptic, slightly acute at base, *h.* 6ft. Jamaica, 1815. Shrub.

W. hirta (hairy). *f.* fascicled-racemose; stamens eight, exserted. May. *l.* leaflets three or four-jugal, six to ten lines long, elliptic, bluish, serrated above the base, pilose-pubescent chiefly beneath. Branchlets villous-hirsute. *h.* 6ft. or more. Jamaica, 1820. Tree or shrub.

W. ovata (ovate-leaved). *f.*, fascicles few-flowered, remote; racemes very loose, 3in. long. May. *l.* elliptic-oblong, somewhat obtuse, acute at base, crenate, 2in. to 3in. long, 1in. to 1½in. broad; petioles two to three lines long. *h.* 6ft. Peru, 1824. Glabrous tree.

W. pinnata (pinnate). *f.* fascicled-racemose; stamens eight, exserted. May. *l.* leaflets three to seven-jugal, elliptic-oblong, bluish, four to eight lines long, serrated above the base, hispid on the midrib beneath, or glabrescent. Branchlets hirsute with short down. *h.* 6ft. and upwards. Jamaica, 1815. Tree. *W. glabra* is (in part) synonymous with this species.

W. trichosperma (hairy-seeded). *f.*, raceme loose. May. *l.* pinnate; leaflets many, oblong, acute, toothed, obliquely cuneate at base, naked and shining above, slightly pilose beneath. *h.* 4ft. Valdivia. Shrub.

W. trifoliata (three-leafleted). A synonym of *Platylophus trifoliata*.

WELFIA (named in honour of the Royal Family [Guelph] of Hanover). ORD. *Palmae*. A small genus (two species) of stove, unarmed Palms, natives of Central America. Flowers pale yellowish-white, rather large; spathes two, deciduous; spadices thick, pendulous. Fruit dark violet, oblong, compressed, 2in. long. Leaves terminal, pinnatisect, on rather flat, short petioles; segments much narrowed at base, entire or cut at apex. *W. regia*, the only species introduced, should be grown in a compost of rich loam and leaf mould, mixed with a little old cow-dung. Propagation may be effected by seeds.

W. regia (royal).* *l.* in the young state divided almost to the base into a pair of oblong, acuminate lobes, having a pretty bronzy tint, borne on slender petioles, at length becoming pinnatisect; margins of the segments recurved at base; adult leaves with numerous unequal, narrow pinnae, decurrent on the angular rachis, whitish beneath. When fully grown, the stem attains a height of 60ft., and the leaves a length of about 20ft. New Grenada, 1869. (*G.* C. 1870, 764; *F.* M. n. s. 60; *I.* H. n. s. 62.)

WELL. A Well is not a desirable source for procuring water to give plants, as the water is invariably colder than the temperature and the soil in which the roots are situated. If, however, there is no other efficient supply, a quantity should be drawn or pumped up some time previous to being required for use, and meanwhile allowed to stand in an open tank. Well-water is also, as a rule, harder than rain-water, and is, consequently, not so well suited for administering to plants. See also **Water**.

WELLINGTONIA. A synonym of *Sequoia* (which see).

WELSH NUT. A common name for the Walnut (which see).

WELSH POPPY. See *Meconopsis cambrica*.

WELWITSCHIA (named in honour of Dr. Frederic Welwitsch, 1806-1872, a celebrated botanical traveller). SYN. *Tumboa*. ORB. *Gnelaceae*. A monotypic genus. The species is one of the most remarkable productions of the vegetable kingdom. It is found growing in arid places in tropical and South-western Africa, where rain rarely falls. The two leaves were at first described as being simply persistent cotyledons enormously developed, but such is not the case: the two cotyledons last for some time, and then the true leaves appear. Although *W. mirabilis* was

Welwitschia—continued.

first made known in Europe by Dr. Welwitsch, it appears to have been first discovered by Mr. C. J. Anderson, an eminent African traveller. This wonderful plant has been introduced into the Royal Gardens, Kew; but we do not know if it yet exists in any other establishment. It will probably prove very difficult to cultivate, on account of the impossibility of imitating the conditions under which it flourishes. It appears to us that the most probable method of succeeding with it would be to inclose a space within brick walls to a height of about 3ft. from the earth. This should be filled up, to a height of about 16in. or 18in., with a very light, porous soil, such as a mixture of light, sandy loam and broken bricks, in the proportion of two parts of the former to one of the latter. Above this the space should be filled in with sand and brick rubbish, mixed with a little sandy loam—about a tenth part of the latter, just to help to bind it. If planted in this way, the long, descending roots would penetrate into the lower soil, and derive sufficient nourishment and water from it, as the water would ascend into the lower stratum from the earth by capillary attraction, whilst the upper stratum being dry would prevent the plant from rotting. It should be fully exposed to the sun, and no water given it, though at evening a slight syringing over leaves and crown would probably be beneficial, as this would in some way approach the dews to which it is subjected in its native country. The temperature should not be allowed to get below 50deg." (*N.* F. Brown).

W. mirabilis (wonderful). *f.* solitary, contained within the scales of the young cones; cones scarlet, small, erect, at length oblong, in stout, dichotomously branched cymes, springing from near the insertion of the leaves. *l.* two, from deep grooves in the circumference of the trunk, 6ft. or more in length, quite flat, linear, very leathery, splitting with age into innumerable thongs, that lie curling on the surface of the soil. Trunk obconical, about 2ft. long, rising a few inches only above the soil, with the appearance of a flat, two-lobed, depressed mass, sometimes 14ft. in circumference; when fully grown, it is dark brown, hard, and cracked, like the burnt crust of a loaf of bread; the lower part forming a stout tap-root, buried in the soil, and branching downwards at the end. 1862 and 1878. The plant is said to last a century. (*R.* M. 5368-9; *T.* L. S. xxiv. 1-14.)

WENDLANDIA (named in honour of Henry Ludovicus Wendland, 1755-1828, once Curator of the Botanic Garden at Hanover). ORD. *Rubiaceae*. A genus composed sixteen species of stove or greenhouse shrubs or small trees, inhabiting tropical and sub-tropical Asia. Flowers white, pink, or yellow, small, two or three-bracteolate, sessile or pedicellate in terminal, thyrsoid, densely many-flowered panicles; calyx lobes four or five, small; corolla tubular, salver or funnel-shaped, the lobes four or five, imbricated in bud; stamens four or five, between the corolla lobes. Leaves opposite or ternately whorled; stipules entire or bifid. For culture of the two best-known species, see *Vangueria*. Both are stove trees.

W. paniculata (panicled). *f.* as in *W. tinctoria*; panicle ample. July. *l.* opposite, elliptic or elliptic-lanceolate, acuminate, 5in. to 8in. long, rarely narrow-obovate, more or less pubescent beneath; stipules recurved, broad, orbicular or oblong, with rounded tips. *h.* 6ft. India, 1820.

W. tinctoria (dyer's). *f.* white, sessile, fascicled; panicles large, spreading, pubescent, pilose, or tomentose. July. *l.* opposite, elliptic, ovate, or obovate, 4in. to 8in. long, acuminate, glabrous and often shining above, paler and pubescent or rarely glabrous beneath; stipules erect, large, with a subulate point or a laterally-flattened, rigid appendage. *h.* 6ft. India, 1825.

WENDLANDIA (of Willdenow). A synonym of *Cocculus* (which see).

WENSEA. A synonym of *Pogostemon* (which see).

WERNERIA (named in honour of A. G. Werner, 1750-1817, Professor of Mineralogy at Friburg). ORD. *Compositae*. A genus embracing about seventeen species of dwarf, tufted, greenhouse, perennial herbs, natives of the Andes of South America. Flower-heads large or

Werneria—*continued*.

mediocre, heterogamous; involucre broadly campanulate or hemispherical, with one series of bracts; receptacle flat or convex, naked; ray florets pink, yellow, or white, in one series, ligulate; disk yellow; achenes oblong or turbinate. Leaves radical or clustered on the stem, entire or rarely toothed or pinnatisect. Only one species is known to gardeners. It thrives in light soil, and may be increased by division of the roots.

W. frigida (rigid). *f.* heads yellow, solitary, shortly pedunculate; involucre about thirteen-cleft, coloured. February. *l.* stellate, imbricated, linear, obtuse. *h.* 9in. Quito, 1828.

WESTERN YEW. See *Taxus brevifolia*.

WEST INDIAN COCKSPUR. See *Pisonia aculeata*.

WEST INDIAN MUGWORT. See *Parthenium Hysterophorus*.

WESTRINGIA (named in honour of J. P. Westring, a physician to the King of Sweden). ORD. *Labiatae*. A genus comprising about eleven species of greenhouse shrubs, broadly dispersed over extra-tropical Australia. Flowers all axillary or rarely in terminal, leafy heads, with a pair of bracts under the calyx, usually very small and sometimes obsolete; calyx campanulate, five-toothed; corolla with a short tube, usually hairy inside, and a dilated throat, the upper lip erect but flat and broadly two-lobed, the lower one spreading, three-lobed; two upper stamens perfect, the two lower ones sterile. Leaves in whorls of three, four, or rarely more. The best-known species are here described. They thrive in any light, rich soil. Propagation may be readily effected by young cuttings, inserted in sand, under a glass.

W. angustifolia (narrow-leaved). A synonym of *W. rigida*.

W. cinerea (grey). A form of *W. rigida*.

W. Dampieri (Dampier's). *f.* white, nearly sessile, about the size of those of *W. rosmariniformis*, but the corolla more hirante. September. *l.* in whorls of four, or very rarely three, on the side branches, linear, much revolute, usually about ½in. long, smooth or scabrous above, often hoary beneath. *h.* several feet. 1803. (B. M. 3308.)

W. eremicola (desert loving). *f.* pale blue, rather small, usually distant; calyx hoary; corolla pubescent. June. *l.* usually in whorls of three, narrow-linear, acute or mucronate, rarely above ½in. long. Branches erect, often twiggy, more or less hoary or silky-pubescent. *A.* 3ft. 1823. (B. M. 3438; B. R. 1481, under name of *W. longifolia*.)

W. longifolia (long-leaved). *f.* lilac, rather small, axillary; corolla pubescent outside, the tube usually exceeding the calyx teeth. Summer. *l.* in whorls of three, narrow-linear, mostly above ½in. long, the margins somewhat revolute or nearly flat. *h.* several feet. 1878.

W. rigida (rigid). *f.* as in *W. Dampieri*. *l.* mostly in whorls of three, but here and there four, linear, obtuse or mucronate-acute, rigid, with much-revolute margins, usually glabrous above when full-grown, and either smooth and shining or scabrous with minute tubercles, hoary beneath. *A.* 3ft. 1823. SYN. *W. angustifolia*. *W. cinerea* is a more hoary form. (B. M. 3307.)

W. rosmariniformis (Rosemary-like).* Victorian Rosemary. *f.* pale blue, almost sessile, all axillary; corolla pubescent outside. July. *l.* in whorls of four, oblong-lanceolate to linear, acute or obtuse, ½in. to ¾in. long, coriaceous, glabrous and shining above, hoary or silvery-white beneath, the margins recurved or revolute. *h.* several feet. 1791. (A. B. R. 214, under name of *W. rosmarinacea*.)

WEST WIND, FLOWER OF THE. See *Zephyr-*

WEYMOUTH PINE. See *Pinus Strobus*.

WHANGEE OR WANGHEE CANE. See *Phyllostachys nigra*.

WHEAT. See *Triticum vulgare*.

WHEAT, BUCK. See *Fagopyrum esculentum*.

WHEAT, GUINEA OR TURKEY. See *Zea*

WHEELBARROWS. Wheelbarrows are amongst the most essential of garden requisites, and are invariably

Wheelbarrows—*continued*.

in daily use. The common Box-barrow with broad wheel is that in general use, and is best adapted for wheeling soil, rubbish, manure, &c. If wheeling on planks becomes necessary, as is sometimes the case when excavations or new walks are made, the Navy-barrow is best, as the wheel, being made of iron, does not collect soil to clog it, and the sides are set on an angle outwards to facilitate emptying readily. Flat Barrows of the shape

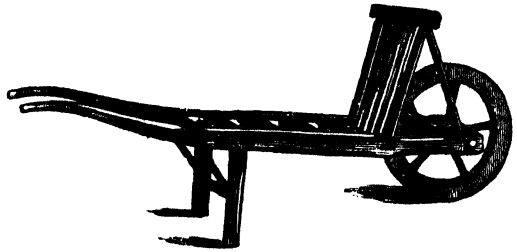


FIG. 218. FLAT MARKET-GARDEN BARROW.

represented in Fig. 218 are largely employed in market gardens for wheeling baskets of fruit, vegetables, &c., to the sheds. One, at least, of these Barrows is always useful in a garden, for the removal of boxes, hampers, or anything that cannot be readily fitted into an ordinary Wheelbarrow. It may also be employed for wheeling a water-barrel, if the use of one is necessary.

WHIN. See *Ulex*.

WHINBERRY. A common name for *Vaccinium Myrtillus* (which see).

WHIN, PETTY. See *Genista anglica*.

WHIP-GRAFTING. See *Grafting*.

WHITE ALDER. See *Platylophus trifoliata*.

WHITE ANTS, or TERMITES. Fortunately, these are not British insects; but in warm countries, and especially throughout the tropics, they abound, and do great destruction to woodwork of every kind. Only a very few kinds of wood can resist their jaws. At La Rochelle and Bordeaux, on the West coast of France, they have been introduced, and have become so abundant as to force themselves into notice by the mischief they do to the woodwork of the public offices and of dwelling-houses, and also to the public records. The Termites resemble true Ants in living in very large communities, comprising males, females, and neuters. Among the neuters may often be distinguished workers and soldiers, the latter attending only to the defence of the community, while the former do the hard work. In structure the Termites differ greatly from the true Ants, as they belong to the *Neuroptera*, while the true Ants are *Hymenoptera* (see *Insects*). Among Termites only the mature males and females are winged. The wings are about twice as long as the body; all four are of nearly equal size, and are provided with a stout front border, or nerve, and a number of slender, indistinct nerves in the other parts of the wings. When not in use they lie flat on the back. The segments of the thorax are distinct; the abdomen is flattened; the head is rather flattened, and has cutting jaws; and the legs are rather short and slender. The neuters have no wings, or have only their rudiments. Some entomologists have regarded them as larvæ and pupæ of the males and females; others believe that they never become sexually mature. The species of Termites are very numerous; those that occur in Europe are named *Termes lucifugus* and *T. ruficollis*. The nests of certain tropical species

White Ants, or Termites—*continued.*

are built of mud on the soil, reach a height of from 10ft. to 15ft., and are so hard as to require a pickaxe to penetrate the outer walls. Other species form nests of clay high up among the branches of trees. They always work under cover of galleries of mud, or in wood, as they hate daylight. When the males and females become winged, they leave the nest, and pair, and soon afterwards the females drop their wings, and are taken back into the nest by the workers. Here each female is inclosed in a clay cell built around her by the workers. Her abdomen grows enormously, becoming filled with eggs, of which a single female can lay as many as 80,000 in twenty-four hours. The eggs are carried away by the workers, and are carefully tended, as among bees and wasps. The number of Termites in a large nest is enormous.

As they are not likely to prove hurtful in England, there is no need to dwell upon any remedies.

WHITE ABUM LILY. See *Richardia africana*.

WHITE ASH. See *Fraxinus americana*.

WHITE BASSWOOD, AMERICAN. See *Tilia heterophylla*.

WHITE BEAM-TREE. See *Pyrus Aria*.

WHITE BLADDER FLOWER. See *Physianthus albens*.

WHITE BOTHEN, WHITE GOLDES. Old names for *Chrysanthemum Leucanthemum*.

WHITE BOTTLE. A common name for *Silene inflata* (which see).

WHITE BUTTERWOOD. See *Trichillia spondioides*.

WHITE CEDAR. A common name for *Chamaecyparis*. See also *Thuja gigantea* and *T. occidentalis*.

WHITE CYPRESS. See *Taxodium distichum*.

WHITE ELM. See *Ulmus americana*.

WHITE ERMINE MOTH. See *Spilosoma menthastris*.

WHITEHEADIA (named after its discoverer, the Rev. Henry Whitehead, "to whom I am indebted for many curious plants" [Harvey]). ORD. *Liliaceæ*. A monotypic genus. The species is a greenhouse, bulbous plant. It thrives in any rich soil, and may be propagated by offsets.

W. bifolia (two-leaved). *fl.*, perianth light green, subsessile, solitary, four to five lines long, the segments subequal, slightly spreading above the base; stamens six, slightly exserted; raceme dense, 3in. to 6in. long; scape clavate, 1½ft. long; bracts amplexicaul, 1in. to 1½in. long. April. *l.* two, opposite, roundish-oblong, glabrous, fleshy-membranous, 6in. to 8in. long, 4in. to 6in. broad, sub-acute or emarginate. Bulb fuscous, 1½in. to 2in. thick. South Africa, 1792. SYNS. *Eucomis bifolia* (B. M. 480), *Melanthium masoniaefolium* (A. B. R. 368).

WHITE-HEART HICKORY. See *Carya tomentosa*.

WHITE HELLEBORE. See *Veratrum*.

WHITE LIME. See *Tilia argentea*.

WHITE PINE. See *Pinus flexilis*.

WHITE POTHEB. See *Valerianaella olitoria*.

WHITE ROOT. An old name for Solomon's Seal (*Polygonatum multiflorum*).

WHITE SAPOTA. A common name for *Casimiroa edulis* (which see).

WHITETHORN. A popular name for *Oxycantha* (which see).

WHITE-TREE. A common name for *Melaleuca leucadendron* (which see).

WHITE WOOD. A name applied to *Liriodendron tulipifera*, *Tilia americana*, &c.

WHITFIELDIA (named after T. Whitfield, a botanical collector of African plants). ORD. *Acanthaceæ*. A small genus (two species) of ornamental, stove shrubs, natives of tropical Africa. Flowers white or brick-red, shortly pedicellate, solitary in the axils of opposite bracts, disposed in a terminal raceme; calyx five-parted; corolla with five twisted lobes; stamens four, didynamous; bracteoles under the calyx, and sometimes the bracts, coloured. Leaves opposite, entire. Only one of the species has been introduced. For culture, see *Barleria*.

W. lateritia (brick-red).* *fl.*, calyx brick-red, ample; corolla orange-red or brick-red, twice as long as the calyx, between campanulate and funnel-shaped; pedicels opposite, drooping. October to March. *l.* opposite, ovate or oblong-ovate, subcoriaceous, evergreen, waved, penninerved. Branches spreading, terete, rather tortuous. h. 3ft. 1841. (B. M. 4155; F. d. 8. 32).

WHITLAVIA. This is regarded, by the authors of the "Genera Plantarum," as synonymous with *Phacelia*



FIG. 219. FLOWERING BRANCHES OF WHITLAVIA GRANDIFLORA (PHACELIA WHITLAVIA).

(which see). The proper name of *Whittlavia grandiflora* (see Fig. 219) is now *Phacelia Whittlavia*.

WHITLEYA. Included under *Scopolia* (which see).

WHITLOW GRASS. See *Draba* and *Paronychia*.

WHITTEN-TREE. A common name for *Viburnum Opulus* (which see).

WHITWORT. An old name for Feverfew (*Pyrethrum Parthenium*).

WHORL. A ring of organs all on the same plane.

WHORL FLOWER. A common name for *Morina longifolia* (which see).

WHORTLEBERRY. See *Vaccinium Myrtillus*. The name is also applied to other species.

WIBORGIA. A synonym of *Viborgia* (which see).

WIDDINGTONIA (named in honour of Captain Widdrington [formerly Cook], who travelled in Spain). African Cypress. ORD. *Coniferae*. A small genus (three species) of greenhouse shrubs or trees, included, by Bentham and Hooker, under *Callitris*; two are natives of South Africa, and the third is found in Madagascar. Flowers dioecious, or male and female on separate plants; male catkins oblong or cylindrical, the females globular, without footstalks. Leaves thickly set, alternately or in whorls, linear or needle-shaped, spreading, but sometimes very small, scale-like, approaching imbricate, with a gland on the back. Cones thick, woolly, nearly equally four-valved, globular, two or three together. Two species have been introduced. For culture, see *Callitris*.

W. cupressoides (Cypress-like). *l.* on the branches acute, somewhat spreading at the points; those on the branchlets four-ranked, much shorter, imbricated, cones ovate, obtuse, nine to ten lines long. Branches elongated, erect, pyramidal; branchlets slender, bent downwards, or pendent at the ends, covered with leaves. *h* 4ft. to 10ft. South Africa, 1799. Shrub.

W. juniperoides (Juniper-like). Cape Gum tree. *fl.* male catkins oblong-cylindrical, terminal. *l.* adherent at base, decurrent, leathery, glaucous-green; young ones mostly linear or needle-shaped, sharp-pointed, spreading, slightly curved, opposite or in whorls of three, $\frac{1}{2}$ in. to 1 in. long; adults scattered; those on the branchlets sometimes ovate-lanceolate or rhomboid, obtuse or sharp-pointed, cones three or four together, much smaller than in *W. cupressoides*, rounded, slightly depressed. Stem straight; branches erect or spreading. South Africa, 1756. Tree.

WIDOW, MOURNFUL. See *Scabiosa atropurpurea*.

WIDOW-WAIL. See *Cnicorum*.

WIDOW-WISSE. An old name for *Genista tinctoria*.

WIGANDIA (named in honour of John Wigand, 1523-1587, a Bishop of Pomerania). ORD. *Hydrophyllaceae*. A small genus (three or four closely-related species) of tall, hispid, stove or greenhouse herbs, broadly dispersed over the mountainous regions of tropical America. Flowers sessile at the sides of scorpioid branches, in terminal, amply dichotomous cymes; calyx segments linear; corolla tube short, broadly campanulate, not scaly, the limb ample, spreading, of five imbricated lobes; stamens five, nearly equally affixed, often exserted; filaments hispid with reflexed pill below the middle. Leaves alternate, ample, wrinkled, generally doubly-toothed. The species are frequently, on account of their fine foliage and bold habit, used for sub-tropical bedding. Seeds should be sown in early spring, in heat; and the seedlings grown on in light, loamy soil, hardened off, and planted out in the open in June. The plants may also be propagated by means of cuttings, inserted in sandy soil, in bottom heat, and carefully shaded until rooted.



FIG. 220. PORTION OF INFLORESCENCE OF WIGANDIA MACROPHYLLA.



FIG. 221. WIGANDIA URENS.

Wigandia—continued.

tomentose, shorter than the corolla; spikes revolute at apex, secund, the rachis villous-pubescent. April. *l.* elliptic-cordate, slightly acute, hairy-tomentose, ferruginous above. *h.* 10ft. Caracas, 1836. See Fig. 220. SYN. *W. caracasana* (B. M. 4575; B. R. 1866; F. d. S. 755; L. J. F. 132).

W. urens (tinging). *fl.* disposed in scorpioid panicles; calyx woolly, with linear, acute sepals; corolla violet-blue, the margins of the lobes somewhat revolute. Autumn. *h.* 6ft. Mexico (?), 1830. This species differs from *W. macrophylla* in its looser habit, and in its longer-stalked, more spreading leaves of a deeper ashy-green, shaded with red on the petioles. See Fig. 221.



FIG. 222. WIGANDIA VIGIERI.

W. Vigieri (Vigier's)* *fl.* calyx green, exceeding the corolla tube, with five linear, acute sepals; corolla lilac-blue, passing through vinous-red to fawn-colour before fading, rotate-infundibular, woolly outside, glabrous; inflorescence very large, paniculate, divaricate. Autumn. *l.* alternate, oval-elliptic, cordate at the base, irregularly and sparsely toothed, channelled; petioles 5in. long. *h.* 6ft. Mexico (?), 1868. See Fig. 222.

WIG-TREE. A common name for *Rhus Cotinus* (which see).

WIKSTRÖMIA. A synonym of *Laplacea* (which see).

WILD APPLE, or WILDING. See *Pyrus Malus*.

WILD BERGAMOT. See *Monarda fistulosa*.

WILD CLARY. See *Salvia Verbenaca*.

WILD CLOVE. See *Pimenta acris*.

WILD DATE. See *Phoenix sylvestris*.

WILD HYACINTH. See *Scilla nutans*.

WILD IRISHMAN. See *Discaria Toumatou*.

WILD OLIVE. See *Elmagnus* and *Olea europæa*.

WILD SNOWBALL. See *Ceanothus americanus*.

WILD WATER LEMON. See *Passiflora foetida*.

WILD WILLIAM. An old name for *Lycchnis Flos-cuculi*.

WILLDENOVIA (of Gmelin). A synonym of *Rondeletia* (which see).

WILLDENOVIA (named in honour of Charles Louis Willdenow, 1765-1812, Professor of Botany at Berlin). SYN. *Nematanthus* (of Nees). ORD. *Restiaceae*. A genus comprising eight species of greenhouse herbs, with Rush-like, leafless stems, natives of South Africa. Flowers dioecious; male spikelets loosely many-flowered, interruptedly spicate; females one-flowered, sessile. Sheaths loose, persistent. It is doubtful whether the under-mentioned species is still in cultivation. It thrives in a compost of loam and peat, and may be increased by divisions.

W. teres (terete). *fl.*, male inflorescence 2in. to 2½in. long, erect, spicately or paniculately cymose; female spikelets one to three at the apex of the culm. Sheaths 1½in. in length, convolute, fuscous, glabrous, acuminate at apex. Culms erect, 3ft. or more high, terete, virgate-branched near the middle; branches ascending, white-lepidotod and spotted with purple. 1790. The plant sometimes grown under this name is a species of *Restia*.

WILLEMETIA (named in honour of P. R. Willemet, 1762-1790, author of "Herbarium Mauritianum"). SYNS. *Noltia*, *Vilmannia*. ORD. *Rhamnaceae*. A monotypic genus. The species is a pretty, perfectly glabrous, greenhouse shrub. It thrives in a compost of sandy loam and peat. Increased by cuttings, inserted in sand, under a glass.

W. africana (African). *fl.* white, in cymes and panicles about 1in. long; petals five, cucullate, sessile. May. *l.* alternate, oblong-lanceolate, more or less obtuse, serrated, feather-nerved, 2in. to 2½in. long, paler beneath. *h.* 10ft. to 12ft. South Africa. The proper name of this plant is now *Noltia africana*.

WILLEDEN PAPER AND CANVAS. For making temporary shelters where light is not necessary, the Paper and Canvas manufactured by the Willesden Paper Company possess all the requisite properties; being fairly cheap, they may be freely used for light coverings of any kind. The Paper is quite waterproof, light, and of fair tensile strength, as anyone who saw the pavilion erected in the grounds of the Crystal Palace, during the exhibition of 1884, will have noticed; except that visitors had cut the Paper about, the edifice was as sound nine months after erection as when first put up. A tank was also exhibited, which held about half a ton of water, the Paper not being saturated for quite two months; and no doubt it would have been sound for the whole time the exhibition lasted, but that some mischievous person stuck a knife through the side, to see if it was really Paper. These examples will show that the Paper will answer what is required of it, and therefore all that is left is to describe the manner of using it for garden purposes.

The stout brown Paper is the best for general use. It is made about 4½ft. wide, a useful size for temporary

Willowden Paper and Canvas—continued.

roofs, and for screens to put over frames or plants. So far as roofs are concerned, the makers give full directions, and therefore this part of the subject need not be considered here. The most useful appliances in any garden, for providing temporary shelter, are a number of frames about 6ft. long and the width of the paper. The woodwork should be about 1½ in. in thickness, and should be braced across to keep the whole structure rigid. Over these frames the Paper should be nailed, preferably on both sides; thoroughly waterproof coverings, which will keep off a fair amount of frost, are thus made for protecting tender subjects in frames or beds, while for outdoor Mushroom-beds they are most convenient. Being flat and comparatively thin, a large number can be stowed away in a little space, when not required for active use. For wall trees of doubtful hardiness, the prepared Canvas, if put on frames, makes a good protective medium when the shelters are made as above, and, having more tensile strength than the Paper, will not be torn with any ordinary usage.

Besides being made into flat screens, wooden frames of different patterns, such as spans, and similar forms, can be constructed in light wooden framing, and covered with Willowden Paper, affording very decent protection against frost and snow to plants of doubtful hardiness in the borders. Larger frames can also be made for the protection of shrubs, &c. In all cases the Paper can be adapted to almost any form required, and a little ingenuity on the part of the user will lead to the construction of many most useful contrivances.

The lighter samples can also be used for packing plants; being waterproof, they prevent undue evaporation. For lining baskets containing cut flowers or plants, the Paper should be found very useful, as it can be made to fit the shape of the basket or hamper, and will last for a long time. Many things, such as hard-wooded cuttings, rose-buds, and similar stock, can be rolled in the Paper, the ends being folded over, and they will travel as well as in lead foil or rubber tissue, and at less cost. Waterproof labels, for writing on which no special ink is required, are also made of Willowden Paper; these are durable, and, being made in various sizes, are useful for many purposes. In fact, there is practically no end to the purposes to which this Paper can be applied in and about the garden.

WILLOW. See *Salix*.

WILLOW, AMERICAN WATER. A common name for *Dianthera americana* (which see).

WILLOW, FRENCH OR PERSIAN. See *Epilobium angustifolium*.

WILLOW GRASS. See *Polygonum amphibium*.

WILLOW HERB. See *Epilobium*.

WILLOW HORNET CLEARWING MOTH. See *Sesia*.

WILLOW, KILMARNOCK WEEPING. See *Caprea pendula*.

WILLOW SAWFLIES. Few, if any, plants are more liable than Willows to be injured by Sawflies. By far the larger number of the species that feed on Willows and Sallows belong to the genus *Nematus*, but a few belong to two or three other genera. It would be useless to attempt to describe, or even to enumerate, the many kinds that have been found on the different species of *Salix*; suffice it to say that Cameron, in his "Monograph of British Phytophagous Hymenoptera," enumerates as British thirty-three species of *Nematus*, and twenty species under other genera, found on *Salix*; and that yet others have been recorded from the Continent of Europe as found on Willows.

Willow Sawflies—continued.

We cannot, therefore, do more than indicate briefly the chief modes in which these insects may prove hurtful.

The larvae of many species feed, exposed to view, on the edges or the lower surface of the leaves, often keeping the hinder part of their bodies coiled in a spiral. Others live between folded or rolled leaves; and a few live in mines in the leaf-blades. Many species are Gall-makers; and of these the habits and the galls vary greatly. Several species, chiefly of *Euura*, produce swellings of the branches, mostly in those of the *cinerea* section of *Salix*. Each swelling is occupied by one larva. Others, mostly species of *Nematus*, produce galls of two or three forms on the leaves. One common kind of gall resembles peas in form and size, and is usually adherent to the lower surface; though on some Willows (e.g., *S. purpurea*) the galls are more often fixed to the upper surface. The *Poa* Galls vary in surface-appendages according to the species of Willow, being smooth on some, downy on others. They are formed by *Nematus pedunculii*, and by several other species of this genus of Sawflies. Another very common form of gall on Willow leaves—often distinguished as "Bean Galls," from their shape—sometimes resembles small haricot beans in pairs, side by side, in the tissue of the leaf, projecting about equally from both of its surfaces. They are usually about ½ in. long by ¼ in. broad. They are green or red on the upper surface, pale green below, and may be smooth or downy, according to the kind of Willow on which they are formed. One of the commonest Gall-makers of this group is *Nematus gallicola*, which makes the galls so often seen on the leaves of *Salix alba*, *S. Caprea*, *S. fragilis*, and other Willows; other species form somewhat similar galls on several of the smaller Willows, e.g., *Salix lapponum*, *S. nigricans*, *S. phylicifolia*, &c.; but it is impossible, in the brief space at disposal, to enter into a fuller discussion of these galls and their makers.

Remedies are scarcely called for unless the larvae of Willow Sawflies are very plentiful. If so numerous as to endanger the health of the plants, those larvae that feed exposed on the leaves may be dislodged by jarring or shaking the branches. They may be shaken into a vessel, and destroyed by having boiling water poured over them; or a ring of tar and oart-grease painted round the base of each tree will prevent them from crawling up again. The only reliable remedy against larvae in rolled or mined leaves, or in galls, is hand-picking; but the damage is seldom so great as to call for so tedious and costly a remedy. As by far the greater number of the species burrow into the soil to become pupæ, any means to prevent their doing so tends to lessen the numbers of the insects. Rolling the ground below the trees, so as to render it compact, and applications of gas-lime, soot, or other substances poisonous or disagreeable to the insects, will prove useful in this way.

WILLUGHBEYA. A synonym of *Mikania* (which

WILLUGHBEIA (named after Francis Willughby, 1635-1672, an English naturalist, pupil of Ray). SYN. *Ancylodadus*. ORD. *Apocynaceæ*. A genus comprising eight or ten Malayan and East Asiatic species of stove, sarmentose or tall-climbing shrubs, all supposed to yield caoutchouc. Flowers in axillary cymes; calyx short, five-lobed; corolla salver-shaped, the tube nearly glabrous within, the mouth naked or with fleshy glands alternating with the lobes; stamens included in the tube. Berry large, globose or ovoid, many-seeded. Leaves opposite, on short petioles. For culture of *W. edulis*, the only species introduced, see **Allamanda**.

W. edulis (edible). fl. of a pale pink colour; cymes on short, stout peduncles. July. fr. edible, sub-ovoid, the size of a lemon. l. 4 in. to 7 in. long, oblong or obovate-oblong, obtusely acuminate or cordate, acute at base, thinly coriaceous; petioles ½ in. to ¾ in. long. India, 1818. An immense climber.

WILLUGHBEIA (of Klotzsch). A synonym of *Lan-dolphia* (which see).

WIND. The various points from which the Wind proceeds, and the amount of its force, are matters requiring daily consideration in the proper management of glass structures, and for the preservation against injury of plants and trees outside. The damage caused by a rough gale is often of a most disastrous nature; sometimes large and valuable trees are uprooted, or have their branches torn off, causing permanent disfigurement. In different localities and situations, what are known as the prevailing Winds have to be taken into account in planting operations: in some, the gales most frequently proceed from one particular point—south-west, for instance—while in others, a wood, hill, or large belt of trees may afford protection from that, but not from some other direction. Situations on various parts of the sea-coast, and also inland, will be locally affected in regard to prevailing Winds. The destruction caused by the Wind to fruit crops is, unfortunately, too familiar. Newly-planted trees of all kinds, of sufficient size to be rocked to and fro by the force of the Wind, should always be secured with stakes for the first season, after which their roots will have generally taken a good hold, thus rendering them safe. Plants in pots—*Chrysanthemums*, for example—are soon destroyed by a gale if not securely staked and tied. A cold Wind has a most injurious effect on the tender foliage of trees and plants in glass structures, particularly in early spring, when too frequently it proceeds from an easterly or north-easterly direction. Preventive measures should be adopted, as far as possible, beforehand, so that when the Wind's force is suddenly increased to a gale, everything may be secured against injury. Not infrequently, the proper provision which it is necessary to make against rough weather is forgotten when trees are newly planted; or plants in pots are placed in exposed situations during a calm period; and the effects of the first rough Wind are disastrous.

WINDFALL. A term frequently applied to such fruits as may often be found lying in an immature condition below the trees, e.g., Apples, &c. The young fruits may be knocked off by one branch striking on another in a high wind; but very frequently the cause of the premature fall will be found, on careful examination, to be the presence of some parasite in the fruit. The most frequent cause is a larva feeding on the seeds, e.g., the Apple or Codlin Grub (*Carpocapsa pomonana*) in immature Apples. Such larvae generally leave the fruit very soon after its fall, to burrow in the soil, and there to become pupæ. It is, therefore, very desirable to prevent future harm by having the Windfalls picked up without delay, and given to pigs, or placed where the larvae may be unable to find a favourable situation for becoming pupæ.

WIND FLOWER. See *Anemone* and *Gentiana Pneumonanthe*.

WINDOW GARDEN. Many cottagers and amateurs who have no glass structure at their command take an especial interest in plant cultivation, and set admirable examples of what may be accomplished by constant attention, even in an ordinary window. Window Gardening has of late years made rapid strides, partly from the encouragement given to it locally by the managers of annual exhibitions, and even more so by the greater interest in the cultivation of flowers which has become so generally diffused. By the term Window Gardening, the cultivation of plants in a window, or on the sill outside in favourable weather, should only be referred to; decorative subjects that are grown to perfection elsewhere, and then used temporarily for windows, ought not to be judged in comparison. Windows facing south, or nearly so, are best adapted for plants generally; but many sub-

Window Garden—continued.

jects will succeed admirably in less favourable aspects. The general potting of window plants is best attended to in spring, when the drainage must be rendered complete. As a rule, it is necessary to use saucers to prevent water running into the room; the water should be emptied out so soon as the plant is well soaked. When water is required—and this time can only be known by practice—a good soaking should be given, and in summer an occasional sprinkling over the foliage, through a fine rose or syringe, generally helps to keep the plants clean and in health. During severe frost, window plants are at times unsafe in their usual quarters; they should then be placed temporarily on the floor for the night; in the day-time, where there is a fire in the room, plants are usually safe in the window, unless they are of an exceptionally tender kind. Amongst window plants that generally succeed well, Zonal Pelargoniums, of various sorts, perhaps take first place; the scented-leaved ones are also great favourites. Other subjects which may readily be adapted to culture in the same position are: *Fuchsias*, *Calceolarias*, some of the dwarf *Campanulas*, Chinese *Primulas*, several kinds of *Cacti*, greenhouse Ferns, spring-flowering bulbs (such as *Hyacinths* and *Tulips*), *Heliotropes*, *Myrtles*, &c. Many more might be enumerated, but those mentioned afford a great selection. *Richardia africana* and *Vallota purpurea* sometimes succeed as window plants.

WINDROOT. See *Asclepias tuberosa*.

WIND ROSE. See *Boerneria hybrida*.

WINEBERRY. An old name for the Whortleberry (*Vaccinium Myrtillus*).

WINE PALM, EAST INDIAN. See *Phoenix sylvestris*.

WINGS. The two lateral petals of a papilionaceous corolla; any kind of membranous expansion.

WINTERA. A synonym of *Drimys* (which see).

WINTER ACONITE. See *Eranthis*.

WINTERANA. A synonym of *Canella* (which see).

WINTERBERRY. A common name for several species of *Ilex* (which see).

WINTER BLOOM. A common name for *Hamelis virginica* (which see).

WINTER CHERRY. See *Physalis Alkekengi*.

WINTER CLOVER. A common name for *Mitchella repens* (which see).

WINTER CRESS. See *Barbarea*.

WINTER DAFFODIL. See *Sternbergia lutea*.

WINTER GARDEN. A term usually employed to denote a very large, cool, glass structure, from which the frost is merely excluded, the interior being occupied by subjects insufficiently hardy to withstand our climate outside during the winter. A Winter Garden is generally of sufficient size to allow of the centre part of the interior being laid out in walks and large beds. The latter are planted with all the stronger-growing occupants that cannot be properly accommodated in pots. Amongst them Himalayan *Rhododendrons* may be specially mentioned, as their foliage is attractive at all seasons, and their flowers in spring and summer are amongst the most beautiful; *Camellias*, Australian *Acacias*, and other hard-wooded plants of a like description, *Araucarias*, many Tree Ferns, Palms, and any good plants that only require a little protection in winter. A Winter Garden, if treated as a conservatory, would admit of the introduction of all greenhouse plants in their seasons on the shelves

Winter Garden—*continued.*

around, while the central beds might be planted with some of the subjects mentioned above, according to the available height and space. Tea Roses may be trained to pillars, also on the roof, if convenient, and numerous beautiful conservatory climbers succeed well when similarly situated and kept tied.

WINTERGREEN. See *Pyrola*.**WINTERGREEN, AROMATIC OR CREEPING.** See *Gaultheria procumbens*.**WINTERGREEN, CHICKWEED.** See *Trientalis*.

WINTER MOTHS. A name given, because of the time of their appearance, to certain moths belonging to the group *Geometrina* (see **Moths**), which is characterised by the possession of a slender body, and wings large relatively to their size of body. Of the Winter Moths, however, the females are wingless, or, rather, possess mere vestiges of wings, utterly useless as organs of flight; the males are well provided with wings of considerable size. Most of the species are included in the genus *Hybernia* (which see); but the insect to which the name is peculiarly applied, and which is most widely destructive, is *Cheimatobia brumata*. In this species the spread of wings of the male may reach about 1½ in.; but it is usually under this size. Both sexes are greyish-brown, with several indistinct, darker, wavy lines or bands across the wings. The female is heavier in the body, and has extremely small front wings. The moths appear between the beginning of October and the end of December. The females must crawl up the trees to reach a suitable situation for laying eggs; or they may, at times, be carried from one place to another by the males. The eggs are usually laid in the crevices of the bark, and in other places fitted to give them protection. The larvæ are bluish-green, with a narrow, dark stripe down the middle of the back, and three narrow, white stripes on each side. In some the ground-colour is smoky or dark brown. They live upon almost all kinds of trees and shrubs. At first, they eat into the buds in early spring; and, when the leaves begin to enlarge, the larvæ spin two or more leaves together, and feed, protected between them, in safety. When full-fed, they lower themselves to the ground, burrow into it, and form earthen cocoons, in which they become pupæ about the end of May or the beginning of June.

Remedies. The larvæ of *C. brumata* are so destructive that it is often most desirable to prevent or to check their ravages. Nothing can be done while the larvæ are in the buds; but, when nearly full-fed, and living between the leaves, they can be dislodged by beating and shaking the branches. The shock causes them to lower themselves by silken threads, or to fall to the ground. They can thus be collected in cloths spread below the plants, or crushed under foot. It is well to put a bolt of some sticky substance on the base of the tree-trunks, to prevent the re-ascend of larvæ. Digging the soil around the roots helps also to lessen the number of pupæ, by exposing them to the quick eyes of birds, or to predatory insects. The most effectual remedies are those employed for the destruction of the females, and for the prevention of their ascent of the tree-trunks. This is effected readily, because of the useless nature of their wings, which compels them to creep up the trunk, unless at times carried on to the trees attached to the males. Whatever substance is used, it must remain soft and sticky for a day or two, must not injure the trunks, and must be renewed sufficiently often to keep the surface of the ring of bark sticky, say about each second day. Among the best of the compounds for catching female moths is the substance known as Davidson's Composition, or a mixture of tar and grease in equal proportions.

WINTERSWEET. See *Toxicophlea spectabilis*.**WINTER WOLF'S-BANE.** A common name for *Eranthis hyemalis* (which see).

WIRE. Wire is extremely useful to florists and gardeners, who could not well do without it in making up bouquets and other personal decorations. Various thicknesses are used, according to the special purpose for which it is required: for instance, when flowers have to be provided with artificial stalks, short lengths of stiff Wire, known as "stubs," are used. These are generally procured in bundles, cut into 6in. or 8in. lengths, which are found most convenient. Binding Wire is very fine, and is largely employed in bouquet-making for securing the short lengths, already referred to, to the flowers, and for tying all the stalks together. It is wound on reels, and is strong, although quite pliable.

The springs sometimes used for fixing certain kinds of flowers in bouquets, so that they shall move about, may be readily made by binding tightly the piece of small Wire which it is intended should form the spring round a piece of a rather larger size, and then slipping off the coil.

Wire is largely employed for both movable and permanent trolleys in glass houses, &c.; for this purpose, it is best galvanised, to prevent rusting. Copper binding Wire, in quantities according to requirements, should be kept in stock; it is often useful, and there are small and large gauges of this made, as well as of iron, the other principal metal used in Wire-making. Wire netting, and its various uses, such as preserving vegetable crops from destruction by rabbits, &c., are familiar to everyone. The "mesh" refers to the size of the spaces; thus Wire netting of 1in. mesh has the spaces that distance across, and so on with other finer or coarser sorts.

WIREWORMS. The popular name of certain pale yellowish-brown, slender larvæ, possessed of skins so tough and hard that they look and feel not unlike short pieces of moderately thick wire, flattened from above downwards. The body is of uniform thickness, and is marked with rings showing the divisions between the



FIG. 223. WIREWORM.

segments of which it consists (see Fig. 223). The head is small, flattened, and darker than the body. The three front body-rings bear each a pair of short, brown, true legs, and there is a solitary prehensile foot on the lower surface of the conical hindmost segment of the body. Wireworms feed near the surface of the soil, but concealed in it; and they gnaw the stems and roots of plants just below its surface. The plants are thereby killed, or, at least, very much injured; and the crops in gardens, as well as in the fields, are, occasionally, seriously damaged from this cause. When the Wireworms reach their full size, they burrow into the soil to a considerable depth, and each forms for itself an earthen cocoon. In this it becomes a pupa, usually about the end of summer. Many of the Beetles emerge after spending little more than a fortnight in the pupa state, but some, probably, do not emerge till the next spring or summer. Wireworms vary in size to some extent, as they are the larvæ of many kinds of Beetles, all belonging to the family *Elateridæ*, but they seldom reach 1in. in length. They feed on almost all kinds of herbaceous plants, but it has been observed that they avoid Mustard: hence it has been suggested that this plant should be sown in ground that is much infested by them, in order to starve them out.

The Beetles are well known under one or other of

Wireworms—continued.

the names Click Beetle, Snap Beetle, Spring Beetle, or Skipjack. All four names allude to the method by which the insects, when laid on their backs, right themselves, and which is described below. There are many species of Click Beetles distributed amongst numerous genera, which differ among themselves in minor peculiarities; but all of them have so strong a family likeness that they are easily recognised as members of the family *Elatéridæ*. Their form is elongated, with nearly parallel sides, but the body is rather pointed behind; the surface is hard. The head is deeply sunk in the thorax; the latter is prolonged backwards at the hinder angles into two sharp points, which prevent lateral movements of the abdomen; it has a sharp, prominent spine on its front part below, and this spine fits into a groove in front of the base of the middle legs. The antennæ, which are often serrated, can be laid, for protection, into grooves on the lower surface of the head—one on each side. The legs are short, but the wings are large and powerful. The Beetles are usually black, often with the basal two-thirds of the elytra some shade between rusty-red and blood-red, less often with short, fuscous or yellowish hairs spread uniformly over the surface, or restricted to defined spots or patches. They seldom exceed $\frac{1}{2}$ in. or fall below $\frac{1}{4}$ in. in length. The number of British species of this family is large, and the Beetles are abundant everywhere during autumn; but only a few of the species are large enough to be familiarly known by anyone except an entomologist. They may be often seen crawling on walls and among herbage. When approached, they allow themselves to drop for concealment; and their form renders them very liable to fall on their back. Their legs are too short to be of service in turning themselves over; but the spine on the breast is an efficient organ for this purpose. When one of the insects wishes to replace itself on its legs, it bends the body backwards till it rests only on the head and the tip of the abdomen. In this position the spine is dragged out of its groove, but, on the Beetle bringing the head up smartly, the spine springs back into its groove, and the back of the Beetle is struck so hard against the surface on which it lies, that the insect is thrown some inches into the air, like a skipjack, and usually falls on its legs. The names Skipjack and Spring Beetle refer to this power of leaping; Click Beetle and Snap Beetle refer to the sound produced in the leap. It is probable that the larvæ of almost all of the *Elatéridæ* are Wireworms in appearance and in habits; but only a few of the species are known to be very injurious to garden and field produce; and some, at least, feed on decaying vegetable tissues.

The following are the most hurtful species, according to the observations of those entomologists who have most carefully studied the subject: *Agrionyx sputator*, *A. lineatus*, and *A. obscurus*. The first of these is little more than $\frac{1}{2}$ in. long, and is black, and slightly glossy, but is pubescent; the front edge and hinder angles of the thorax, and the greater part of the elytra, are dull yellowish-brown or dusky; the legs and antennæ are paler; the elytra are deeply punctate-striate. The other two species are about $\frac{1}{2}$ in. or $\frac{3}{4}$ in. long, and are thought by some to be forms of a single species. *A. lineatus* is fuscous, with greyish pubescence; the thorax is nearly black; the elytra are punctate-striate, the striae (in pairs) greyish, the interspaces brown, so that the elytra are striped lengthwise with dull grey and brown; the limbs are rusty-red. *A. obscurus* is dull brown-black, with dark pubescence, the elytra faintly punctate-striate, and nearly black; the thighs are nearly black, the rest of the legs and the antennæ dull rusty-red. Still another species is probably a serious foe to cultivated plants at times. This is *Athous hamorrhoidalis*; the insect is from $\frac{1}{2}$ in. to $\frac{3}{4}$ in. long,

Wireworms—continued.

and is dusky-black, with the elytra brownish; the limbs are dull red, except the black thighs. In the perfect state these insects are harmless: the damage is done only the larval condition. This stage has been observed to continue in *A. lineatus* during five years; hence, the larvæ have time to do much mischief. It would be useless to enumerate all the plants on which they have been observed to feed; but among the more important garden plants are Cabbages, Carrots, Dahlias, Irises, Lettuces, Onions, Pinks, Potatoes, Turnips, and other favourites. They also often seriously injure the grass in lawns. Where ground is allowed to lie unbroken for a time, they multiply, and from it they spread to the adjoining pieces of ground. When soil that has lain fallow, or has been a lawn for some years, is broken up, the crops grown in it are apt to suffer severely from attacks of Wireworm.

Remedies. When the larvæ are very numerous, the soil should be broken up, as this exposes the Wireworms to the eyes of birds. Deep-trenching has also been recommended as a useful measure. If practicable, one of the most successful methods is to starve out the larvæ by allowing the ground to lie fallow for a year, merely cutting down and destroying the weeds on it; or a crop of Mustard (*Brassica alba*) may be grown on it, as the larvæ avoid this plant. Frequent stirring of the soil is unfavourable to them; and so, to a slight extent, is the employment of a heavy roller. Various applications to the soil have been used with success. On ground allowed to lie fallow for a year, a good coating of fresh gas-lime is of great use; but where crops have to be grown without a break of this kind, soot and guano are better, scattered before or during heavy rain. One part of nitrate of soda to two of common salt has also worked well. In gardens, paraffin has been used in solution (one in fifteen) with success, for watering infested plants, or along drills of Carrots, &c. Where any plants are fading without apparent cause, the roots should be examined for Wireworms, and one of the remedies recommended above should be applied to the injured plants. Traps for Wireworms, formed of pieces of lettuce, carrot, or other favourite food, may also be used. These should be buried a little below the surface, and removed, examined every day, and the Wireworms on them collected and destroyed.

WISTARIA (named in honour of Caspar Wistar, 1761-1818, Professor of Anatomy in the University of Pennsylvania). Grape-flower Vine. **SYNS.** *Diplomyx* and *Thyrsanthus*. **ORD.** *Leguminosæ*. A small genus (four or five species) of hardy, tall, climbing, deciduous shrubs, natives of North America, China, and Japan. Flowers usually bluish, scattered at the sides of the rachis; two upper calyx teeth short and sub-connate, the lower ones usually longer; standard ample, with two parallel ridges at the base; wings oblong-falcate; racemes terminal; bracts very caducous. Pods elongated, torulose, two-valved. Leaves imparipinnate; leaflets entire, pinnately veined and reticulate-venulose, often stipellate. *Wistarias* thrive in any good, loamy soil, and grow fast when once established. They are most readily propagated by layering the young growing shoots during the summer months, and detaching them from the the parent plant the following year.

W. brachybotrys (short-clustered). *f.* violet-purple; standard orbicular; pedicels one-flowered, shorter than the acuminate, caducous bracts; racemes short, erect or loosely spreading. April. *f.* imparipinnate, four to six-jugate; leaflets petiolulate, truncate or sub-cordate at base, ovate-lanceolate, acuminate, silky-canescens on both sides. Branches tortuous. *f.* 3ft. to 5ft. Japan. (*F. d. S.* 880; *S. Z. F. J.* 45.)

W. chinensis (Chinese). Chinese Kidney-bean Tree. *f.* large, inodorous, produced in great abundance on established plants; wings of the corolla each having one auricle. May and June (sometimes acuminate, a thin, silky, adpressed pubescence. China, 1816. See Fig.

Wistaria—*continued.*

SYNS. *W. sinensis*, *Glycine chinensis* B. M. 2083), *G. sinensis* (B. R. 650; L. B. C. 773).

W. c. flore-pleno (double-flowered). A handsome variety, with double flowers. 1882. (F. & P. 1882, 557.)

W. c. macrobotrys (large-clustered). *f.* white, tinted with bluish-purple, borne in very long racemes. Japan, 1870.

W. c. variegata (variegated). A form with bright silvery-variegated foliage. 1866.



FIG. 224. PORTION OF FLOWERING BRANCH OF WISTARIA CHINENSIS.

W. frutescens (shrubby). American Kidney-bean Tree. *f.* odorous; racemes 4 in. to 6 in. long, 2 in. to 3 in. in diameter, on short branches, dense-flowered; bracts large, caducous. April and May. *fr.*, pods one or several-seeded. *l.*, young ones (and branches) silky-pubescent; leaflets nine to thirteen, lin. long, ovate. SYNS. *Glycine frutescens* (B. M. 2103) and *W. frutescens*.

W. japonica (Japanese).* *f.* white, in simple, nodding racemes; standard obovate, obtuse, entire; pedicels one-flowered, horizontally spreading, torate; peduncles slender. July and August. *l.* imparipinnate, four to six-jugate; leaflets pedicellate, ovate or ovate-lanceolate, obtuse, acuminate, entire, petiolulate. Japan. A glabrous, twining shrub. (S. Z. F. J. 43.)

W. multijuga (many-paired). *f.* lilac, with purple wings and keel, rather smaller than in *W. chinensis*, and growing in racemes which are said to be upwards of 2 ft. in length. Summer. *l.* pinnate; leaflets numerous, elliptic-ovate, acuminate. Japan, 1874. (F. d. S. 2002.)

W. sinensis (Chinese). A synonym of *W. chinensis*.

WISTARIA, TUBEROUS-ROOTED. See *Apios tuberosa*.

WITCHES' THIMBLE. See *Silene maritima*.

WITCH HAZEL. See *Hamamelis*.

WITCH KNOTS. The name popularly bestowed on the curious clusters of twigs (looking very much like the nest of a rook, or some other large bird, when seen from a distance) that so frequently occur on the larger branches of Birch, Hornbeam, and certain other trees. The twigs are usually somewhat swollen, and both they and the sickly-looking leaves upon them are duller green than usual, and frequently show a slightly velvety surface. The causes of these deformities escaped detection till they were carefully investigated a few years ago with the microscope, and were found to differ in various trees.

Witch Knots—*continued.*

In Birch and Hornbeam, they are the work of minute Fungi, belonging to a very lowly group of *Ascomycetes*. The mycelium of the Fungi lives in the tissues of the host-plant's leaves and bark; and the velvety appearance mentioned above results from the outgrowth over the whole epidermis of the organs of reproduction. These latter consist of asci (see *Pyrenomyces*) in each of which eight (or more) spores are formed, and from which they are scattered when mature. The asci in *Eoascus* (as the most important genus of Witch Knot Fungi is called) are quite exposed to casualities from without, instead of being inclosed in a perithecium, as in *Pyrenomyces*. The number of asci and of spores is immense; but they are far too small individually to be detected, except when thin sections of the diseased parts are examined with a lens of high magnifying power. The following species of *Eoascus* give rise to Witch Knots: *E. turgidus*, on Birch; *E. Carpinii*, on Hornbeam; and *E. Insiticia*, on Bullace. It may be noted that other species of the genus produce distortions of the leaves of various trees and shrubs (Poplar, Alder, Elm, Cherry, &c.), and that *E. Pruni* is the cause of the disease of the fruit in various species of *Prunus* known as "Bladder Plums."

In the Birch, a diseased condition, a good deal like a young Witch Knot, is often of frequent occurrence. It is the work of a species of *Phytoptus* or Gall-mite (see *Mites*), and results from the stimulation, by the myriads of minute Mites, of the growing tissues in the buds, which are increased in size, but never develop properly. The buds in the axils of the leaf-scales, instead of remaining undeveloped, enlarge to a conspicuous size, or grow into stunted branches; and on this process being repeated year after year, the mass of buds, &c., may reach the size of a cricket ball, but is usually smaller. There is no real difficulty in distinguishing these Mite Galls from true Witch Knots.

The Silver Fir (*Abies pectinata*) occasionally bears Witch Knots, which are made up of a central swelling of the stem, or of a large limb. From this arise one or more branches, on which grow very many small branches crowded densely together. The needles are short, thick, brittle, and bright green. All parts of the Witch Knots are traversed by mycelium; and the leaves bear over their surfaces numerous small, yellow, membranous cups, filled with minute, yellow spores for reproduction. These are the characteristic "fruits" of a Fungus named *Æcidium elatinum*. This Fungus renders the stems, &c., brittle, and liable to injury from wind; and it also causes the leaves to fall early.

Treatment. The only method likely to be of use is to cut off and burn Witch Knots of all kinds, to prevent the diseases from being propagated by the spores.

WITCH OR WYCH ELM. See *Ulmus montana*.

WITHERINGIA (name commemorative of William Withering, of Birmingham, 1741-1799, author of a "Botanical Arrangement of the Vegetables of Great Britain," 1776). SYNS. *Aureliana*, *Basovia* (now the correct name). ORD. *Solanaceae*. A genus comprising about a dozen species of stove or greenhouse, erect or

Witheringia—*continued*.

sarmentose shrubs or small trees, rarely tall herbs, natives of South and Central America and the West India. Flowers often rather small; calyx five to ten-toothed; corolla deeply five-cleft; pedicels often fasciated, umbellate, solitary or twin. Leaves entire or slightly sinuate. Most of the species formerly known in gardens as *Witheringias* have been removed to *Solanum* (which see), but it is doubtful if any are now cultivated.

WITHE ROD, AMERICAN. See *Viburnum nudum*.

WITHY. See *Salix fragilis*.

WITLOOF. A variety of Chicory (*Cichorium Intybus*).

1 (named after Nicholas Witsen, a Dutch patron of botany). ORD. *Iridææ*. A monotypic genus. The species is an ornamental, greenhouse shrub. It thrives in sandy peat, and may be increased by divisions, or by seeds.

W. corymbosa (corymbosæ)* *f.* one (or two ?) to a spathe, subsessile; perianth purplish-blue, the tube elongated, cylindrical; lobes erect, connivent, the outer ones rather thick, tomentose at back, the inner ones shorter; stamens affixed to the throat, shorter than the perianth; spathes usually twin in the axils of the upper bracts. June. *l.* erect, ensiform, equitant, rather

WITTEBROOM, WITTELSBACHIA, WOAD, WAXEN, WOLF BERRY, WOLF CHOP, WOLF'S BANE, WOLF'S BANE, WINTER, WOLF'S CLAW, WOLF'S MILK, WOLLASTONIA, WOMAN'S-CAP ORCHID, WONGA-WONGA VINE, WOOD, WOOD ASHES, WOOD BORING BEES, WOOD BETONY, WOODBINE, WOODBINE, AMERICAN, WOOD-FERN, WOODFORDIA, W. floribunda, W. tomentosa.

WITTEBROOM. See *Leucadendron*.

WITTELSBACHIA. A synonym of *Cochlospermum* (which see).

WOAD, DYER'S. See *Isatis tinctoria*.

WOAD, WAXEN. A common name for *Genista tinctoria* (which see).

WOAD, WILD. A common name for *Reseda Luteola* (which see).

WOLF BERRY. See *Symphoricarpos occidentalis*.

WOLF CHOP. A common name for *Mesembryanthemum lupinum* (which see).

WOLF'S BANE. See *Aconitum*.

WOLF'S BANE, WINTER. See *Eranthis hyemalis*.

WOLF'S CLAW. A common name for *Lycopodium clavatum* (which see).

WOLF'S MILK. See *Euphorbia*.

WOLLASTONIA. Included under *Wedelia* (which see).

WOMAN'S-CAP ORCHID. See *Thelymitra*.

WONGA-WONGA VINE. See *Tecoma australis*.

WOOD. The hard part of a stem, formed chiefly of woody tissue or plectenchyma.

WOOD ASHES. The Ashes obtained from wood, after all the organic compounds have been destroyed by burning, form a very valuable manure, as they contain potash compounds, and also the other mineral substances that existed in the plants from which they were prepared. These Ashes usually contain the elements in forms that can be made use of by most plants in their nutrition. They are of especial value to the same species as yielded the wood from which they were prepared, since they possess all the mineral elements required by such plants, and, for the most part, in the desirable proportions. The Ashes that remain after weeds are burned may be employed like Wood Ashes, being similar in general composition; but it is usually better economy to make

Wood Ashes—*continued*.

up the weeds into a compost, and to employ them after slow decomposition with urine. Wood Ashes may be applied pure, or may be previously mixed with dung or other organic manures, e.g., guano. They are sometimes made use of against insect depredations, either dusted without mixture on the plants, or mixed with powdered Pyrethrum leaves or Paris Green (Arsenate of Copper).

WOOD BETONY. See *Peduncularis canadensis* and *Stachys Betonica*.

WOODBINE. See *Lonicera Periclymenum*.

WOODBINE, AMERICAN. A common name for *Ampelopsis quinquefolia* (which

WOOD-BORING BEES. In many localities where there is a supply of decaying wood in which to form their burrows, these insects are not uncommon. Each female works independently of the others—not, as do Hive Bees and Humble Bees, in societies, for the good of the community. Each digs out a burrow for herself; forms one or more cells in it; stores her cells with pollen or other food suitable for the nourishment of her larvæ; lays an egg in the mass in each cell; closes up the mouth of the latter; and leaves the larva to escape from the egg, to live on the food stored up for it, and to pass through its development. At last the young Bees escape from the cells, and from the burrows when they are fully mature, to repeat the process for the benefit of their offspring in turn. There are several kinds of

biting Bees found in England, belonging to more than one genus. They show a considerable likeness to the common Hive Bee, so that they might be mistaken for the latter by a casual observer. Some of them burrow not only in decaying wood, but also in old walls, in the ground, or even in soft sandstone. The species of *Megachile* are called "Leaf-cutter Bees," as they cut pieces from the leaves of Roses, or other plants, and employ them in forming the cells for containing the larval food in the burrows. The end of each cell is closed by a set of circular pieces of leaf. Another Wood-borer has had one of its habits recorded by the well-known Rev. Gilbert White, of Selborne. This habit is that of stripping off the hairs from the surface of various plants, shaving the stems bare, as White says, "with all the dexterity of a hoop-shaver," and flying away with a bundle held between its chin and fore legs, almost as large as itself. With the hairs the female collects in this way she forms cells by uniting them with some sticky cement into a substance like felt. The cells are made in burrows dug out of the rotten wood of decaying Willows. This Bee's scientific name is *Anthidium manicatum*.

WOOD-BRONEX. An old name for the Ash (*Fraxinus*).

WOOD FERN. See *Polypodium vulgare*.

WOODFORDIA (named after J. Woodford, who wrote an account of the plants round Edinburgh in 1824). ORD. *Lythraricæ*. A monotypic genus. The species is a stove shrub, with long, spreading branches. For culture, see *Leianthus*.

W. floribunda (bundle-flowered). *f.* scarlet, in short, paniced cymes on axillary peduncles, rarely solitary; calyx ½ in. to ¾ in. long, six-toothed; petals six, scarcely longer than the calyx, or wanting. May and June. *l.* 2 in. to 4 in. long, opposite or nearly so, entire, lanceolate, usually rounded or cordate at base, often grey-pubescent beneath. *h.* 1 ft. to 4 ft. India, &c. SYN. *W. tomentosa* (B. F. S. xiv.), *Grisea tomentosa* (B. M. 1806).

W. tomentosa (tomentose). A synonym of *W. floribunda*.

WOOD LEOPARD MOTE. See *Zeuzera maculi*.

WOOD LILY. A common name for *Pyrola minor* and various species of *Trillium*.

WOOD NUT. A popular name for *Corylus Avellana* (which see).

WOOD OR SPURGE LAUREL. See *Daphne Laureola*.

WOODRUFF, or WOODROWEL. A common name for several species of *Asperula*.

WOODSIA (named in honour of Joseph Woods, 1776-1864, author of "The Tourist's Flora"). Including *Hymenocystis* and *Physematium*. ORD. *Filices*. A genus comprising about fourteen species of small, much-tufted, stove, greenhouse, or hardy Ferns, mostly inhabiting cold or temperate climates. Stipes often jointed and separating at the joint. Sori globose; involucre inferior, soft-membranous, from the first calyciform or more or less globose, and sometimes inclosing the sorus, at length opening at the top, the margin or mouth irregular, lobed or fringed. The best-known species are here described. With the exception of *W. mollis*, all the exotic species thrive in a cool house. For general culture, see **Ferns**.

W. alpina (alpine). A garden name for *W. hyperborea*.

W. Brownii (Brown's). A synonym of *Hypoderris Brownii*.

W. caucasica (Caucasian). *fronds* lanceolate, 9in. long, glandular-hirsute on the rachis and midrib, firm-membranous, bipinnate; primary pinnae sessile, nearly opposite, lanceolate, broadest at the base, acuminate-pinnatifid or again pinnate; lobes or ultimate pinnales oblong, acute, serrated. *sori* large, two on each lobe or pinna, one on each side near the margin; involucre globose. CAUCASUS. SYN. *Hymenocystis caucasica*.

W. glabella (nearly glabrous). *st.* short. *fr.* linear, slightly tapering below, pinnate; pinnae very remote towards the short stipes, all deltoid, very obtuse, cut into from three to seven shortly rounded or sub-cuneate, entire lobes. North America, Norway, 1827. Baker regards this as possibly a glabrous form of *W. hyperborea*. (H. F. B. A. II. 237.)

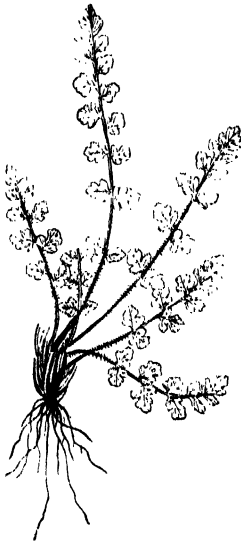


FIG. 225. WOODSIA HYPERBOREA.

W. hyperborea (extreme-northern). *rootstock* stout, somewhat elongated. *st.* shining, clothed with ferruginous scales. *fronds* 3in. to 6in. long, linear-lanceolate, densely tufted; pinnae somewhat distant, ovate-cordate, ½in. to ½in. long, pubescent and ciliated, with a few broad lobes. *sori* three to five on each lobe. Arctic Europe (Britain), &c. See Fig. 225. SYN. *W. alpina* (of gardeners). (Sy. Fn. B. 1863.)

W. ilvensis (Elba). *fronds* broadly lanceolate; pinnae oblong, obtuse, broader at the base, sessile, deeply pinnatifid, with many oblong, sub-crenate lobes. Alpine regions of Northern hemisphere. See Fig. 226. (Sy. Fn. B. 1862.) *Illa*, whence *ilvensis* is derived, is the classical name for the island of Elba. The species received the name because Linnaeus believed this Fern

Woodsia—continued.

to be the same as one figured by Dalechamp, named *Louchittia*



FIG. 226. WOODSIA ILVENSIS.

W. mollis (soft).^a *fronds* lanceolate, pinnate, generally densely clothed, especially beneath, with short, jointed hairs, scarcely attenuated below; pinnae sessile from a broader base, oblong, obtuse, pinnatifid; lobes approximate, oval or nearly round, entire or crenate. *sori* marginal; involucre opening with a jagged, circular mouth. Mexico, Guatemala, &c. Greenhouse. SYN. *Physematium mollis*.

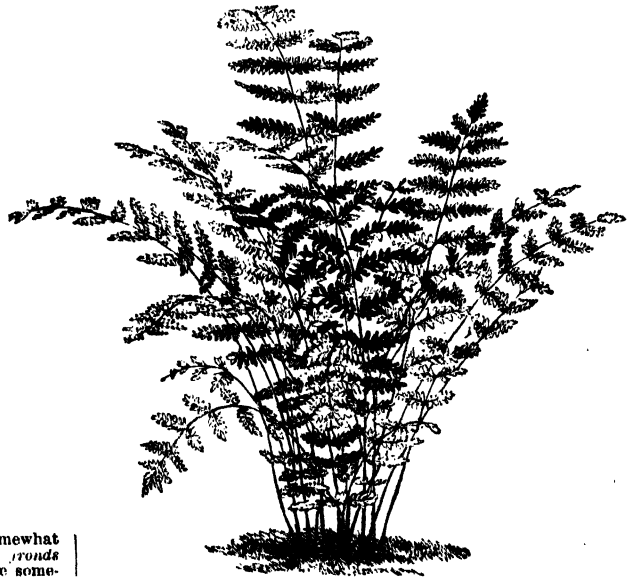


FIG. 227. WOODSIA OBTUSA.

W. obtusa (obtuse).^a *st.* tufted, not articulated, 3in. to 6in. long, castaneous towards the base. *fronds* oblong-lanceolate, narrowed to both ends, 6in. to 9in. long, bipinnate of tripinnatifid; central pinnae sessile, lanceolate-deltoid, ½in. to 1½in. long, the lower ones reduced; pinnales oblong, blunt, crenulate, or the lowest sub-pinnatifid, glandular-pilose. *sori* sub-marginal,

Woodsia—continued.

six to twelve to the largest pinnules; involucre a small, membranous, lacerated, white cup. United States to Peru. See Fig. 227. (H. G. F. 43.) SYN. *W. Perriniana*.

W. oregana (Oregon). *sti.* densely tufted, not articulated, castaneous, 2in. to 4in. long. *fronds* oblong-lanceolate, narrowed to both ends, 3in. to 4in. long, bipinnate, glabrous; pinnae lanceolate, sessile, the central ones 3in. to 4in. long, cut down to the rachis or a narrow wing into blunt, oblong, crenate lobes, the lower ones distant, gradually reduced; rachis stramineous. *sori* sub-marginal; involucre hidden by the sorus. North America. Closely allied to *W. obtusa*.

W. Perriniana (Perrin's). A synonym of *W. obtusa*.

W. polystichoides (Polystichum-like).* *fronds* 9in. long, opaque, lanceolate, pinnate, sparsely subulate-squamulose; pinnae spreading, approximate, sessile, 6in. to 8in. long, lanceolate, acute, cuneate-truncate at base, acutely auricled at the superior base, entire or obsoletely crenate at the apex, indistinctly costate. *sori* marginal in a distinct line or series; involucre globose, of four or five ciliated, incurved scales. Japan, 1863.

W. p. sinuata (sinuate). *fronds*, pinnae broader, more obtuse, lobed-pinnatifid. (H. G. F. 32, f. 3.)

W. p. Veitchii (Veitch's). *fronds* very villous (H. G. F. 32, f. 1, 2, 4-6.)

W. scopulina (brush-like). *sti.* densely tufted, 2in. to 3in. long, castaneous below. *fronds* 4in. to 6in. long, oblong-lanceolate, bipinnate, narrowed from the middle to both ends; central pinnae lanceolate, sessile, 3in. to 4in. long, cut down to the rachis or a narrow wing into close, ligulate-oblong, crenate-pinnatifid lobes; upper surface slightly, lower densely glandular-pilose, with a few minute scales on the ribs. Rocky Mountains, 1884. "Scarcely more than a variety of *S. obtusa*" (Baker).

WOOD SORREL (*Oxalis Acetosella*). A hardy, native perennial, occasionally cultivated for the use of its young leaves in salads. It should be cut over frequently, and not allowed to produce seed in gardens, or else the seedlings may become troublesome weeds. A cool, shady place is best suited, but the plant is seldom cultivated. If a few specimens are desired, they are best procured in spring and transplanted from places where they grow naturally.

WOOD SOWER. An old name for the common Wood Sorrel (*Oxalis Acetosella*).

WOOD TIGER MOTH.
See **Tiger Moths.**

WOOD-TONGUE FERN. See *Drymoglossum*.

WOOD VIOLET. See *Viola sylvatica*.

WOODWARDIA (named after Thomas Jenkinson Woodward, an English botanist). Chain Fern. Including *Anchistea* and *Lorinseria*. ORD. *Filices*. A small genus (about half-a-dozen species) of highly decorative, greenhouse or half-hardy Ferns, belting the world in the North temperate zone, extending very slightly within the tropics. Fronds usually ample and bipinnatifid. Sori linear or linear-oblong, sunk in cavities of the frond, placed in single rows parallel with, and contiguous to, the midribs of the pinnae and pinnules; involucre sub-coriaceous, the same shape as the sorus, closing over the cavity like a lid. Woodwardias thrive in any well-drained, light, rich

Woodwardia—continued.

soil, and require plenty of water, both at the roots and overhead, during the summer months. They succeed well if planted out in the conservatory border, and grow much more vigorously than in pots. For general culture, see **Ferns**.

W. angustifolia (narrow-fronded). A synonym of *W. areolata*.

W. areolata (areolate).* *barren fronds* 9in. to 12in. long, 6in. to 8in. broad, on a slender stipes, deltoid-ovate, with numerous oblong-lanceolate, sinuated pinnae on each side, the lower ones 3in. to 4in. long, 4in. to 5in. broad, reaching down to the rachis, which above has a broad wing; both surfaces naked. *fertile fronds* on an elongated, strong, erect, chestnut-brown, naked stem, pinnae 3in. to 4in. long, narrow-linear 4in. to 1in. apart. United States, 1812. See Fig. 228. (H. G. F. 61.) SYN. *W. angustifolia*.

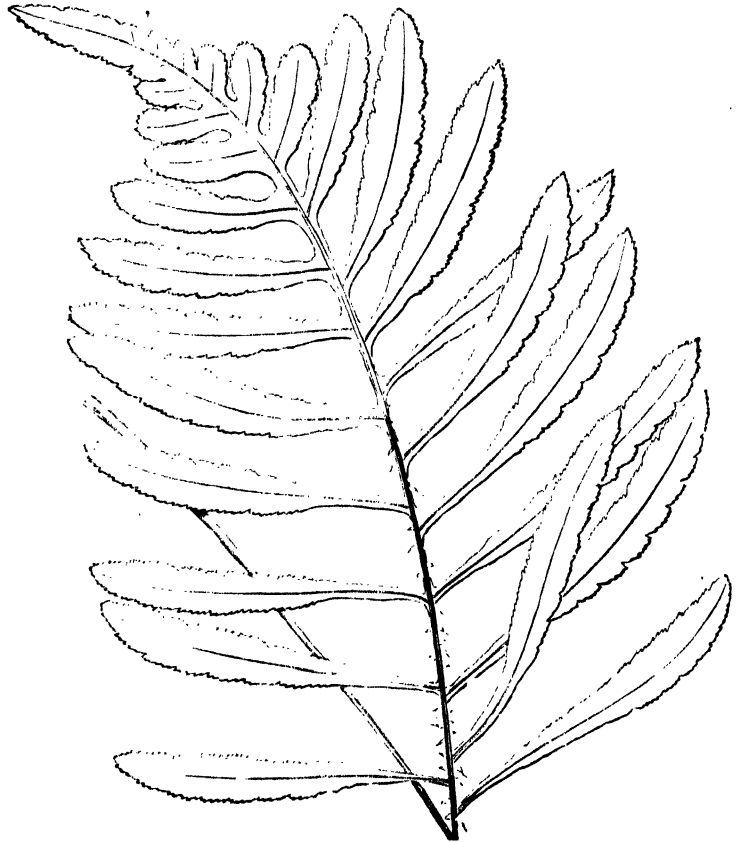


FIG. 228. BARREN FROND OF WOODWARDIA AREOLATA.

W. Harlandii (Harland's). *sti.* 6in. to 18in. long, erect, nearly naked. *barren fronds* varying in shape from linear-lanceolate, undivided, to broadly ovate, with one or two spreading, linear-lanceolate lobes, 3in. to 4in. long, 4in. to 5in. broad, reaching down to a broadly-winged rachis; both surfaces naked. *fertile fronds* with more numerous and narrower lobes, the lowest pair often quite free of the others. *sori* in broad lines close to the midrib of the lobes, with short lines branching from these in an erecto-patent direction. Hong Kong.

W. japonica (Japanese). *sti.* 6in. to 12in. long, erect, scaly below. *fronds* broadly ovate, 1ft. to 1½ft. long, 9in. to 12in. broad; pinnae lanceolate, often 6in. long, 1in. to 1½in. broad, reaching half or two-thirds of the way down to the rachis, the lines of sori which margin the midrib of the pinnae confined to the upper part of the upper ones. China and Japan.

W. orientalis (Eastern). *sti.* erect, densely scaly at base. *fronds* 4ft. to 8ft. long, 1ft. to 1½ft. broad; pinnae lanceolate, sometimes more than 1ft. long, cut down below nearly to the

Woodwardia—*continued*.

rachis into sinuated or pinnatifid pinnules, sometimes 4 in. long, those of the under side shorter, and none at the base of the pinna; veins copiously anastomosing outside the sori; upper surface often producing copious, gemmiferous buds. Japan to Formosa. Closely allied to *W. radicans*.

W. radicans (rooting).* *stl.* strong, erect, naked, scaly at base. fronds 3ft. to 6ft. long, 1ft. to 1½ft. broad; pinna lanceolate, the lower ones often 1ft. long, cut down below within a short distance of the rachis into finely-toothed, lanceolate pinnules 1 in. to 1½ in. long, those of the under side the shortest; veins anastomosing once outside the line of fruit; gemmæ few and large, placed at the base of the upper pinna. Canaries, South Europe, &c., 1779.

W. r. cristata (crested).* A handsome variety, with regularly and symmetrically crested pinnae. 1878.



FIG. 229. PINNA OF FERTILE FROND OF WOODWARDIA VIRGINICA.

W. virginica (Virginian). *stl.* strong, erect, 1ft. to 1½ft. long. oblong-lanceolate, 1ft. to 1½ft. long, 6 in. to 9 in. broad; pinna linear-lanceolate, 4 in. to 6 in. long, ½ in. to 1 in. broad, cut down within one line or less of the rachis into linear-oblong lobes, which are two to three lines broad at the base, the lines of sori which margin the midrib of the pinnae often reaching down in the lower ones. Canada, southward, 1774. See Fig. 229.

WOOD, WAXEN. A common name for *Genista tinctoria* (which see).

WOODY NIGHTSHADE. See *Solanum Dulcamara*.

WOOLLEN. An old name for Mullein (*Verbascum*).

WOOLLEN RAGS. Occasionally, these are used as manure. They should be torn or cut up into shreds, and dug into the soil. Thore they decay slowly, and decompose into substances useful to plants, ammonia being formed, among other products. Owing to their slow decay, their effects are perceived for two or three years. Their action as manure is hastened by steeping them for some months in Sulphuric Acid or Oil of Vitriol; but their fertilising influence ceases more quickly after

Woollen Rags—*continued*.

this treatment. Woollen refuse and rags are made great use of in Kent as manure for Hops, after having been made up for some time in a compost.

WOOLLY APHIS (*Schizoneura lanigera*). An insect more often called the **American Blight** (which see). A few particulars may be added to the account already given of this very dangerous pest to Apple-trees. The wingless females are oval and flattened, with deep constrictions between the body-rings. In general appearance they much resemble blackish-brown Aphides; but the antennæ and limbs are very short, the tail is very small, and the two honey-tubes are extremely small. These wingless females live on the bark, sucking its juices, and produce multitudes of living larvæ, like themselves on a smaller scale. In autumn, winged viviparous females also are found, differing from the wingless females in little but the possession of wings. The winged females produce small, ill-developed insects, of which each gives birth to one egg for the continuance of the species during winter. The larvæ seem to suffer very little from the action of low temperatures, as they are protected under the cottony excretions with which they cover themselves. It is said that in winter they fix themselves on the roots of Apple-trees, and suck the sap from them, returning to the branches in spring. The pupæ are like the winged females, except in having the wings represented only by little scales. The males are small, and, like the winged females, are unable to suck, as the beak is undeveloped.

The popular name (American Blight) points to the belief that this insect has been imported from America into Europe. The earliest European record of its occurrence dates from 1787. In England, it was first observed in a nursery, near London, in which were Apple-trees recently imported from North America. It soon spread, with disastrous results, into the orchards of Devonshire. In Germany it was first observed in 1801, in France and Belgium in 1812. It is now plentiful in many parts of Europe. It feeds on the wild Crab Apple of North America; but several leading American entomologists believe that it has been carried from Europe to America, and not in the reverse direction, as generally supposed.

Remedies. A number of the more highly recommended remedies are mentioned under **American Blight**. The most important point to attend to is the thorough cleansing of the branches, by the aid of a thick brush and any good insecticide, e.g., soft soap in water, alone or mixed with crude carbolic acid of such a strength that the acid does not separate as oily drops when the soap is mixed with water. Usually, about one part of acid to ten of soap is sufficient, thoroughly mixed before water is added. The solution may be used moderately strong to the older branches, weaker to the younger ones. Kerosene may be used instead of the above—Professor Comstock states that he has sprayed it pure on plants, without injury to them—but it is usually employed diluted with four or five times its bulk of water; in this strength it may be applied to the branches without risk of injury. Another useful remedy is employed thus: Towards the end of autumn, or in winter when the weather is mild, the earth for about 3ft. from the tree is thrown back from the old roots, and one or two pailfuls of lime-water, or of lye of wood ashes, is poured in; then about 1 in. of newly-slaked lime is scattered in, and the earth is replaced. All small branches on which the insect is established should be cut off and burned.

WORM GRASS. See *Spigelia marilandica*.

WORMIA (named in honour of Olaus Wormius, a famous Danish philosopher and naturalist). SYN. *Lenidia*. ORD. *Dilleniacæ*. A genus comprising nine species of stove trees; one is found in the Mascarene Islands, another is Australian, and the rest inhabit tropical Asia. Flowers showy, disposed in terminal, often few-flowered panicles

Worms—continued.

sepals five, spreading; petals five; stamens nearly free. Leaves ample, parallel-penniveined. Only two species have been introduced. They thrive in a light, sandy loam. Cuttings of half-ripened wood root readily, if inserted in sand, under a glass, in bottom heat.

W. Burbidgel (Burbidge's).* *f.* pale golden-yellow. 3in. in diameter, sub-cymose on a simple peduncle 2in. to 4in. long; petals obovate-oblong, with broadly undulated margins; stamens almost white. July. *l.* 8in. to 10in. long, almost exactly elliptic, the base contracted and decurrent as a very broad petiole, lin. to 1½in. long, which expands and is amplexicaul at base. Branches terete. North Borneo. (B. M. 6531.)

W. dentata (toothed). A synonym of *W. triquetra*.

W. triquetra (triquetrous). *f.* white, 2in. in diameter, in sub-terminal, leaf-opposed, secund, few-flowered racemes; pedicels lin. long, thickened upwards. May. *l.* broadly oval, 5in. to 8in. long, repand-toothed or sinuated, the tip obtuse or sub-truncate, the base rounded; petioles with broad, sheathing, deciduous wings. *h.* 20ft. Ceylon, 1818. SYN. *W. dentata*.

WORMS. Under this name will be discussed only the Earth Worms, since the Nematoid Worms have been already treated of. The Earth Worms all belong to the genus *Lumbricus*; but many species have been named and described. Their general appearance is too well known to call for description. They possess two rows of bristles along the sides of the body, so short as to be almost invisible, but stiff, and adapted for enabling the Worms to move by their aid; they can be felt on drawing a finger along the sides of the body from behind forwards. On damp evenings and nights the Worms stretch out of their holes to seize on food, and to drag it into their burrows. The trembling of the soil due to footsteps, or the approach of a light, causes a very rapid retreat into their holes. In winter, and in very dry weather, they burrow deep into the soil, beyond the reach of cold and droughts. They feed on decaying vegetable substances, and swallow much earth to obtain such remains of plants as are in it. The earth, after the vegetable matter is digested by the Worm, is ejected close to the opening of the burrow in the form known to all gardeners as "worm-castings."

In most cases, Worms ought to be regarded as useful creatures, since they constantly renew the surface soil with finely-divided earth brought from the sub-soil, and, by means of their burrows, allow the free penetration of rain and air to greater depths than would otherwise be reached. They also promote the more rapid decay of the vegetable remains in the soil. But, on the other hand, they are obnoxious on lawns and in flower borders, because of the untidy appearance of their castings, and of the pieces of leaves, paper, and other things dragged partially into their burrows. They also disfigure plants by dragging in the ends of living leaves. When they get into flower-pots, they are troublesome or hurtful, and should be ejected.

Remedies. After or during mild, warm showers in the dusk of evening, Worms crawl out in large numbers from their holes in search of food, and can be collected by the aid of a lantern; but the operation must be quickly performed, for the reason above stated. Watering the soil—whether in a flower-pot, lawn, or flower border—with a weak solution of smelling salts or Carbonate of Ammonia causes the Worms to come to the surface in a nearly helpless state; and an infusion prepared from Walnut leaves has the same effect. This should be done in the evening. An undue increase in their numbers may be checked by keeping in gardens such creatures as hedgehogs, shrew-mice, frogs, and the *Testacella* slugs, which feed largely on Worms.

WORMWOOD (*Artemisia Absinthium*). A hardy perennial, grown for the use of its leaves and tops medicinally; they are intensely bitter. The plants prefer a somewhat sheltered, rather dry position; very few specimens are generally sufficient. Propagated by seeds, cuttings, and division of the roots, in spring.

WOUNDS. These are often caused in fruit and other trees by an improper use of a knife or hammer, also by friction, e.g., when two branches rub against each other, and in many other ways. Wounds are invariably longer in getting callused and grown over than clean cuts; hence care should specially be taken to prevent any being made in the bark of trees, &c., for want of proper attention or appliances.

WOUNDWORT. See *Anthyllis Vulneraria* and *Stachys*.

WOUNDWORT, HERCULES'. A common name for *Heracleum* (which see).

WREATH. A floral head-dress which goes all round the head. It is generally made up of choice flowers of rather small or medium size. Another kind of Wreath is that made, in various sizes, of fresh or dried flowers, for funerals, &c. The outline is circular; and a framework upon which to fasten the flowers may easily be made with a piece of strong wire, or of thin board or cardboard, cut into the size and shape desired. Either green moss or sprigs of Myrtle or Box may be bound round to cover the frame before the flowers are arranged.

WREATHWORT, PURPLE. A common name for *Orchis mascula* (which see).

WREATH, PURPLE. See *Petroselinum volubile*.

WRIGHTIA (named after William Wright, 1740-1827, a Scotch physician and botanist). Palay or Ivory-tree. SYN. *Balfouria*. ORD. *Apocynaceæ*. A genus including about a dozen species of stove shrubs or small trees, with often slender, cord-like branches, natives of tropical Africa, Asia, and Australia. Flowers red, white, or yellow, in terminal or sub-axillary, sessile cymes; calyx short, five-parted, with glands or scales inside; corolla salver-shaped, the tube cylindrical, usually short, the throat with one or two series of usually fimbriated scales; stamens at the top of the tube; filaments short, dilated. Leaves opposite, penniveined. The best-known species are here described. They thrive in a mixture of peat, loam, and sand. Cuttings root readily if inserted in sand, in heat.

W. coccinea (scarlet).* *f.* dark red, lin. in diameter; corolla thick, almost fleshy; scales crimson; cymes three or four-flowered. July. *l.* elliptic or elliptic-lanceolate, 3in. to 5in. long, membranous, obtusely caudate-acute, acute at base; petioles very short. *h.* 12ft. and upwards. India, 1822. A glabrous or pubescent tree. (B. M. 2696.) SYN. *Nerium coccineum* (L. B. C. 894).

W. dubia (doubtful). *f.*, corolla lobes yellow outside, orange-red within, ten lines long, spreading, acuminate; pedicels rather shorter than the flowers; cymes three-flowered, glabrous. June. *l.* ovate-lanceolate, 3in. to 4in. long, glabrous, slightly undulated, rather obtusely acuminate. Native country uncertain, 1813. Shrub. SYN. *Cameraria dubia* (B. M. 1646).

W. pubescens (downy). *f.* white, sessile or shortly pedicellate; cymes terminal, trichotomous, corymbose, not exceeding the leaves; corolla tube scarcely exceeding the calyx, the lobes twice as long. March. *l.* shortly petiolate, ovate to elliptic-oblong, acuminate, 2in. to 4in. long. North Australia, 1829. A pubescent or velvety-tomentose, tall shrub or small tree.

W. tinctoria (dyers). *f.* white, 3in. to 4in. in diameter; cymes sometimes 6in. in diameter, with slender, spreading, dichotomous branches. Summer. *l.* elliptic-ovate, elliptic-lanceolate, or obovate-oblong, 3in. to 5in. long, obtusely acuminate or caudate, acute or rounded at base; petioles very short. India, 1812. A small, glabrous tree. (B. F. S. 241; B. E. 933.)

WRIGHTIA (of Roxburgh). A synonym of *Wallichia* (which see).

WULFENIA (named in honour of Francis Xavier Wulfen, 1778-1825, a botanical author). ORD. *Scrophulariaceæ*. A small genus (four species) of hardy, glabrous or scarcely pilose, perennial herbs, with a thick rhizome, natives of Carinthia, Western Asia, and the Himalayas. Flowers blue, ebraeteolate, nodding, solitary in the axils of the bracts, racemose or spicate at the tops of the scapes; calyx five-parted; corolla tube exserted, cylindrical; limb of four erecto-patent, imbricated lobes, the

Wulfenia—continued.

upper one emarginate or bifid, the lower one entire or crenate; stamens two; peduncles scape-like, simple, with a few alternate scales. Leaves sub-radical, petiolate, crenate. The two introduced species are well adapted for the rockery, or for ornamenting well-drained but moist flower borders, being very showy when in blossom. Any light, rich soil is suitable; the protection of a frame in winter is desirable, as the plants are liable to rot if left in the open air at that season. Propagation may be effected by divisions, or by seeds.

W. Amherstiana (Amherst's)* *f.* horizontal; corolla $\frac{1}{2}$ in. long, with lanceolate, acute lobes; pedicels shorter than the calyx; racemes long, slender, very many-flowered; scapes 5 in. to 10 in. long, slender. July. *l.* obovate-oblong or obovate-spathulate, 2 in. to 5 in. long, coarsely crenate or lobulate, narrowed at base and sub-pinnatifid; petioles $\frac{1}{2}$ in. to $\frac{1}{4}$ in. long. Himalayas, 1846.

W. carinthiaca (Carinthian)* *f.* corolla tube $\frac{1}{2}$ in. long, the limb shorter, the upper segments bifid, the lower sub-crenate; pedicels much shorter than the calyx; raceme dense, spike-like, at length elongated; scape 1 ft. to 2 ft. long, scaly below. July. *l.* oblong or oboval-oblong, doubly-crenate, slightly lobed, narrowed at base; radical ones few, 5 in. to 8 in. long. Carinthian Alps, 1817. (B. M. 2500; S. B. F. G. 66.)

WULFFIA (named in honour of John C. Wulff, who died in 1767, author of "Flora Borussia"). **SYNS.** *Chakiatella*, *Chylodia*, *Tilesia*. **ORD.** *Compositæ*. A small genus (eight species have been described, but all are not distinct as such) of tropical American, stove, scabrous-pubescent, perennial herbs. Flower-heads yellow, at first depressed, at length globose, pedunculate, solitary or three to seven in a corymb; involucre hemispherical, with two or three series of bracts; receptacle slightly convex, the pales enveloping the florets; ray florets, when present, entire or minutely toothed; achenes glabrous or slightly pilose. Leaves opposite, petiolate, crenate-serrated. *W. maculata*, the only species introduced, is of easy culture in any light soil. Propagation may be effected by seeds, or by divisions.

W. maculata (spotted). *f.* heads orange-yellow; ray florets about eight, twice as long as the involucre; peduncles terete, terminal. June. *l.* oblong-lanceolate, cuneate at base, acuminate at apex, serrated, scabrous above, nearly glabrous beneath. Stem erect, tetragonal, spotted. *h.* 3 ft. Brazil, 1822. **SYN.** *Gymnolomia maculatum* (B. H. 662).

WULLSCHLEGELIA (named after Herr Bischoff Wullschlegel, who collected *W. aphylla* in Jamaica). **ORD.** *Orchidæ*. A small genus (two species) of stove, terrestrial, leafless Orchids, found in the West Indies and Brazil. Flowers very small, in loose, sub-sessile spikes; lip sessile at the base of the column, erect, concave, the base produced in a pouch or spur. Stems simple, with a few small scales. The species are of no horticultural value.

WURMBEA (named in honour of F. van Wurmb, Secretary to the Academy of Sciences at Batavia). **ORD.** *Liliacæ*. A genus consisting of seven species of greenhouse plants, with tunicated bulbs or corms, natives of South Africa and Australia. Flowers bracteate, subsessile, in a short, terminal, pedunculate spike; perianth sub-campanulate or expanded nearly from the base, persistent, the lobes longer than the tube, sub-equal, spreading; stamens six. Leaves few, linear- or rarely ovate-lanceolate, continuous with the sheaths. *P. campanulata* and its varieties, the only plants calling for description here, are pretty subjects when in flower. They thrive in a compost of sandy peat and a little loam. Propagation may be easily effected by seeds, or by offsets.

W. campanulata (bell-shaped). *f.*, perianth pallid, 4 in. to 6 in. long, the tube campanulate, the segments lanceolate, acute, black-glandular above the base; spikes 1 in. to 3 in. long, loose or dense-flowered. May and June. *l.* three or four, firm; lower ones linear, 3 in. to 5 in. long; upper ones lanceolate, dilated at base, embracing the stem. Bulb ovoid; tunic brown. A. 6 in. to 12 in. South Africa, 1819. **SYN.** *Melanthium monopetalum* (B. M. 1891). *W. surreses* (A. B. R. 221; B. M. 694) is regarded, by Baker, as a form of this species; it has a lurid-purple perianth, the segments equalling or exceeding the campanulate tube.

Wurmbea—continued.

W. c. longiflora (long-flowered). *f.*, perianth pale, $\frac{1}{2}$ in. to $\frac{3}{4}$ in. long, the segments equalling or shorter than the cylindrical tube. 1788. A robust variety. *W. pumila* is a dwarf form of this, with three or four flowers in a spike, and linear leaves.

W. pumila (dwarf). A form of *W. campanulata longiflora*.

W. purpurea (purple). A form of *W. campanulata*.

WÜRTHIA. A synonym of *Ixia* (which see).

WYCH ELM. See *Ulmus glabra* and *U. montana*.

WYETHIA (so called after N. B. Wyeth, the discoverer of this genus in the mountains of North America). **SYN.** *Alarconia*, *Melurhiza*. **ORD.** *Compositæ*. A genus of seven species of hardy, perennial, North American herbs, with a thick caudex. Flower-heads yellow, large, heterogamous, radiate; involucre hemispherical, the bracts in two or three series, scarcely unequal; receptacle flat or slightly convex; ray florets ligulate, spreading; disk florets shortly five-cleft at apex; achenes glabrous. Leaves radical or alternate, entire. Stem often simple and one-headed. Only one species calls for mention here. For culture, see **Helianthus**.

W. angustifolia (narrow-leaved). *f.* heads yellow, solitary; scales of involucre mostly foliaceous, lanceolate or broader, equalling the disk; involucre fully lin. high, loose or spreading; rays numerous, $\frac{1}{4}$ in. long. Autumn. *l.* radical ones stalked, elongated-lanceolate, tapering to both ends, occasionally dentate or serrate, often undulate; cauline ones sessile, broader. *h.* 6 in. to 2 ft. United States.

WYMOT. An old name for Marsh Mallow (*Althæa*).

XANTHISMA (from *xanthisma*, yellowness; alluding to the colour of the flowers). **SYN.** *Centaureidium*. **ORD.** *Compositæ*. A monotypic genus. The species is a hardy, annual or biennial herb. Seeds should be sown in the open border, during April.

X. texanum (Texan). *f.* heads wholly yellow, heterogamous, mediocre, solitary, at the tips of the branches; involucre broadly campanulate, or at length sub-globose, the imbricated bracts in several series; receptacle flat, strongly fimbriiferous; achenes glabrous; pappus reddish, shining. Summer. *l.* alternate, linear-lanceolate, entire, pale, erect, sessile, about lin. long. *h.* 1 ft. to 2 ft. Texas, 1877. (B. M. 6275.)

XANTHIUM (the old Greek name used by Dioscorides, from *xanthos*, yellow; the plants were formerly used by the Greeks for dyeing hair). Cockle Bur; Clot Bur. **ORD.** *Compositæ*. A genus consisting of about four species of hardy, annual herbs, dispersed over warm and temperate regions. Flower-heads solitary or glomerate at the axils, unisexual. Leaves alternate, lobed or toothed. The species are of no horticultural value. *X. spinosum* (Bathurst Bur; Spiny Clot-Bur) and *X. strumarium* (Ditch or Louse Bur; Small Burdock) are casual weeds in Britain.

XANTHOCEPHALUM (from *xanthos*, yellow, and *cephale*, a head; alluding to the yellow flower-heads). **SYN.** *Xanthocoma*. **ORD.** *Compositæ*. A genus consisting of eight species of greenhouse or hardy herbs or sub-shrubs; one is found in Ecuador, and the rest are Mexican. Flower-heads wholly yellow, rather large or mediocre, solitary or loosely corymbose at the tips of the branches, heterogamous; involucre hemispherical or broadly campanulate, the imbricated bracts in several series; receptacle flat, foveolate; ray florets ligulate, spreading, nearly entire; disk florets five-cleft at apex; achenes glabrous. Leaves alternate, narrow, entire or toothed. Only two species call for mention here. Both thrive in any fairly good soil. *X. centaureoides* may be increased by cuttings, and *X. gymnospermoides* by seeds.

X. centaureoides (Centaurea-like). *f.* heads yellow, solitary involucre clammy; outer scales spreading. July to September. *l.* sessile, thickish, linear, pinnatifidly toothed, wrinkled, glabrous. *h.* 1 ft. Mexico, 1822. Greenhouse sub-shrub. **SYN.** *Grindelia coronopifolia*.

Xanthocephalum—continued.

FIG. 230. INFLORESCENCE OF XANTHOCEPHALUM GYMNOSPERMOIDES.

X. gymnospermoides (Gymnosperma-like).* *fl.* heads orange-yellow, about lin. in diameter, corymbose. September. *l.* 3/4 in. to 6 in. long, lanceolate, linear, and small above, the lower ones sub-spathulate and serrated towards the point, the rest entire. *h.* 2 ft. to 4 ft. New Mexico, 1859. Hardy annual. See Fig. 230. SYN. *Gutierrezia gymnospermoides* (B. M. 5155).



FIG. 231. FRUITS OF XANTHOCEPHALUS SORBIFOLIA.

XANTHOCERAS (from *xanthos*, yellow, and *keras*, a horn; alluding to the yellow, horn-like glands or nectaries between the petals). ORD. *Sapindaceæ*. A monotypic genus. The species is a small, hardy tree, thriving in any light garden soil. It is difficult to propagate in any other way than from seeds; but root-cuttings sometimes succeed.

X. sorbifolia (Sorbus-leaved). *fl.* white, with blood-red streaks at the base, large, regular, polygamous; sepals five, equal, boat-shaped, imbricated; petals five, elongated, clawed, without scales; disk cup-like; stamens eight; pedicels long, bracteate at base; racemes simple, terminal. *fr.* three-celled, the size of an apple. *l.* alternate, exstipulate, imparipinnate; leaflets serrated. *h.* 5 ft. to 15 ft. China, 1870. See Fig. 231. (B. M. 6923; F. d. S. 1899; G. C. n. s., v., p. 565, and xxvi., p. 205; I. H. 1877, 295; R. H. 1872, p. 291.)



FIG. 232. XANTHOCHYMUS PICTURIUS.

XANTHOCHYMUS (from *xanthos*, yellow, and *chymos*, juice; the plants contain an abundance of yellow juice). SYN. *Stalagmites*. ORD. *Guttifera*. A small genus (four species) of stove trees, with the habit of *Garcinia* (under which *Xanthochymus* is included by Sir J. D. Hooker, in his "Flora of British India"), inhabiting tropical Asia and Africa, and Madagascar. Sepals and petals five, very rarely four; filaments connate in five, rarely four, erect, distant, pedicellate, spatulate bodies. Berry indehiscent. Three of the species have been introduced. They thrive in a compost of loam and

Xanthochymus—*continued.*

peat; and may be propagated by cuttings of ripened shoots, inserted in sand, under a glass, in strong bottom heat.

X. dulcis (sweet-fruited). *f.* cream-white, in fascicles; petals convolving in a globular form; peduncles scarcely longer than the flowers. February. *fr.* bright yellow, smooth, the size of an apple, with copious yellow pulp, palatable and good. *l.* opposite, bin. or more long, oblong, acuminate, coriaceous, entire, bright glossy green, paler beneath. *h.* 20ft. Molucca Islands, 1820. (B. M. 3088.)

X. ovalifolius (oval-leaved). *f.* white, $\frac{1}{2}$ in. to $\frac{3}{4}$ in. in diameter, the males and females often mixed in one fascicle, but usually the females are fasciated and the males spikid. Summer. *fr.* deep green, the size of a walnut. *l.* sub-orbicular to lanceolate, obtuse, $\frac{3}{4}$ in. to $\frac{8}{10}$ in. long. India. A middling-sized tree. SYN. *Garcinia ovalifolia*.

X. pictorius (painter's)*. *f.* white; males $\frac{3}{4}$ in. in diameter, in four to eight-flowered fascicles from the axils of fallen leaves; hermaphrodite ones like the males. Summer. *fr.* dark yellow, the size of an apple, globose, pointed. *l.* linear-oblong or oblong-lanceolate, $\frac{5}{8}$ in. to $\frac{1 \frac{1}{2}}$ in. long, coriaceous, shining, reticulated. Trunk straight. *h.* 40ft. India. This tree yields a large quantity of indifferent gamboge. See Fig. 232. (B. F. S. 88; R. H. 1881, p. 13.) SYN. *Garcinia Xanthochymus*.

XANTHOCOMA. A synonym of **Xanthocephalum** (which see).

XANTHOCROMYON. A synonym of **Trimezia** (which see).

XANTHORHIZA (from *xanthos*, yellow, and *rhiza*, a root; alluding to the bright yellow colour of the long roots and rootstock). SYN. *Zanthorhiza*. ORD. *Ranunculaceæ*. A monotypic genus. The species is a hardy, dwarf shrub or under-shrub. It thrives in common garden soil, and may be increased by suckers.

X. apiifolia (Apium-leaved). *f.* dark purple, small, often polygamous, in slender, compound racemes, appearing before (and under) the leaves; sepals five, petaloid; petals five, small, clawed, often dilated at apex. March and April. *l.* pinnate, long-petiolate; leaflets three to five, ovate and lanceolate-ovate, incisely lobed and toothed from near the acute base. Stems 2ft. to 3ft. high. North America. 1766. (B. M. 1736; B. M. Pl. 9.)

XANTHORRHEGA (from *xanthos*, yellow, and *rheo*, to flow; referring to the resinous juice extracted from the plants). Black Boy; Grass Gum-tree; Grass-tree. ORD. *Juncaceæ*. A genus embracing eleven species of greenhouse, long-lived perennials, with a thick, woody caudex, all natives of Australia. Perianth persistent, of six distinct segments; stamens six; scape or peduncle terminal, hard, often several feet long, terminating in a dense, cylindrical spike of numerous sub-sessile flowers, closely packed with numerous bracteoles surrounding each flower within a small or subulate, subtending bract. Leaves in a dense tuft at the top of the caudex, long-linear, brittle, spreading or recurved, their broader, closely imbricated bases remaining long persistent. Caudex of several species emitting a copious, dark or yellow, resinous gum (the former kind called Black-boy Gum, and the latter Botany Bay or Acaroid Resin). Some of those plants form conspicuous features in Australian landscapes. Those best known to cultivation are here described; all have white flowers, appearing in spring. They thrive in a compost of peat and loam and may be increased by offsets.

X. arborea (tree-like). Botany Bay Gum. *f.*, perianth segments about $\frac{1}{2}$ in. long, three-nerved; spike 3ft. to 4ft. long, $\frac{1}{2}$ in. to $\frac{1 \frac{1}{2}}$ in. in diameter; scape 5ft. to 6ft. long. April. *l.* flat or triquetrous. 3ft. to 4ft. long, two or three lines broad. Caudex attaining several feet in height, with a diameter of 6in. to 9in.

X. australis (Southern). *f.*, spike, when full grown, upwards of 2ft. long, nearly $\frac{1}{2}$ in. in diameter; scape usually about 2ft. high. Summer. *l.* about 2ft. long, one line or rather more broad, somewhat flat, but with the dorsal angle, and sometimes also the facial one, prominent. Caudex elongated, but rarely exceeding 2ft. in height. 1824.

X. bracteata (conspicuous-bracted). *f.*, spike usually 4in. to 6in. long, $\frac{1}{2}$ in. or sometimes $\frac{3}{4}$ in. in diameter; subtending bracts subulate and very conspicuous in the young spike; scape 2ft.

Xanthorrhæa—*continued.*

to 3ft. high. Summer. *l.* about 2ft. long, one line or rather more broad, concave above, the dorsal angle slightly projecting in the lower part, tapering upwards into a narrow, triquetrous point. Caudex very short. 1810.

X. hastilis (spear-like). *f.*, spike 1ft. to 2ft. long, a dense, rusty tomentum covering the ends of the bracts and outer perianth segments; scape often 6ft. to 8ft. long below the spike. *l.* 3ft. to 4ft. long, two to three lines broad, flat in front, but with the dorsal angle more or less prominent. Caudex very short, or often scarcely prominent. 1803. (B. M. 4722; F. d. S. 868.)

X. minor (lesser). *f.*, spike 3in. to 6in., rarely 7in. or even 8in., long, seven to eight lines in diameter when fully out; scape, when full grown, often longer than the leaves. *l.* crowded on the caudex, 1ft. to 2ft. long, one to nearly two lines broad, flat but thick, or more or less triquetrous. Caudex short and thick. 1804. (B. M. 6297.)

X. Preissii (Preiss)*. *f.*, perianth segments about $\frac{1}{2}$ in. long, the outer ones oblong, the inner ones broader; spike 1in. in diameter; scape 2ft. to 6ft. long (including the spike, which occupies half to nearly the whole length). April. *l.* from a short, flat base, 2ft. to 4ft. long, one to two lines broad, rigid, very brittle when young. Caudex thick and simple, short, or attaining 5ft. to 6ft. (sometimes, according to Oldfield, as much as 15ft.). (B. M. 6933.)

X. quadrangulata (quadrangular). *f.*, spike 3ft. to 4ft. long, $\frac{1}{2}$ in. in diameter when in flower; scape as long, or longer. *l.* slender but rigid, 1ft. long, strictly quadrangular, though sometimes slightly flattened, rarely above one line broad. Caudex lengthening out to several feet. 1874. (B. M. 6075.)

XANTHOS. This term, used in Greek compounds, signifies such yellow as gamboge; e.g. Xanthophyll, the yellow colouring matter of plants.

XANTHOSIA (from *xanthos*, yellow; alluding to the yellow down with which some of the species are covered). SYN. *Leucolæna*. ORD. *Umbelliferae*. A genus comprising seventeen species of greenhouse herbs or small shrubs, diffuse or decumbent at the base, or erect, often clothed with long, soft hairs, mixed with a stellate tomentum, natives of Australia. Calyx lobes peltate, cordate, or not attached by the whole of the base; petals with an induplicate point and reduplicate margins; umbels usually compound, the partial ones with two or three bracts, and several almost sessile flowers, the general one of three or four rays, and as many bracts, but sometimes the whole umbel reduced to very few, or to a single flower. Leaves toothed, lobed, or ternately divided. The two species introduced require similar treatment to **Trachymene** (which see).

X. hirsuta (hairy). A synonym of *X. pilosa*.

X. montana (mountain-loving). A synonym of *X. pilosa*.

X. pilosa (pilose). *f.* white; peduncles usually two at the nodes, each usually with two flowers, more rarely three or only one, with two or three short, narrow bracts forming a general involucre at the base of the short pedicels or rays. June. *l.* coarsely sinuate-toothed, three or five-lobed or rarely three-parted, the central lobe always longer than the lateral ones, rarely exceeding 1in. in length. *h.* 1ft. to 2ft. 1826. An erect, or more frequently diffuse or procumbent shrub. SYNS. *X. hirsuta*, *X. montana*.

X. rotundifolia (round-leaved)*. *f.* white, rather numerous, on very short pedicels; peduncles long, each bearing a rather large, compound umbel; rays usually four, with a sessile umbellule in the centre; involucre bracts petal-like. June. *l.* shortly petiolate, nearly orbicular, irregularly and acutely toothed, $\frac{1}{2}$ in. in diameter, glabrous or woolly beneath, especially when young. Stems erect, 1ft. to 2ft. high, often woody at base. 1836. (B. M. 3582.)

XANTHOSOMA (from *xanthos*, yellow, and *soma*, a body; alluding to the large, lobed, depressed, yellow stigma). Including *Acontias* and *Phyllotanium*. ORD. *Aroidæ* (*Araceæ*). A genus consisting of about twenty-five species of stove, milky, perennial herbs, inhabiting tropical America. Flowers monœcious, the imperfect males between the perfect ones and the females; spathe tube oblong or ovoid, convolute, accrescent, persistent, at length bursting irregularly, the throat constricted, the lamina boat-shaped; spadix inappendiculate, shorter than the spathe, and adnate with it at base; male inflorescence cylindrical or clavate, elongated, the imperfect

Xanthosoma—continued.

portion constricted; female shorter, dense-flowered, attenuated above; peduncles one or several, rarely elongated. Leaves sagittate, hastate, or pedatisect, on long



FIG. 233. XANTHOSOMA BARILLETII.

and thick petioles. The best-known species are here described. They thrive in any rich, light, well-drained soil. Propagation is effected by cutting up the stem or rootstock into small portions, and planting these in light soil, or in cocoa fibre, in bottom heat. After a stem has been cut off, a large number of shoots are developed, which strike readily when submitted to the same treatment as that recommended for root-cuttings. Some of the species may be used for sub-tropical work: they should have a sheltered place in a well-drained bed, principally made up of leaf mould, and an abundance of water.

X. auriculatum (eared). *fl.*, spathe greenish outside, white within, 8in. long, the tube ovoid-oblong, the lamina oblong-lanceolate, acuminate; spadix as long as the spathe. *l.* three-lobed, cordate-hastate; middle lobe oblong, acuminate, cuspidate; basal lobes recurved, spreading, oblong or ovate-oblong, twice or thrice as long as the middle lobe; petioles reddish, or green and rufous-striolated or variegated. Brazil, 1869. (R. G. 1869, 603.)

X. Barilletii (Barillet's).* *l.* arranged on a robust petiole attaining 3ft. in length, deeply channelled at its base, which is broadly winged, the whole of a beautiful shining green;

Xanthosoma—continued.

blade digitately-palmate, divisions entire, unequal, strongly nerved, the median lobe 1ft. to 1½ft. long, of a dull green. Brazil, 1882. Plant caulescent. See Fig. 233. (R. H. 1882, p. 260.)

X. belophyllum (arrow-leaved). *fl.*, spathe 8in. long, the tube greenish-white within, the lamina pale yellow, acuminate; spadix whitish, much shorter than the spathe. *l.* large, opaque and slightly pruinose above, cinereous or often pale greenish beneath, 1½ft. to 2ft. long, cordate-hastate; middle lobe shortly apiculate; basal ones semi-ovate, slightly acute. Stem short and thick. Venezuela and Guiana.

X. helleborifolium (Hellebore-leaved). *fl.*, spathe 3½in. to 4½in. long, the tube green, avoid, nearly glabrous, the lamina yellowish-green, oblong-lanceolate, shortly cuspidate; spadix 5in. long; peduncles equalling or slightly exceeding the petioles. *l.* on very long petioles, green, spotted and striated with dark violet, reniform, pedatisect, 8in. to 12in. broad; segments five, nine, eleven, or thirteen, distant, the lateral ones unequally oblong or lanceolate, cuneate towards the base, acuminate at apex, gradually smaller. *b.* 1½ft. to 2ft. Venezuela, &c., 1793. SYNS. *Acutias helleborifolius*, *Arum helleborifolium*.

X. Jacquini (Jacquin's). *fl.*, spathe tube green outside, dark purple within, 2½in. long, the lamina pale greenish-yellow outside, whitish within, about 4in. long; spadix whitish, sessile, about equalling the spathe; peduncles about 4in. long, nearly ½in. thick. *l.* on long petioles, broadly cordate-sagittate, 1½ft. to 2ft. long; middle lobes rounded at apex, shortly apiculate; basal ones retrose, obtuse, half as long as the middle one. Stem thick, about 2ft. high. Venezuela, 1816.

X. Lindenii (Linden's).* *l.* hastate-oblong, 1ft. long, glabrous except the midrib, deep green, the midrib and numerous well-



FIG. 234. XANTHOSOMA VIOLACEUM.

Xanthosoma—continued.

marked veins ivory-white; middle lobe oblong, acute; basal ones inequilateral, obtuse, extrorse; petioles rather longer than the blades, sheathing one-third their length. Rhizome tuberous. New Grenada, 1871. A showy, variegated plant. SYN. *Phyllotantium Lindenii* (L. H. 1872, 88).

X. maculatum (spotted). *l.* green, sagittate-triangular; petioles purplish, with a glaucous bloom, and margined on the sheathing portion with white. 1861. A bold-habited plant. SYN. *Alocasia albo-violacea*.

X. Maximiliani (Maximilian's). *fl.*, spathe 8in. to 9in. long, the tube glaucous-purple, green at back outside, within and at the throat blood-purple, ovoid, tumid, the lamina straw-coloured outside, sulphur-white within, the base and margins blood-purple; spadix straw-coloured and dirty orange. *l.* triangular-hastate, of a pleasing green; basal lobes broadly rhomboid. Stem tall. *fl.* 5ft. Brazil, 1860.

X. mirabile (wonderful). *fl.*, spathe primrose-yellow, 5in. to 6in. long, curved; spadix somewhat stipitate, shorter than the spathe. *l.* green, spotted with yellow, trisected, 10in. to 12in. long; segments ovate-lanceolate, acute, the lateral ones very inequilateral, shorter than the middle one; petioles three or four times as long as the leaves. Rhizome tuberous. South America, 1874. (G. C. n. s., pp. 258, 259.)

X. plumbea (lead-coloured). A synonym of *Alocasia cuprea*.

X. robustum (stout). *fl.*, spathe 8in. to 10in. long, the tube green, the lamina whitish, broadly ovate-lanceolate, acute; spadix whitish, rather shorter than the spathe. *l.* opaque above, paler beneath, pruinose, sagittate-ovate, 1ft. or more long; middle lobe semi-ovate, acutely cuspidulate; basal ones sub-rhomboid or oblong, obtuse. Stem 4in. to 8in. long, nearly or quite 2in. thick. Mexico.

X. sagittifolium (sagittate-leaved). Arrow-leaved Spoonflower. *fl.*, spathe 6in. to 7in. long, the tube greenish, the lamina whitish-green; spadix much shorter, and peduncles longer, than the spathe. *l.* 16in. to 20in. long, broadly sagittate-ovate, pruinose; middle lobe broadly semi-ovate, acuminate-apiculate, twice as long as the acute basal ones. Stem thick, erect, 3ft. or more high. West Indies, 1710. (B. M. 4989.)

X. violaceum (violet)*. *fl.*, spathe tube glaucous and pale violet outside, yellowish-white within, oblong, 4in. long, the lamina sulphur-white, 6in. long; spadix violet and white, 7in. long; peduncles 6in. to 8in. long. *l.* pruinose, at length green, paler beneath, 8in. to 16in. long, sagittate-oblong-ovate; middle lobe shortly acuminate-apiculate; basal ones a third or a quarter as long, sub-triangular; petioles brownish-violet, nearly twice as long as the blades. Rhizome short. West Indies, 1864. See Fig. 234.

X. Wallisii (Wallis). *l.* large, hastate, of a rich dark green; veins white, or nearly so. Antioquia, 1869.

XANTHOXYLUM. See *Zanthoxylum*.

XENTATEUM. A synonym of *Clintonia* (which see).

XENOCARPUS. A synonym of *Cineraria* (which see).

XENOPHONTA. A synonym of *Barnadesia* (which see).

XERANDRA. A synonym of *Iresine* (which see).

XERANTHEMUM (from *xeros*, dry, and *anthemon*, a blossom; alluding to the dry nature of the flowers, which retain their form and colour for years). Immortelle. SYN. *Harrisonia* (of Necker). ORD. *Compositæ*. A small genus (four or five species) of hardy, erect, branched, hoary, annual herbs, inhabiting the Mediterranean region and the Orient. Flower-heads solitary, long-pedunculatè at the tips of the branches, heterogamous, disk-formed; involucre campanulate or oblong-cylindrical; bracts in several series, imbricated, the inner ones pink or whitish (rarely blue?); receptacle flat, with rigid pales; limb of the florets bilabiate. Leaves alternate, narrow, entire. The two best-known species are here described. Seeds only require sowing on a light, rich soil. Several plants formerly included here will now be found under *Helichrysum*, *Helipterum*, and *Phenacoma*.

X. annuum (annual)*. *fl.* heads purple; involucre hemispherical, highly glabrous, the inner bracts much longer, diverging-radiate; florets more than 100. July. *l.* linear or oblong, with revolute margins. *fl.* 2ft. South Europe, 1570. (J. F. A. 388.)

X. erectum (erect). A synonym of *X. inapertum*.

X. inapertum (not open). *fl.* heads white; involucre ovoid-oblong, highly glabrous, the inner bracts a trifle longer, scarcely radiating; florets thirty to forty. June. *l.* linear or oblong, with revolute margins. *fl.* 2ft. South Europe and Persia, 1836. SYN. *X. erectum*.

XERONEMA (from *xeros*, dry, and *nema*, a thread; the filaments dry and persist). SYN. *Scleronema*. ORD. *Liliacæ*. A monotypic genus. The species is an interesting and elegant, stove perennial, with a very short rhizome and fasciated root-fibres. It thrives in a compost of rich, sandy loam and leaf mould. Propagation may be effected by seeds, or by division of the rootstock.

X. Moorei (Moore's). *fl.* clustered, erect, shortly pedicellate; perianth bright crimson, ½in. to ¾in. long, persistent, the segments distinct, linear, erect, sub-equal; stamens six, exserted; raceme terminal, simple, secund, the rachis abruptly inflexed at base, often horizontal. *l.* clustered at the base of the stem, 12in. to 16in. long, erect. Stem erect, simple, about 20in. long, with a few reduced leaves. New Caledonia, 1878. (G. C. n. s., x., p. 17; L. H. 1877, 297.)

XEROPHYLLUM (from *xeros*, dry, and *phyllon*, a leaf; alluding to the dry, Grass-like leaves). ORD. *Liliacæ*. According to Baker, a monotypic genus. The species is a handsome, hardy, perennial, sub-aquatic herb. It succeeds in a peat border, and will, if treated with care, ripen seeds, by which means, and by division of the roots, the plant may be propagated.

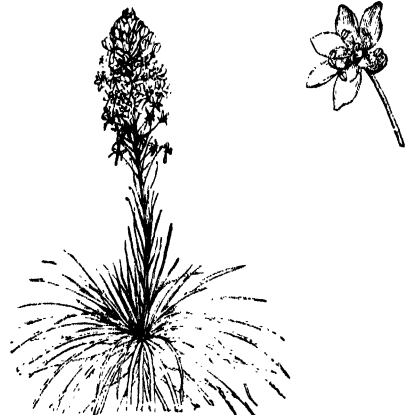


FIG. 235. *XEROPHYLLUM ASPHODELOIDES*, showing Habit and detached Single Flower.

X. asphodeloides (Asphodel-like)*. Turkey's Beard. *fl.*, perianth whitish, six-parted, ½in. long, the segments spreading, many-nerved at back; stamens six, hypogynous, rather shorter than the perianth; pedicels ascending, solitary, not jointed, ½in. to 1½in. long; raceme dense, 4in. to 6in. long, 2in. to 3in. broad. May. *l.* radical, in a very dense rosette, subulate, persistent, 1ft. to 1½ft. long, one line broad, reclined, rough on the margins, remarkably dry and rigid. Stem 1ft. to 2ft. high, its leaves reduced to bristle-like bracts. Rhizome thick. North America, 1765. See Fig. 235. (G. C. n. s., xiii., p. 453.) SYN. *X. setifolium* (B. B. 1613), *Helonias asphodeloides* (B. M. 748).

X. s. tenax (tenacious). *fl.* rather larger; stamens equalling or exceeding the perianth. *l.* ½in. to ¾in. broad. 1811.

X. setifolium (bristle-leaved). A synonym of *X. asphodeloides*.

XEROPHYTA. A synonym of *Vellozia* (which see).

XEROTES (from *xerotes*, dryness; alluding to the arid herbage). SYN. *Lomandra*. ORD. *Juncacæ*. A genus comprising thirty species of greenhouse, perennial or rarely annual, rigid herbs, natives of Australia, one species being also found in New Caledonia. Flowers small, the males usually either in dense clusters or solitary along the branches of a panicle, sessile or pedicellate within short, scarious bracts; female inflorescences either similar to the males, or less branched, or reduced to single, sessile, globular heads, or rarely both sexes in dense, globular or oblong heads, along a simple rachis, or connected into a long, dense, cylindrical spike; scapes or peduncles short, or the inflorescence sessile in the tufts of radical leaves or at the ends of the leafy stems.

Xerotes—continued.

or more or less elongated below the inflorescence. Stems tufted. Only two species call for description in this work. Both are perennials, thriving in light, rich soil. They may be increased by division of the root.

X. longifolia (long-leaved). Australian Tussock Grass. *f.* greenish-white; clusters dense, sessile along the rachis at the bases and ends of the branches; whole inflorescence 6in. to nearly 12in. long; scape 1ft. to nearly 2ft. high, much flattened below the panicle. June. *l.* radical or nearly so, 1ft. to 2ft. long, one to three lines broad, flat or concave, with a short, sheathing base, mostly two-toothed at apex. *h.* 3ft. 1798. (B. R. 1839, 3.)

X. rigida (rigid). *f.* greenish-white, sessile in sessile clusters; inflorescence 1½in. to 2in. long, shortly branched at base; male scapes from some of the lower axils flat and broad, 1½in. to 2in. long. June. *l.* thick and rigid, less than 1ft. long, 2in. to 2½in. wide, spreading, obtuse, truncate, or two-toothed at apex, the short sheaths covering the base of the stem. Leafy stem shortly developed, rather thick, terminating a creeping rhizome. 1791. (L. B. C. 788.)

XIMENESIA. Included under **Verbesina** (which see).

XIMENIA (named after Francis Ximenes, a Spanish monk, who wrote a work on Mexican plants in 1615). *SYN. Heymassoli.* ORD. *Olivaceæ*. A small genus (four species are known) of stove or greenhouse, glabrous or tomentose trees or shrubs; one is Mexican, another South African, a third inhabits the South Pacific Islands, and the fourth is broadly dispersed through the tropics. Flowers whitish, large for the order, in short, axillary cymes, or rarely solitary; calyx small, four or five-toothed or lobed; petals four or five, hypogynous; stamens eight or ten. Drupes ovoid or globose; flesh pulpy. Leaves alternate, entire, sub-coriaceous, often fascicled. The drupes of *X. americana* have a sweet, aromatic flavour, but are a little rough to the palate. This species thrives in a compost of loam and peat. Cuttings will readily root in sand, under a glass, in heat.

X. americana (American). False Sandalwood; Hog, Mountain, or Seaside Plum. *f.* odorous, racemose or corymbose; petals four, oblong, villous internally, many times longer than the calyx. April. *fr.* oval or oblong, edible. *l.* 1½in. by ½in. and upwards, glabrous, ovate-oblong or roundish, emarginate, rounded at base. Branches covered with astringent bark, often ending in a spine. *h.* 20ft. Tropics, 1759. Stove tree.

XIPHIDIUM (from *xiphos*, a sword, and *eidas*, likeness; alluding to the shape of the leaves). ORD. *Hæmodoraceæ*. A genus consisting of two species (perhaps varieties of one) of stove, perennial herbs, with short rhizomes, natives of tropical America. Flowers rather small, glabrous, shortly pedicellate at the sides of the simple panicle branches, unilateral; perianth tube none, the segments equal, oblong, spreading, not decurrent at base; stamens three, affixed at the base of the inner segments. Leaves rather broadly linear or long-lanceolate, distichous, membranous, equitant. *X. floribundum* thrives in an equal mixture of loam, peat, and sand. It may be readily increased by division of the roots.

X. albidum (whitish). A synonym of *X. floribundum*.

X. floribundum (bundle-flowered). *f.* white or blue, eight to ten along the branches of the panicle; perianth segments ½in. long, oblong-lanceolate, glabrescent; panicle pubescent. May and June. *l.* oblong-lanceolate or oblong, ½in. to 2in. broad, acuminate, often distinctly mucronate at the edges, glabrous. *h.* 1ft. to 2ft. West Indies, 1856. (B. M. 5065.) *SYN. X. abidum.* *X. giganteum* is a very broad-leaved form, with entire margins.

XIPHION. Included under **Iris** (which see).

XIPHOPTERIS. Included under **Polypodium**.

XYLOBIUM (from *xylon*, wood, and *bios*, life; in allusion to the substance on which the plants grow). ORD. *Orchidææ*. A genus comprising about sixteen species of stove, epiphytal, tropical American Orchids, closely allied to *Maxillaria*. Flowers racemose, very shortly pedicellate; sepals erect, at length somewhat spreading, the lateral ones broader than the upper one,

Xylobium—continued.

adnate at base to the foot of the column, forming a chin; petals similar to the upper sepal, but smaller; lip sub-articulated with the foot of the column, sessile or contracted and incumbent at base, at length erect, the lateral lobes erect, clothing the erect, semi-terete column, the middle one short, broad, spreading; scapes at the bases of the pseudo-bulbs, erect, simple. Leaves ample or elongated, plicate-veined, contracted into the petioles. Stems short, many-sheathed, mostly thickened into a one or two-leaved, fleshy pseudo-bulb. The best-known species are here described. For culture, see **Maxillaria** (under which the species were formerly classed).

X. concavum (concave-lipped). *f.* pale yellow; lateral sepals falcate, acuminate; petals half as large as the sepals; lip almost truncate, concave, bluntly three-lobed, the middle lobe somewhat fleshy and tuberculated at the edge, rose-veined, with a long, narrow ridge in the middle, three-lobed at the point. *l.* twin, three-ribbed, shining, narrowed into the petioles. Pseudo-bulbs oblong, deeply furrowed. *h.* 6in. Guatemala, 1844. *SYN. Maxillaria concava* (L. & P. F. G. II., p. 53).

X. decolor (discoloured). *f.* sepals and petals sulphur-coloured, the former ovate-oblong, obtuse, spreading, the latter half as large, connivent; lip whitish, obsolete three-lobed, obtuse, hooded, with five elevated, parallel calli; scapes radical, many-flowered. *l.* solitary, oblong-lanceolate, acuminate at both ends, 1ft. to 1½ft. long. Pseudo-bulbs oblong, compressed. *h.* 1ft. Jamaica, 1830. *SYN. Maxillaria decolor* (B. M. 3661; B. R. 1549).

X. elongatum (elongated). *f.* in a dense, oblong raceme; sepals and petals pale, linear, acuminate; lip purplish-brown, warded, ovate-oblong, very fleshy; scapes erect, two-sheathed. *l.* lanceolate, three-ribbed, about twice as long as the elongated, cylindrical pseudo-bulbs. *h.* 1ft. Central America, 1847. *SYN. Maxillaria elongata* (L. & P. F. G. III., p. 69.)

X. foveatum (foveate). *f.* of a pale, uniform straw-colour, faintly scented; sepals and petals linear-oblong; lip three-lobed at apex, the middle lobe rounded, fleshy, excavated. *l.* lanceolate, undulated, thrice as long as the raceme. *h.* 1ft. Demerara, 1839. Allied to *X. squalens*. *SYN. Maxillaria foveata*.

X. pallidiflorum (pale-flowered). *f.* pedicellate; sepals and petals pale sulphur-coloured, one-ribbed, the lower sepals broadly falcate; lip whitish at back, reflexed above, somewhat truncate-emarginate at apex; racemes erect, three to seven-flowered. *l.* oblong, acuminate, glabrous, 8in. to 10in. long, three-ribbed, arcuate-recurved, attenuated into the petioles. Pseudo-bulbs densely aggregated, cylindrical, 6in. to 7in. long. *h.* 1ft. Venezuela, 1826. *SYN. Maxillaria pallidiflora* (B. M. 2806).

X. squalens (squalid). *f.* pale, dingy yellowish-flesh-coloured, numerous, in a dense, thyrsiform raceme; two of the petals and the three-lobed lip streaked with purple, the side lobe of the lip deep purple; scape 4in. to 6in. high, brown-scaly. *l.* two to a pseudo-bulb, 8in. to 12in. long, tapering into footstalks, strongly five-ribbed. Pseudo-bulbs several, oblong, dark green, sheathed with brown scales. Brazil, 1828. *SYNS. Maxillaria squalens* (B. M. 2955), *Dendrobium squalens* (B. R. 732).

XYLOMELUM (from *xylon*, wood, and *melon*, an apple; alluding to the woody fruit). ORD. *Protocææ*. A small genus (four species) of greenhouse trees or tall shrubs, endemic in Australia. Flowers sessile in pairs within each bract, disposed in opposite, dense spikes; perianth regular, with revolute segments; bracts small. Fruit large, ovoid or tapering above the middle, very thick and woody, tardily opening along the upper side, or in two valves. Leaves opposite, entire or prickly-toothed. The fruits are known in Australia as Wooden Pears. Only one species has been introduced. It thrives in a compost of sandy peat and fibry loam. Ample drainage must be given. Propagated by cuttings of young and rather firm shoots; or by seeds, sown in slight heat.

X. pyriforme (pear-fruited). *f.* spikes very dense, 2in. to 3in. long, usually clustered three to six together, at first appearing terminal, but soon becoming lateral. *fr.* 2½in. to 3in. long, above ½in. in diameter near the base, tapering above the middle. *l.* of the flowering branches entire, lanceolate or ovate-lanceolate, very acute, 4in. to 6in. long; those of flowerless branches or young shoots often sinuate and prickly-toothed, attaining 8in. in length. 1869. A moderate-sized tree.

XYLOPHYLLA. Included under **Phyllanthus** (which see).

XYLOPIA (abridged from *xylopicon*, which is from *xylon*, wood, and *pikos*, bitter; the wood of some of the species is intensely bitter). Bitter Wood. ORD. *Anonacææ*. A genus comprising nearly thirty species of

Xylopia—*continued*.

leafy, stove trees or shrubs; five are Indian, six or seven African, and the rest inhabit America. Flowers solitary or fasciated in the axils, sessile or shortly pedicellate; sepals three, more or less connate, valvate; petals six, biseriata, the inner ones included; stamens indefinite. Leaves coriaceous, often distichous. It is doubtful whether the under-mentioned tree is still grown in gardens. A compost of sandy loam and fibry peat, to which is added a small quantity of broken bricks, charcoal, and dried cowdung, is most suitable for its culture. Propagated by cuttings of the hard shoots, inserted in sandy soil, in heat.

1 silky; outer petals 4in. to 5in. long, deciduous. 2 lanceolate, taper-pointed, 2in. to 3in. long, downy beneath, clothed with appressed hairs in the younger state. A. 20ft. West Indies, Venezuela, and Guiana, 1820.

XYLOSTEUM. Included under **Lonicera** (which *see*).

XYRIDEE. A small natural order of perennial or rarely annual, Rush-like or Sedge-like, tufted herbs, broadly dispersed over the warmer regions of the globe, often growing in watery places. Flowers hermaphrodite, scarcely irregular, in terminal, solitary heads of densely imbricating, rigid, scarios, one-flowered bracts; perianth of six segments in two series, the three outer segments calycine, the three inner petaloid; stamens three to six, inserted on the inner perianth segments, three opposite fertile, the others sterile, penicillate, or obsolete; filaments filiform; anthers two-celled. Capsule one-celled, loculidally three-valved, or three-celled and fenestrate at base, operculate above; scapes erect, simple. Leaves radical, rounded or clustered, linear or rarely linear-lanceolate, sheathing at base, often equitant. Roots fibrous. The leaves and roots of those plants are used in the cure of itoh in India and South America. The order embraces two genera—*Abolboda* and *Xyris*—and less than fifty species.

XYRIS (an old Greek name used by Dioscorides for *Iris fatidissima*). Yellow-eyed Grass of North America. ORD. *Xyridae*. A genus comprising about forty species of stove, greenhouse, or hardy, perennial or rarely annual, Rush-like herbs, broadly dispersed over the warmer regions of the globe. Flower-heads globose, ovoid, or rarely hemispherical or shortly cylindrical; sepals petaloid, very broad, more or less distinctly three-nerved; corolla lobes ovate; staminodes often three. Leaves radical, linear, rigid or Grass-like, tufted or distichous, surrounding the scape. *X. operculata*, the only species worth describing here, thrives in light, rich soil. It may be increased by divisions of the root.

X. operculata (covered). *fl.*-heads ovoid to globular, four to six lines in diameter, the scales black; scapes slender, 1ft. to 1½ft. high, inclosed at base in a rather long sheath without any lamina in the centre of the tuft of leaves. June. Sheaths shining brown, some of them produced into very narrow, almost subulate leaves, mostly less than 6in. long. Australia, 1804. Stove perennial. (B. M. 1158; L. B. C. 205.)

XYSMALOBIUM (from *xyema*, a fragment, and *lobos*, a division; alluding to the minute divisions of the corona). ORD. *Asclepiadaceae*. A genus consisting of about eight species of stove or greenhouse, perennial herbs, natives of tropical and South Africa. Flowers in umbelliform cymes; calyx five-parted, having five or many glands at the base within; corolla somewhat rotate-campanulate, five-cleft, the lobes reflexed-bearded or naked within; coronal scales five, affixed to the staminal tube. Leaves opposite, broadly lanceolate or linear. *X. padifolium*, the only species known in gardens, requires similar treatment to that recommended for **Gomphocarpus**.

X. padifolium (Cherry-leaved). This is the correct name of the plant described in this work under the name of *Gomphocarpus padifolius*.

YAM. *See* **Dioscorea**.

YANG-MAE-TREE. A common name for **Myrica Nagi** (which *see*).

YARROW. A popular name for **Achillea** (which *see*).

YARROW, SOLDIERS'. A name applied to **Stratiotes aloides** (which *see*).

YATE OR YEIT TREE. A common name for **Eucalyptus cornuta** (which *see*).

YELLOW ARCHANGEL. A name applied to **Lamium Galeobdolon** (which *see*).

YELLOWBY. A common name for **Chrysanthemum segetum** (which *see*).

YELLOW CRESS. A popular name for **Barbarea praecox** (which *see*).

YELLOW ELDER. *See* **Tecoma stans**.

YELLOW EVERLASTING. *See* **Helichrysum arenarium**.

YELLOW-EYED GRASS (of North America). *See* **Xyris**.

YELLOW GARDEN HAWK WEED. *See* **Tolpis barbata**.

YELLOW IRIS. *See* **Iris Pseudo-acorus**.

YELLOW LARKSPUR. *See* **Tropaeolum**.

YELLOW RATTLE. *See* **Rhinanthus Crista-galli**.

YELLOW ROCKET. *See* **Barbarea vulgaris**.

YELLOW SLUG (*Limax flavus*). In its habits this Slug differs from the other **Slugs** (which *see*), as it very frequently lives in cellars and other damp places in towns. During the day it lies concealed; but at night it goes in search of its food, and shows itself very partial to cooked articles. Though it prefers potatoes and other vegetables, it will readily eat any kind of meat. The Yellow Slug may also be found in gardens and its woods; and where one occurs, others are seldom far off, as it is gregarious in its habits. It may reach a length of 4in. to 5in., but is usually found of a smaller size. The body is yellowish, spotted with dark brown, and is covered with numerous short, longitudinal ridges. There is a distinct keel on the upper surface of the tail. Other Slugs also are often more or less yellow in colour, but the size, habits, and markings of *L. flavus* will suffice to distinguish it from them. The remedies recommended under **Slugs** are applicable against this species.

YELLOW STAR FLOWER. *See* **Sternbergia lutea**.

YELLOW STAR OF BETHLEHEM. *See* **Gagea lutea**.

YELLOW SULTAN. *See* **Centaurea suaveolens**.

YELLOW UNDERWING. *See* **Tryprena**.

YELLOW-WEED, DYER'S. *See* **Reseda Lu-teola**.

YELLOW WOOD. A name applied to *Cladrastis tinctoria*, *Ochrosia borbonica*, several species of *Podocarpus*, &c.

YELLOW-WORT. *See* **Chlora**.

YEVEHING BELLS. A common name for **Fyrcia secunda** (which *see*).

YEW. *See* **Taxus**.

YEW-BUD GALLS. The buds of the Yew (*Taxus baccata*) are liable to be injured by a Gall Midge, and also by a Gall Mite. The former (*Cecidomyia Tari*)

Yew-bud Galls—*continued.*

produces a cone-shaped Gall at the tips of the young twigs, composed of crowded, overlapping leaves (see Fig. 236), which remain short, but become broader than the healthy leaves; they are like the latter in colour. The larvæ live between the altered leaves. The Galls are usually of the size figured. They are generally solitary; but two or three may be present at the tip of a twig. The simplest method for preventing harm to the trees from this cause is to pick off the young Galls, as this destroys the larvæ.



FIG. 236 MONGECIOUS BRANCHLET OF YEW (*Taxus baccata*) showing (g) Gall of *C. longica Taxi*.

The Gall Mite (*Phytoptus Taxi*) is a much more dangerous foe. It attacks the leaf-buds, and also the male and female flowers, all of which enlarge, and may reach $\frac{1}{2}$ in. in diameter, becoming, at the same time, yellow or red. The galled organs are fleshy, and are covered with small, translucent warts. Between them live multitudes of the minute Gall Mites. The Galls remain on the branches all winter, serving for the protection of the Mites. These crawl out the following spring, and produce new Galls in the younger buds. Mr. Andrew Murray was the first to describe these Galls, from examples found by Professor Thistleton Dyer, near London, in 1875. Mr. Murray describes the branches as looking as if frost-bitten. The most effectual—indeed, the only reliable—remedy is to remove the galled branches and burn them, while the Mites are still in the Galls.

YEW-BUD MITE. See **Yew-bud Galls.**

YEW, CHINESE. See **Podocarpus chinensis.**

YEW, CLUSTER-FLOWERED. See **Cephalotaxus.**

YEW GALLS. See **Yew-bud Galls.**

YEW, JAPANESE. A common name for **Cephalotaxus pedunculata fastigiata** (which see).

YEW, JOINTED. A popular name for **Athrotaxis** (which see).

YEW, LORD HARRINGTON'S. See **Cephalotaxus pedunculata.**

YEW, PRINCE ALBERT'S. See **Saxegotha conspicua.**

YEW, STINKING. See **Torreya.**

YOKE ELM. A name applied to **Carpinus Betulus** (which see).

YOUTH AND OLD AGE. See **Zinnia.**

YOUTHWORT. A common name for **Drosera rotundifolia** (which see).

YPONOMEUTA. A form, sometimes used incorrectly, of the name *Hyponomeuta*, a genus of small Moths, whose web-forming larvæ are often destructive to various kinds of garden trees and shrubs. See **Hawthorn Caterpillars.**

YUCCA (a native name of the genus). Adam's Needle; Bear's Grass; Spanish Bayonet. Oxd, *Liliacæ*. A genus (comprising, according to Engelmann twelve, according to Baker twenty-one, species) of handsome, stove, greenhouse, or hardy plants, allied to *Dracæna* and *Cordylina*; they inhabit the Southern United States, Mexico, and Central America. Flowers rather large, shortly pedicellate at the sides of the panicle branches, pendulous; perianth segments distinct or scarcely connate near the base, lanceolate-ovate, rather thick, more or less connivent in a globe; stamens six, hypogynous, erect, much shorter than the perianth; filaments rather thick; anthers small, sessile or adnate with the tips of the filaments; panicle terminal, showy, many-flowered, sub-sessile amongst the leaves, or supported on a bracteate peduncle. Fruit sometimes fleshy, pulpy, or nearly spongy, sometimes dry, septicidally or loculidally three-



FIG. 237, POD OF YUCCA.

valved (see Fig. 237). Leaves clustered at the apex of the caudex, linear-lanceolate, thick and rigid or rarely flaccid, usually spinose at apex, the margins entire or filamentose. Caudex or stem woody, sometimes dwarf, sometimes at length tall and arborescent branched. All the Yuccas thrive in a rich, light soil, and may be propagated either by divisions, planted in the open ground, or by means of pieces of the thick, fleshy roots, cut into lengths, and inserted in sandy soil, in heat. Seeds of any of the species are rarely, if ever, produced in this country. Many of the plants make noble objects if properly placed and suitably treated. The greenhouse ones may be plunged in their pots, &c., and used for subtropical effects in the open air during the summer months. Except where otherwise indicated, the under-mentioned species are hardy.

Most of the descriptions are translated from Mr. Baker's admirable Monograph of *Alonææ* and *Yuccoideæ*, which appeared in the "Journal of the Linnean Society," vol. xviii.

Yucca—continued.

Y. acuminata (taper-pointed), of Sweet. A form of *Y. gloriosa*.

Y. acuminata (taper-pointed), of gardens. A synonym of *Y. fezzii*.

Y. acutifolia (acute-leaved). *f.* large, pendent, moderately expanded; perianth strongly striated and spotted with dark brown; panicle columnar, about 5ft. high, the flowering branches short and erect. Summer. *l.* sub-erect, stiff, channelled, shortly acuminate, 2½ft. long, bordered by a line of deep red. French gardens, 1869.

Y. agavoides (Agave-like). A garden synonym of *Y. treculeana*.

Y. albo-spica (white-spiked). A synonym of *Y. constricta*.

Y. aloifolia (Aloe-leaved). * *f.*, perianth white, 1½in. to 2in. long, the segments oblong or oblong-lanceolate, ½in. to 1in. broad; lower pedicels 1in. to 1½in., upper ones ½in. to ¾in., long;

Yucca—continued.

FIG. 238. YUCCA ANGSTIFOLIA.

panicle rhomboid, dense, 1ft. to 2ft. long, the branches ascending; peduncle very short. May and June. *l.* fifty to 100 rigid, ensiform, 1ft. to 1½ft. long, 1in. to 1½in. broad, green,



FIG. 239. YUCCA ANGSTIFOLIA STRICTA.

glaucous-tinged, with a pungent, reddish-brown horn at the tip, the margins whitish, serrated. Stem slender, sometimes 15ft. to 20ft. high, usually simple. West Indies to North Carolina. Greenhouse. (B. M. 1700; P. M. B. iii. 25.) The following, most of which are often classed as species, are regarded, by Baker, as varieties of *Y. aloifolia*: *Atkinsi* and *purpurea*, dwarf, with purplish leaves; *arcuata*, *crenulata*, and *tenuifolia*, small forms, with narrow, more or less arched leaves; *conspicua*, leaves looser, broader, recurved, 1½in. broad; *Dracoma* (G. C. 1870, p. 828), leaves looser, longer, recurved; *quadricolor*, leaves reddish-tinged; *tricolor* (= *lineata-lutea*), a common form in gardens, having leaves variegated with white and yellow; *variegata*, leaves with whitish stripes.

Y. angustifolia (narrow-leaved), of Pursh. * *f.*, perianth greenish outside, campanulate, the segments oblong, acute, 2in. to 2½in. long, ¾in. to 1½in. broad; pedicels ½in. to 1in. long; raceme terminal, thirty to forty-flowered, sometimes simple, often with a few ascending branches at the base, 3ft. to 4ft. long; peduncle nearly 1ft. long. July. *l.* 100 or more, dense,

Yucca—continued.



FIG. 240. YUCCA FILAMENTOSA.

rigid, linear, 1½ft. to 2ft. long, three to four lines broad, channelled above, pungent-pointed, the pale reddish-brown margins copiously filamentose. Missouri, &c., 1811. Plant nearly stemless. See Fig. 238. (B. M. 2:36.)

Y. s. stricta (straight). *fl.*, inflorescence more compound; peduncle 2ft. to 3ft. long. *l.* ½in. to ¾in. broad, narrowed at base, less rigid, and less pungent-pointed. Arkansas, 1817. See Fig. 239. (B. M. 2222, under name of *Y. stricta*.)

Y. angustifolia (narrow-leaved), of Carrière. A synonym of *Y. constricta*.

Y. angustifolia (narrow-leaved), of gardens. A synonym

Y. antwerpensis (Antwerp). A form of *Y. filamentosa*.

Y. arcuata (arcuate). A form of *Y. aloifolia*.

Y. argentea (white-spathed). *fl.*, perianth pure white, large; pedicels long and slender; bracts satiny-white, undulated; panicle pyramidal. Summer. *l.* numerous, channelled, 2ft. to

Yucca—continued.

2½ft. long, having reddish, finely-denticulate margins, and a sharp, brownish-yellow, spiny point. Stem short. Grenoble Botanic Garden, 1869. Allied to, and perhaps a form of, *Y. Tricuciana*.

Y. argyrophylla (silvery-leaved). A synonym of *Furcata*

Y. Atkinii (Atkins'). A form of *Y. aloifolia*.

Y. baccata (berried). *fl.*, perianth white, 1in. to 3in. long, the segments oblong-lanceolate, ½in. to ¾in. broad; bracts large, lanceolate; inflorescence 5ft. to 6ft. long, on an elongated peduncle, the branches 6in. long, often glabrous. Summer. *fr.* purple, ovoid or oblong, baccate, 3in. to 5in. long, edible. *l.* ensiform, thick, very rigid, 1½ft. to 3ft. long, 1in. to 2in. broad, scabrous, slightly concave above, pungent-tipped, the reddish-brown margins copiously filamentose, very squarrose. *h.* 8ft. to



FIG. 241. YUCCA FILAMENTOSA FLACCIDA.

10ft.; or plant stemless. Colorado, 1873. Hardy or half-hardy. (I. H. n. s. 115.)

Y. b. australis (Southern). A synonym of *Y. filifera*.

Yucca—continued.

Y. b. circinata (curled-threaded). *l.* 2ft. to 2½ft. long, five to six lines broad, copiously circinate-thready.

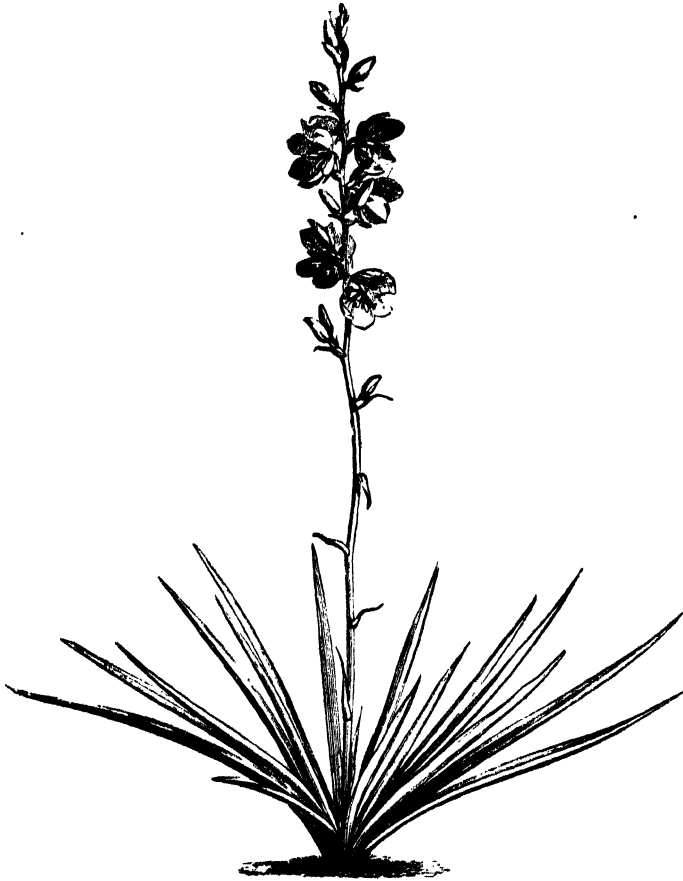


FIG. 242. YUCCA FILAMENTOSA ORCHOIDES.

Y. b. fragillifolia (fragile-leaved). *l.* weaker than in the type, the outer ones recurved, 1½ft. long, six to seven lines broad, the margins having a few threads above only. Trunk short and slender.

Yucca—continued.

Y. b. scabrifolia (scabrous-leaved). *l.* rather fragile, the outer ones recurved, 1½ft. to 2ft. long, four to five lines broad, of a

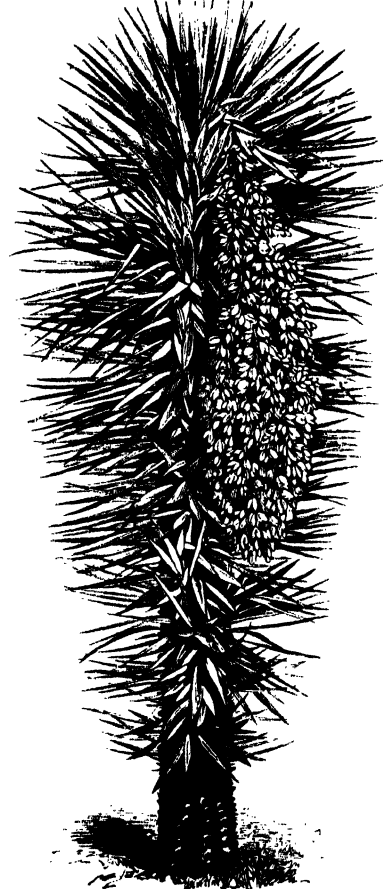


FIG. 243. YUCCA FILIFERA.

pleasing green, paler in the middle, and channelled above, rounded at back, the margins arcuate-filamentose.

Y. Boerhaavii (Boerhaav's). *l.* about 200, linear, straight, the lower ones only recurved, 2 ft. or more long, ¼in. to ¾in. broad,



FIG. 244. FRUIT OF YUCCA FILIFERA.

Y. b. perionosa (dangerous). *l.* straight, 2½ft. to 3ft. long, eight to nine lines broad, channelled from base to apex, copiously filamentose in the upper half.

acuminate, much dilated at base, green (young ones slightly glaucous), scarcely pungent at apex, the margins entire, narrowly bordered with red-brown or paler. Mexico (f), 1870. Greenhouse.

Yucca—continued.

- Y. canaliculata** (channeled). A form of *Y. Treculeana*.
Y. circlinata (curled-threaded). A form of *Y. baccata*.
Y. concava (concave), of Haworth. A form of *Y. filamentosa*.
Y. concava (concave), of gardens. A synonym of *Y. Treculeana*.
Y. conspicuous (conspicuous). A form of *Y. aloifolia*.
Y. constricta (constricted). *f.*, perianth white, 2in. long, the segments oblong, acute; pedicels four to six lines long: panicle ten to fifteen-flowered; peduncle elongated. Summer. *l.* 100 to 200, dense, rigid, linear, 1½ft. to 2ft. long, six to eight lines broad, slightly narrowed at base, channelled above, pungent-tipped, the narrow, red-brown margins very filamentose. Stem simple, 3ft. to 5ft. high. Utah to North Mexico, 1862. Half-hardy. SYN. *Y. albo-tyrica* (F. d. S. ser. ii, vii, p. 110), *Y. angustifolia*, of Carrière (R. H. ix, 1860, f. 3).
Y. contorta (twisted). A name applied in gardens to both *Y. rupestris* and *Y. Treculeana*.
Y. cornuta (horned). A garden synonym of *Y. Treculeana*.
Y. crenulata (crenulate). A form of *Y. aloifolia*.

Yucca—continued.

- l.* 3in. long; bracts large, scarious; panicle rhomboid, the branches flexuous, ascending, 6in. long; peduncle elongated; inflorescence 4ft. to 8ft. long. June. *l.* thirty to fifty, in a dense rosette, ensiform, 1½ft. to 2ft. long, 1½in. to 2in. broad, rather firm, Reed-like, slightly glaucous, the whitish margins clothed with thread-like filaments. North America, 1676. Plant stemless or nearly so. See Fig. 240. (B. M. 900; Ref. B. 324; R. H. 1860, p. 214.)
Y. f. antwerpensis (Antwerp). *f.*, panicle 1ft. to 1½ft. long, the branches four to six, shortly pubescent; inflorescence 2ft. to 3ft. long. *l.* fifteen to twenty, erecto-patent, 1ft. to 1½ft. long, 1in. broad, the marginal threads few and very slender. 1875. (B. M. 6316, under name of *Y. orchivoides major*.)
Y. f. aureo-variegata (golden-variegated). *l.* marked with bright yellow, longitudinal bands. 1884. Greenhouse.
Y. f. concava (concave). *l.* 1½ft. long, 3in. to 4in. broad, erect-incurved, concave on the face. 1810.
Y. f. flaccida (flaccid)* *f.*, perianth segments broad; panicle branches pubescent. *l.* slender and weaker than in the type, much recurved, the marginal fibres stronger. 1816. See Fig. 241. SYN. *Y. flaccida* (B. R. 1895; Ref. B. 323; R. H. 1859, p. 566).

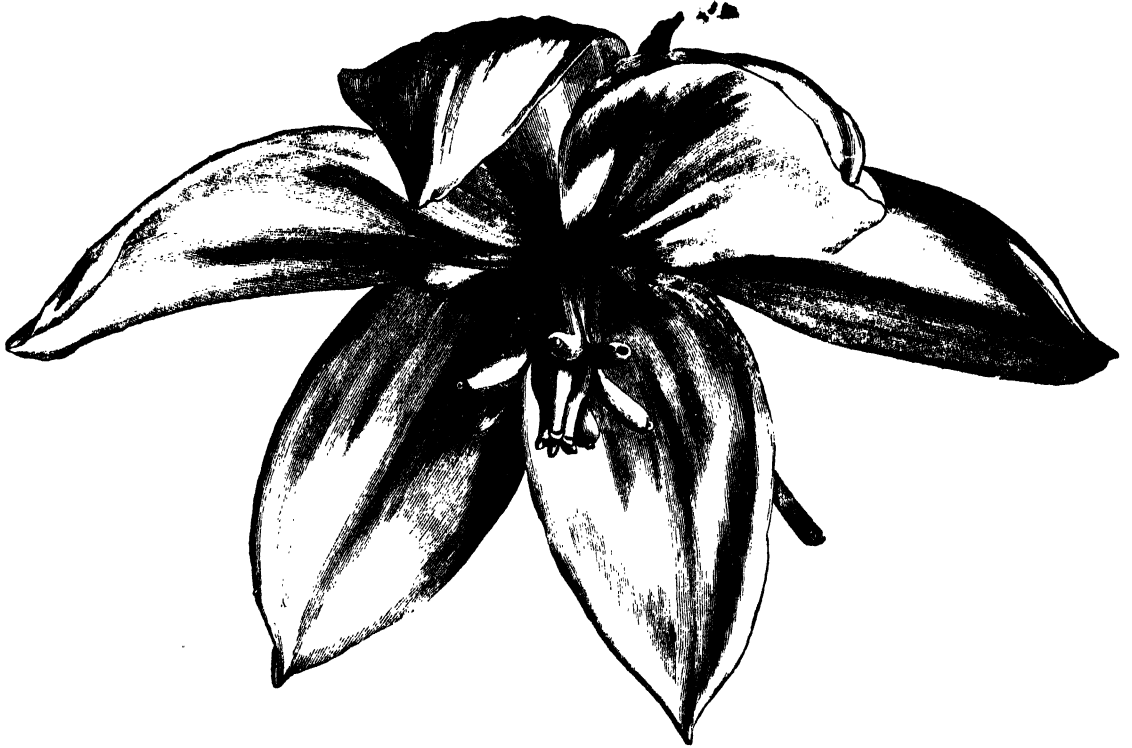


FIG. 245. FLOWER OF YUCCA FLEXILIS (natural size).

- Y. Desmetiana** (De Smet's). *l.* 100 to 200, rather loosely disposed, linear, nearly 1ft. long, ½in. to ¾in. broad, all recurved, the young ones purple, glaucous, the old ones green, not pungent at apex, with narrow, pale, serrulated margins, dilated at base. Mexico, 1868. Greenhouse.
Y. Draconis (dragon's). A form of *Y. aloifolia*.
Y. Ellacombei (Ellacombe's). A form of *Y. gloriosa*.
Y. ensifolia (sword-leaved). A form of *Y. flexilis*.
Y. exigua (dwarf). *f.*, perianth white, tinged with green outside, the segments oblong, acute, 1½in. long; bracts large, lanceolate; pedicels very short; panicle loose, 3ft. long, the branches pubescent, ascending, 6in. long; peduncle elongated, furnished with much-reduced, lanceolate leaves. Summer. *l.* thirty to forty, ensiform, 1½ft. long, 1in. to 1½in. broad, similar to those of *Y. gloriosa*, the margins brown, entire. Western North America, 1873. Plant stemless. (Ref. B. 314.)
Y. falcata (sickle-leaved). A form of *Y. flexilis*.
Y. filamentosa (thready). Silk Grass. *f.*, perianth white, tinged with green outside, 1½in. to 2in. long, the segments oblong or oblong-lanceolate, ½in. to ¾in. broad; pedicels drooping, ½in. to ¾in. long; bracts large, scarious; panicle rhomboid, the branches flexuous, ascending, 6in. long; peduncle elongated; inflorescence 4ft. to 8ft. long. June. *l.* thirty to fifty, in a dense rosette, ensiform, 1½ft. to 2ft. long, 1½in. to 2in. broad, rather firm, Reed-like, slightly glaucous, the whitish margins clothed with thread-like filaments. North America, 1676. Plant stemless or nearly so. See Fig. 240. (B. M. 900; Ref. B. 324; R. H. 1860, p. 214.)
Y. f. antwerpensis (Antwerp). *f.*, panicle 1ft. to 1½ft. long, the branches four to six, shortly pubescent; inflorescence 2ft. to 3ft. long. *l.* fifteen to twenty, erecto-patent, 1ft. to 1½ft. long, 1in. broad, the marginal threads few and very slender. 1875. (B. M. 6316, under name of *Y. orchivoides major*.)
Y. f. aureo-variegata (golden-variegated). *l.* marked with bright yellow, longitudinal bands. 1884. Greenhouse.
Y. f. concava (concave). *l.* 1½ft. long, 3in. to 4in. broad, erect-incurved, concave on the face. 1810.
Y. f. flaccida (flaccid)* *f.*, perianth segments broad; panicle branches pubescent. *l.* slender and weaker than in the type, much recurved, the marginal fibres stronger. 1816. See Fig. 241. SYN. *Y. flaccida* (B. R. 1895; Ref. B. 323; R. H. 1859, p. 566).
Y. f. glaucescens (glaucous). *f.*, perianth segments fifteen to sixteen lines long; panicle and rachis densely clothed with bluish-grey pubescence. *l.* more glaucous than in the type, 1in. broad, the marginal threads rarely slender. 1819. SYN. *Y. glaucescens* (S. B. F. G. 53).
Y. f. grandiflora (large-flowered). A synonym of *Y. f. maxima*.
Y. f. major (greater). A synonym of *Y. f. maxima*.
Y. f. (largest). *f.*, perianth 2½in. to 3in. long, the segments more acuminate than in the type. 1873. (Ref. B. 325.) This is also known as *Y. f. grandiflora* and *Y. f. major*. There is a white-variegated form.
Y. f. orchivoides (Orchis-like)* *f.*, perianth segments ovate, 1in. long; raceme simple, 9in. long; peduncle 1½ft. long. *l.* ten to twelve, 6in. to 9in. long, eight to ten lines broad, scarcely filamentose on the margins. 1861. See Fig. 242. SYN. *Y. orchivoides* (R. H. 1861, p. 370).
Y. f. puberula (puberulous). *f.*, perianth segments oblong-lanceolate, 1½in. to 1¾in. long; panicle branches pubescent. *l.* weaker and more recurved than in the type. SYN. *Y. puberula* (Ref. B. 322; S. B. F. G. 261).

Yucca—continued.

Y. filifera (thread-bearing). *fl.*, inflorescence 6ft. to 8ft. long, on a short peduncle, the branches sometimes 2ft. long. *fr.* fleshy, indistinctly ribbed, pendulous in a young state, erect afterwards. *l.* 1½ft. long, obscure green, lightly channelled, 1in. to 1½in. broad. Trunk sometimes 50ft. high, 2ft. to 3ft. in diameter. Mexico, 1826. Greenhouse. See Figs. 243 and 244 (R. H. 1876, p. 433.) **SYN.** *Y. baccata australis* (of Baker).

Y. haecoida (flaccid). A form of *Y. filamentosa*.

Y. flexilis (flexible). *fl.*, perianth white, 3in. long, the segments *ovoid, acute, pedicels* ½in. to ¾in. long, the bracts small; inflorescence 4ft. long, the central branches 6in. long, six to nine-flowered. Summer. *l.* dense, linear, 2ft. to 2½ft. long, 1in. to 1½in. broad, obscurely plicate, moderately firm, pungent-pointed, the margins horny, red-brown, entire or sometimes obscurely serrulated. Caudex simple, short. Mexico, 1859. Greenhouse. See Fig. 245. (B. H. 1859, p. 400.) **SYNS.** *Y. acuminata*, *Y. angustifolia*, *Y. longifolia*, *Y. mexicana*, *Y. stenophylla* (all of gardens).



FIG. 246. YUCCA FLEXILIS ENSIFOLIA.

Y. l. ensifolia (sword-leaved).* *fl.*, perianth slightly tinged with red outside, 2in. long; peduncle rather shorter than the leaves. *l.* forty to eighty, nearly erect, pale green (at first slightly glaucescent), 2ft. to 2½ft. long, 1½in. to 1¾in. broad. Stem slender, sometimes 4ft. to 5ft. high. 1870. See Fig. 246. **SYN.** *Y. ensifolia* (Ref. B. 318).

Y. l. falcata (sickle-shaped). *fl.*, perianth white, slightly tinged with green on the outside, 2in. to 2½in. long; panicle rhomboid, rather loose, 2ft. long; peduncle 1ft. long. *l.* 100 to 150, green, straight, 2ft. long, 1½in. to 1¾in. broad. Plant nearly stemless.

Y. l. nobilis (noble). *l.* sixty to eighty, nearly straight, 1ft. to

Yucca—continued.

1½ft. long, 1½in. to 1¾in. broad, concave on the face, the margins horny, pale or red-brown; young ones very glaucescent.

Y. l. semi-cylindrica (half-cylindrical). *l.* forty to fifty, 1½ft. to 2ft. long, nine to ten lines broad, pale green (at first slightly glaucescent), the outer ones recurved, channelled above from base to apex, the margins red-brown. 1870.

Y. fragillifolia (fragile-leaved). A form of *Y. baccata*.

Y. funifera (cord-bearing). *l.* not numerous, ensiform, 6ft. to 7ft. long, thick, rigid, dingy-green, striolated, the margins furnished

Y. Ghiesbreghtii (Ghiesbreght's). A garden synonym of *Y. guatemalensis*.

Y. gigantea (gigantic). *fl.*, perianth white, 3in. to 3½in. long; panicle 2ft. to 2½ft. long, with twelve to fifteen branches, the central ones nearly 1ft. long, eight to ten-flowered. Summer. *l.* ensiform, straight, spreading, shining-green, 4ft. to 5ft. long, 3in. to 3½in. broad, acuminate, pungent-pointed, the margins whitish; lower ones scarcely recurved. Stem (in gardens) simple, slender, 3ft. to 4ft. high. Mexico (?), 1859. Greenhouse.

Y. glauca (glaucescent)*. *fl.*, perianth white, broadly campanulate, the segments oblong, 1½in. long; lower pedicels five to six lines long; bracts small, lanceolate; panicle rhomboid, 2ft. to 3ft. long, the branches ascending, glabrous; peduncle 3ft. long. Summer. *l.* twenty-five to thirty, dense, ensiform, 1½ft. long, 1½in. to 1¾in. broad, the young ones slightly glaucescent, somewhat pungent at apex, with very narrow, red-brown, entire or slightly filamentose margins, the outer ones recurved. North America, 1814. Plant stemless, half-hardy. (B. M. 2662; Ref. B. 315.)

Y. glaucescens (glaucescent). A form of *Y. filamentosa*.

Y. gloriosa (glorious)*. Mound Lily. *fl.*, perianth tinged with red outside, campanulate, 1½in. to 2½in. long, the segments oblong, acute; pedicels four to twelve lines long; bracts small, lanceo-



FIG. 247. YUCCA GLORIOSA.

Yucca—continued.

late; panicle rhomboid, rather dense, 4ft. to 5ft. long, with erecto-patent, glabrous or pubescent branches, the lower ones 1ft. to 1½ft. long; peduncle elongated, furnished with reduced leaves. July. *l.* 100 or more in a dense rosette, 1½ft. to 3ft. long, erect, obscure-green, slightly glaucescent, punctate on the face and scabrous at back, pungent-pointed, the narrow, red-brown margins entire, or in young forms obscurely serrulated. Stem when old 4ft. to 6ft. high, simple or branched. United States, 1596. See Fig. 247. (B. M. 1260; Ref. B. 320.)

Y. g. acuminata (taper-pointed). *fl.* fewer; perianth 1½in. to long; panicle smaller. *l.* fifty to sixty, 6in. to 2ft. long, ½in. to 1½in. broad, green, straight, acuminate. 1800. Nearly stemless. SYN. *Y. acuminata* (Ref. B. 316; S. B. F. G. 195). *Y. patens* is a similar form, with more numerous, broader, and more glaucescent leaves.



FIG. 218. YUCCA GLORIOSA RECURVIFOLIA.

Y. g. Ellacombei (Ellacombe's). *fl.*, perianth segments acuminate, 2½in. to 3in. long; lower pedicels 1in. to 1½in. long. *l.* forty to fifty, nearly straight, 2ft. to 2½ft. long, 1½in. to 1½in. broad, concave on the face, at length smooth. Nearly stemless. SYN. *Y. Ellacombei* (Ref. B. 317).

Y. g. medio-striata (middle-striped). *l.* having a broad, whitish-green band down the centre on each side. 1830. (F. d. S. 2395.4.)

Y. g. minor (lesser). *fl.*, perianth 1½in. long; pedicels short; inflorescence 3ft. to 4ft. long. *l.* straight, 1ft. to 1½ft. long, 1½in. to 1½in. broad. Dwarfier than the type. (Ref. B. 319.)

Y. g. obliqua (oblique). *l.* glaucous, 1½in. to 2in. broad, oblique, bending. 1808.

Yucca—continued.

Y. g. plicata (plaited). *fl.*, perianth 2in. long; panicle large. *l.* slenderer than in the type, but straight, much plaited, 1½ft. to 2½ft. long, 2in. to 2½in. broad, slightly scabrous at back.

Y. g. pruriens (pruriose). *l.* seventy to eighty, straight, nearly flat in the middle, 2ft. to 2½ft. long, fifteen to sixteen lines broad, glaucescent. Nearly stemless.

Y. g. recurvifolia (recurved-leaved). *fl.*, perianth segments more narrowed at apex than in the type. *l.* 100 to 150, weaker than in the type, 2ft. to 3ft. long, the outer ones much recurved, less pungent at apex, flat and obscurely plicate in the middle above, concave only just above the base and below the apex; young ones glaucous. Stem short, often branched. 1794. See Figs. 248 and 249. SYN. *Y. japonica* (of gardens). *Y. pendula* (L. H. 1859, p. 490). *Y. recurva*, *Y. recurvifolia* (Ref. B. 321). The garden form *foliis-variegatis* has a pale greenish-red stripe down the centre. 1883. (L. H. 1883, 475.)

Y. g. rufocincta (reddish-girdled). *l.* slightly recurved, sub-glaucous, 2in. broad, smooth on both sides, with clearly-defined, reddish-brown margins. 1816. Nearly stemless.



FIG. 219. YOUNG PLANT DEVELOPED FROM ROOT CUTTING OF YUCCA GLORIOSA RECURVIFOLIA.

Y. g. superba (superb). *fl.* larger than in the type; panicle branches much spreading. *l.* broad and straight. Trunk at length 10ft. high. (A. B. R. 473, under name of *Y. gloriosa*.)

Y. g. tortulata (slightly-twisted). *l.* about forty, straight, glaucescent, 1½in. to 1½in. long, fourteen to fifteen lines broad, often oblique, flexuous. 1873. Stemless.

Y. guatemalensis (Guatemala). *fl.*, perianth white, 2½in. to 3in. long, the segments oblong-lanceolate, acute, ½in. to 1in. broad, the outer ones broader; pedicels ½in. to 1½in. long; bracts white, scarious; panicle dense, rhomboid, 2ft. to 3ft. long; the central branches 6in. long; peduncle very short. Summer. *l.* fifty or more, loosely disposed, ensiform, 2ft. to 3ft. long, 2in. to 3in. broad, shining-green, scarcely pungent at apex, the whitish margins obscurely serrulated; upper ones ascending, much

Yucca—continued.

recurved. Stems sometimes 15ft. to 20ft. high, usually simple and tuberous at base. Mexico and Guatemala, 1873. Habit of *Y. aloifolia*. (Def. B. 313.) SYNS. *Y. Giesbreghtii* and *Y. Rozeii* (of gardens).

Y. japonica (Japanese). A garden synonym of *Y. gloriosa recurvifolia*.

Y. laevigata (smooth). A garden synonym of *Y.*

Y. lineata-lutea (yellow-lined). A form of *Y. al*

Y. longifolia (long-leaved). A synonym of *Y. flexilis*.

Y. lutescens (yellowish). A synonym of *Y. rupicola*.

Y. macrocarpa (large-fruited). *fl.*, panicle sub-sessile, with lanceolate, white, fleshy bracts. *fr.* pale yellowish, cylindrical, obtuse, not marked by any ridges, pulpy, 4in. to 6in. long, 6in. to 7in. in circumference, of a pleasant, sweetish, acidulous taste. *l.* spreading, sharp-pointed, concave, with entire margins. Trunk 1ft. to 4ft. high. Santa Rita Mountains, Arizona. This species is closely allied to *Y. baccata*.

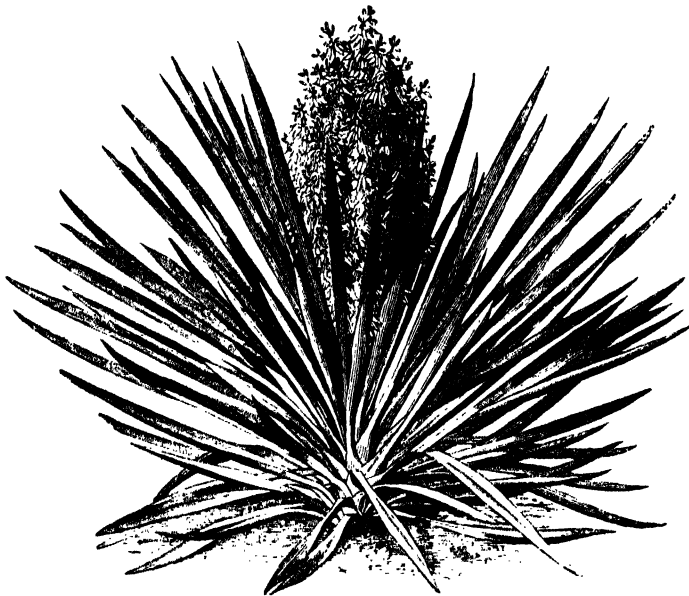


FIG. 250. YUCCA TRECULEANA.

Y. mexicana (Mexican). A synonym of *Y. flexilis*.

Y. nobilis (noble). A form of *Y.*

Y. obliqua (oblique). A form of *Y.*

Y. orchiloides (Orchis-like). A form of *Y. filamentosa*.

Y. o. major (greater). A synonym of *Y. filamentosa antwerpensis*.

Y. Parmentieri (Parmentier's). A synonym of *Furcraea*

Y. patens (spreading). A form of *Y. gloriosa*.

Y. Peacockii (Peacock's). *l.* about 100 (forming a dense rosette 3ft. in diameter), straight, linear, 1½in. to 1½in. long, ½in. broad, obscure-green, smooth and channelled on the face, rounded and slightly scabrous at back, pungent-pointed, the margins entire, reddish-brown. Mexico (?), 1879. Greenhouse. SYN. *Y. laevigata* (of gardens).

Y. pendula (pendulous). A synonym of *Y. gloriosa recurvifolia*.

Y. periculosa (dangerous). A form of *Y. baccata*.

Y. polyphylla (many-leaved). A synonym of *Y. constricta*.

Y. pruinosa (pruinose). A form of *Y. gloriosa*.

Y. puberula (puberulous). A form of *Y. filamentosa*.

Y. purpurea (purple). A form of *Y. aloifolia*.

Y. quadricolor (four-coloured). A form of *Y. aloifolia*.

Y. recurva (recurved). A synonym of *Y. gloriosa recurvifolia*.

Y. recurvifolia (recurved-leaved). A form of *Y. gloriosa*.

Y. revoluta (revolute). A garden synonym of *Y. treculeana*.

Y. Rozeii (Roze's). A garden synonym of *Y. guatemalensis*.

Y. rufocincta (red-girdled). A form of *Y. gloriosa*.

Yucca—continued.

Y. rupicola (rock-loving). *fl.*, perianth white, slightly greenish externally, 2in. to 3in. long, the segments oblong, acute, nine to fourteen lines broad; pedicels ½in. to ¾in. long; bracts small, lanceolate; panicle loose, with ascending branches, the lower ones 6in. long; peduncle 3ft. long, furnished with reduced leaves. Summer. *l.* dense, ensiform, 1½ft. to 2ft. long, ¾in. to 1½in. broad, often twisted, pungent-pointed, smooth above, slightly scabrous at back, with pale, serrated margins. Texas. Plant stemless. SYNS. *Y. contorta* and *Y. tortilis* (of gardens), *Y. lutescens*.

Y. scabrifolia (scabrid-leaved). A form of *Y. baccata*.

Y. semi-cylindrica (half-cylindrical). A synonym of *Y. flexilis*.

Y. stenophylla (narrow-leaved). A synonym of *Y. flexilis*.

Y. stricta (straight). A form of *Y. angustifolia*.

Y. superba (superb). A form of *Y. gloriosa*.

Y. tenuifolia (slender-leaved). A form of *Y. aloifolia*.

Y. Tonelliana (Tonel's). A synonym of *Furcraea Bedinghausii*.

Y. tortilis (twisted). A garden synonym of *Y. rupicola*.

Y. tortulata (slightly-twisted). A form of *Y. gloriosa*.

Y. Treculeana (Trécul's).* *fl.*, perianth white, campanulate, 1½in. to 2½in. long, the segments oblong, acute, five to six lines broad; lower pedicels 1½in. to 1½in. long; bracts white, as long as the pedicels; panicle dense, 2ft. to 4ft. long, the glabrous branches often 1ft. long; peduncle short. Summer. *l.* dense, ensiform, 2ft. to 4½ft. long, 2in. to 3½in. broad, coriaceous, dull green, scabrous, deeply concave on the face, rounded at back, pungent-pointed, the red-brown margins paler outside, at first obscurely serrated; adults sometimes slightly filamentose. Stem 20ft. to 25ft. high, 1ft. to 2ft. in diameter, copiously branched. Texas and North Mexico, 1858. Greenhouse. See Fig. 250. (R. H. 1869, p. 406). SYNS. *Y. agavoides*, *Y. concava*, *Y. contorta*, *Y. cornuta*, *Y. revoluta*, *Y. undulata* (all of gardens). *Y. canaliculata* (B. M. 5201) is a form having small flowers, and deeply-channelled leaves about 2ft. long. 1858.

Y. tricolor (three-coloured). A form of *Y. aloifolia*.

Y. undulata (wavy). A garden synonym of *Y. Treculeana*.

Y. variegata (variegated). A form of *Y. aloifolia*.

Y. Whipplei (Whipple's). *fl.*, perianth white, tinged with green externally, the segments lanceolate, three to six lines broad; pedicels ascending, ½in. to 1½in. long; bracts white, minute; panicle dense, oblong-lanceolate, the slender branches 6in. long; peduncle elongated, with many reduced leaves; inflorescence 4ft. to 12ft. long. Summer. *l.* 150 to 200, dense, rigid, straight, linear, 1ft. to 1½ft. long, four to six lines broad, green, glaucous-tinged, dilated at base, flat above, channelled at back, sub-triquetrous, pungent-pointed, the pale margins minutely serrated. California and Arizona, 1876. Plant stemless or nearly so, stoloniferous, half-hardy. (G. C. n. s., vi., p. 197.)

Y. W. violacea (violet).* A striking variety, with violet-tinted flowers. 1884. (R. H. 1884, p. 324.)

YULAN. See *Magnolia conspicua*.

ZACINTHA (so called from having been first discovered in the island of Zante, the ancient Zacynthus). OED. *Compositae*. A monotypic genus. The species is a glabrous, divaricately-branched, hardy, annual herb, of simple culture.

Z. verrucosa (warted). *fl.*-bracts yellow, rather small; involucre narrow, the inner bracts folded, the outer ones spreading; receptacle flat, naked; florets all ligulate, truncate five-toothed at apex; achenes glabrous. Summer. *l.* radical ones lyrate; cauline ones few, alternate, amplexicaul, more entire. h. 6in. to 12in. Mediterranean region. (S. F. G. 820.)

ZACINTHA (of Vellozo). A synonym of *Clavija* (which see).

ZALACCA (said to be the name of this genus in the Moluccas). Sometimes spelt *Salacca*. ORD. *Palme*. A genus comprising about eight species of stemless, stove Palms, with soboliferous roots; one is a native of Assam, and the rest inhabit the Malayan Archipelago. Flowers often pink, polygamo-monoëcious or dioecious; spathes persistent, the lower ones sheathing the peduncle and branches, incomplete, the partial ones subtending the floriferous branchlets; spadices simple or fastigiately branched, pendulous, the floriferous branchlets catkin-like, rather short, remote or clustered, sessile or pedunculate; bracteoles connate in a two-celled cup. Fruit globose, turbinate, or ovoid, one to three-seeded, usually beaked. Leaves elongated, equally pinnatisect; segments alternate, fastigate or equidistant, lanceolate or oblanceolate, straight or falcate, acuminate; rachis obtusely triangular, not produced into a spine; petioles slightly terete, armed with often spirally-disposed prickles. The best-known species are here described. The plants grown in some nurseries under the names of *Z. nitida* and *Z. Wagneri* perhaps represent distinct species, but so little is known about them that they cannot be described. The cultural directions given under *Cycas* are applicable to this genus.

Z. Blumeana (Blume's). A synonym of *Z. edulis*.

Z. edulis (edible). *fl.*, spadices drooping, long-branched, the males axillary, longer and more branched than the females; female catkins 2in. to 3in. long, thicker than the males. *fr.* fulvous-fuscescent, pyriform, $\frac{1}{2}$ in. long. *l.* copious, clustered, erect, clothed with long, often serrate prickles; pinnae linear-lanceolate, very long-acuminate, 1 $\frac{1}{2}$ ft. to 2 $\frac{1}{2}$ ft. long, $\frac{1}{2}$ in. to 2in. broad, whitish beneath; petiole rather shorter than the rachis, and armed with robust prickles. Malay Archipelago, 1847. SYN. *Z. Blumeana*.

Z. Wallichiana (Wallich's). *fl.*, spadix axillary, many feet long, drooping or pendulous, long-branched; male catkins lin. to 2in. long, the female ones cylindrical, 2in. long. *fr.* ovate-pyriform, $\frac{1}{2}$ in. long, slightly acute. *l.* 18ft. to 20ft. long, clustered, nearly erect; pinnae fasciated in twos, threes, or fours, narrow-lanceolate, with a long and slender, cuspidate point, attenuated and reduplicate at base, flat, the older ones $\frac{1}{2}$ ft. long, 3in. to 4in. broad; petiole 4ft. to 6ft. long, armed with robust, fuscous prickles. India, &c., 1847. (G. C. 1873, p. 1803.)

ZALUZANIA (named after Adam Zaluziansky a Zaluzian, a physician of Prague, who published "Methodus Herbariarum" in 1602). Including *Chaliophyllum* and *Ferdinanda* (in part). ORD. *Compositæ*. A genus embracing seven species of stove, greenhouse or half-hardy, Mexican shrubs or under-shrubs. Flower-heads yellow (or white), heterogamous, radiate, sometimes rather small, in leafy, corymbose panicles. *Ferdinanda eminens* is a tall, stove shrub. Flower-heads white, small, disposed in an ample panicle; involucre short, the narrow bracts in two or three series. Leaves opposite, petiolate, large, angular-lobed. *Podachonium paniculatum* is now the correct name of this plant. It thrives in a compost of loam and peat, and may be increased by cuttings, inserted in sand, under a glass, in heat.

ZALUZIANSKIA (named in honour of the same person as the preceding genus). SYN. *Nycterinia*. ORD. *Scrophularinæ*. A genus comprising about sixteen species of more or less viscous, greenhouse or half-hardy, South African, annual or perennial herbs or sub-shrubs. Flowers sessile, spicate; calyx shortly five-toothed, bilabiate or two-parted; corolla persistent, at length cleft to the base, the limb of five spreading, entire or bifid lobes; stamens often four. Lower leaves alternate; upper ones opposite, few-toothed; floral ones bract-like, entire. Three species have been introduced. All thrive in a mixture of sandy loam and peat. Seeds of *S. capensis* and *S. selaginoides* may be sown, in summer, in the open border. *S. lychnidea* may be increased by cuttings, or by divisions.

Z. capensis (Cape).* *fl.* whitish; corolla slender, nearly $\frac{1}{2}$ in. long; spikes usually short and few-flowered, the central one usually acquiring a considerable length. Spring. *l.*, upper ones

Zaluzianskia—*continued*.

or all linear, few-toothed or quite entire, one-nerved, the margins and nerve usually ciliated. Stem erect, adpressedly villous. *h.* 6in. to 12in. Half-hardy annual. See Figs. 251 and 252.



FIG. 251. ZALUZIANSKIA CAPEENSIS.

Z. lychnidea (Lychnis-like). *fl.* yellowish-white; corolla tube $\frac{2}{3}$ in. or rather more in length; spikes elongated. May to July. *l.* oblong-linear, few-toothed or entire, one-nerved, nearly glabrous; floral ones amplexilobed, broadly lanceolate or oblong, obtuse, few-toothed or entire, the margins and nerve ciliated. Branches adpressedly villous. *h.* 6in. to 12in. 1776. Greenhouse sub-shrub. SYN. *Erinus lychnidea* (B. M. 2:04; B. R. 748), *Nycterinia lychnidea* (S. B. F. G. ser. ii. 239).

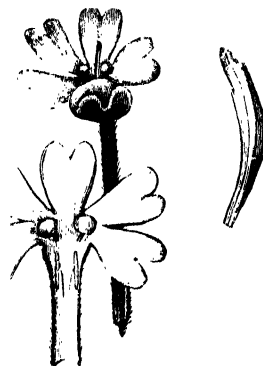


FIG. 252. ZALUZIANSKIA CAPEENSIS, showing detached Flower, Leaf, and Corolla laid open to exhibit insertion of Stamens.

Z. selaginoides (Selago-like). *fl.* white, with an orange centre, fragrant at night; corolla nine to eleven lines long, the throat crowned with rigid pile; spikes interrupted at base. May. *l.* spatulate; lower ones obovate, on rather long petioles; upper ones oblong- or linear-spatulate; floral ones adnate to the calyx, dilated at base. *h.* 3in. to 5in. 1854. Half-hardy annual.

ZAMIA (from *zamia*, loss; a name given by Pliny to barren Pine cones, and hence applied by Linnæus to this genus, in allusion to the sterile appearance of the male fructification). ORD. *Cycadaceæ*. A genus comprising about thirty species of handsome, stove or greenhouse, perennial plants, resembling Palms and, in some particulars, Ferns; they are all natives of tropical America and the West Indies, one only extending up to the Southern

Zamia—continued.

United States. Leaves few, appearing one after another, pinnate; pinnae broad or narrow, entire or serrated; petioles smooth or spinulose. Cones glabrous or rarely furfuraceous, solitary or two or more together; males oblong-cylindrical, with many series of superposed, peltate scales, on thick footstalks; females similar, but larger and thicker. Caudex (sometimes a dwarf trunk) simple, lobed, or branched, smooth or scarred, naked, epigæous or nearly hypogæous. The species best known to cultivation are here described. They thrive in a mixture of equal parts of good loam and peat, with a little silver sand added, and prefer a position where they would be shaded from bright sunshine in summer, and a temperature not lower than 60deg. in winter. In summer, they should be freely watered, both at the root and overhead. When sick, it is a good plan to shake all the soil away from their roots, wash them carefully, cut away all decayed parts, and replot them in fresh soil. They should then be plunged in bottom heat, and watered carefully till new growth appears. Propagated by division in the cases where the stems are clustered; by seeds and offsets where division is not possible. Except *Z. integrifolia*, the North American species, all are stove plants.

Z. amplifolia (ampl-leaved).* *L.* erect; leaflets two pairs, broadly ovate-lanceolate, acuminate, glabrous, yellowish-green, 1 1/2 in. long, 3/4 in. to 4 in. broad, strongly ribbed on both sides; rachis angular; petioles 1/2 in. to 1 1/2 in. long, purplish, terete, puberulous, with scattered, minute prickles. Caudex oblong, obtuse, glabrous. Columbia, 1879. A handsome plant, probably new lost to cultivation.

Z. angustifolia (narrow-leaved). *L.*, adults glabrous; leaflets four to twenty on both sides, mostly alternate, narrow-linear, rather obtuse, 6 in. to 8 in. long, scarcely narrowed at base; petioles terete beneath, unarmed. *cones* 2 in. to 2 1/2 in. long; males reddish-tomentose, cylindrical; females thicker, obtusely cuspidate; peduncles erect, rufous-pubescent. Caudex ovoid-conical. West Indies.

Z. calocoma (beautiful-haired).* *L.* 3 ft. long, very slenderly pubescent; leaflets eighty on each side, alternate and opposite, the larger ones 4 in. long, linear, acuminate, slightly narrowed at base, parallel-nerved, the margins revolute; petioles 4 in. long, terete beneath. Trunk dwarf. Antilles. *Microcyas calocoma* is now the correct name of this species.

Z. Chigua (Chigun). *L.* 4 ft. long; leaflets alternate, very numerous, spreading, long-lanceolate, acuminate, obsoletely denticulate, glabrous, about sixteen-nerved; petioles thickly, and rachis sparsely, prickly. *cones*, males cylindrical, 5 1/2 in. to 7 1/2 in. long, cuspidate; females much larger, cuspidate. Trunk cylindrical, 8 in. high. Darien, 1847. *SYNS.* *Z. Lindleyi*, *Z. princeps*, *Aulacophyllum Ortipia*.

Z. Fischeri (Fischer's). *L.*, leaflets three to six on each side, 1 1/2 in. to 2 1/2 in. long, about 1 in. broad, the lower ones alternate, the upper ones opposite, lanceolate, acuminate, attenuated at base, slightly inequilateral, the upper margin argutely serrulated one-third to half its length; rachis 1 1/2 in. to 2 1/2 in. long, glabrous or nearly so, produced above the leaflets in a mucro; petioles nearly terete, 2 in. or more long. Central America, 1849. (G. C. n. s., xix., p. 213.)

Z. Fraseri (Fraser's). A garden synonym of *Macrozamia Fraseri*.

Z. furfuracea (scurfy).* Jamaica Sago-tree. *L.*, leaflets ten to thirteen on each side, opposite or alternate, obovate-oblong or obversely lanceolate, spinulose-serrulated from the middle to the apex, serrated and sometimes unequally repand-lobed at the extremity, acute or obtuse, below densely, above and on the rachis and petioles slightly, scurfy; rachis almost unarmed; petioles prickly. *cones*, females yellow-scurfy, 2 in. to 4 in. long, ovoid-elongated. Trunk cylindrical. Mexico, 1691. (B. M. 1869; R. G. 932.)

Z. Ghellinckii (Ghellinck's). A synonym of *Encephalartos Ghellinckii*.

Z. integrifolia (entire-leafleted). Jamaica Sago-tree. *L.* spreading, glabrous; leaflets seven to sixteen on each side, alternate, rarely opposite, the larger ones 4 in. to 7 in. long, oblong or obovate-oblong, entire or obtusely serrulated at apex; petioles unarmed. *cones* slightly rufous-tomentose; males 2 1/2 in. long; females 3 1/2 in. long. Trunk short, globular or oblong. Southern United States, &c., 1758. Greenhouse. (B. M. 1851.)

Z. Kickxii (Kickx's). *L.* glabrous; leaflets about twenty-four on each side, alternate or sub-opposite, nearly all spreading, the lower ones smaller, the middle ones 2 in. long, 5 in. broad, lanceolate-elliptic, the margins, especially the lower one, serrulated; rachis sub-terete; petioles slender, unarmed. *cones*, males cylindrical, elongated, acute, 2 in. long. Cuba.

Zamia—continued.

Z. Leiboldii (Leibold's). *L.*, leaflets fourteen to twenty-two on each side, truncate or acute at apex, opposite or alternate, twenty to twenty-five nerved; petioles semi-terete. Trunk 8 in. high. Mexico, 1843. (R. G. 929, under name of *Z. L. angustifolia*.)

Z. Lindenii (Linden's). *L.* lanceolate, 6 ft. long, on elongated petioles; leaflets forty to forty-four on each side, sessile, glabrous, 8 in. long, elongated-lanceolate, somewhat falcate, dentate-serrated in the upper half. Trunk cylindrical, 3 ft. or more high. Ecuador, 1875. A stately plant. (L. H. 1875, 195.)

Z. Lindleyi (Lindley's). A synonym of *Z. Chigua*.

Z. Loddigesii (Loddiges'). *L.*, leaflets erecto-accumbent, long-lanceolate or linear-lanceolate, slightly narrowed at base, acuminate at apex, 7 1/2 in. long, slightly thickened on the margins, serrated from the middle (or nearly so) to the apex; rachis slightly spiny. Caracæa, 1844. (R. G. 926.)

Z. media (medium). A synonym of *Z. pumila*.

Z. Miquelii (Miquel's). A garden name for *Macrozamia Fraseri*.

Z. montana (mountain-loving). *L.* 4 ft. to 5 ft. long, forming a terminal tuft; leaflets eight to ten pairs, 1 ft. or more long, 2 in. to 4 in. broad, oblanceolate to linear-oblanceolate, abruptly acuminate, with one prominent tooth and a few obscure ones; petioles dusky-tomentose at base, beset throughout with scattered prickles. Trunk 4 ft. to 5 ft. high, 9 in. thick. Columbia, 1882.

Z. muricata (rough). *L.*, leaflets six to eleven pairs, alternate and sub-opposite, oblong or obversely oblong or oblong-lanceolate, acuminate, obscurely spiny-serrulated from the middle to the apex; petioles terete, prickly. *cones* 3 in. to 4 in. long, cylindrical, sub-acute at apex; peduncles glabrous. Trunk glabrous. Central America, 1849.

Z. obliqua (oblique). *L.* unarmed, glabrous or covered with a close pubescence; leaflets seven to ten on both sides, ovate-lanceolate, obtusely acuminate at apex, attenuated at base, about 8 in. long and nearly 3 in. broad. Trunk slender, attaining a height of 6 ft. to 7 ft. Columbia, 1878. (G. C. n. s., xvii., p. 461; L. H. 1877, 289.)

Z. Ottonis (Otto's). *L.* glabrous, 1 ft. to 2 ft. long; leaflets nine to fourteen pairs, alternate and (the upper ones) opposite, oblong- or obovate-lanceolate, obtuse, the larger ones 1 1/2 in. to 2 in. long, argutely serrulated towards the apex, especially on the lower margin; petioles unarmed. *cones* 1 1/2 in. long; males fuscous-pubescent, cylindrical; females thick, cuspidate; peduncles 1 1/2 in. long, clothed with fuscous and white pubescence. Caudex tuberous, fusiform, 2 1/2 in. long. Cuba.

Z. picta (painted).* *L.*, leaflets spotted with white; petioles thicker and more pubescent than in *Z. muricata*, of which *Z. picta* was long considered a variety; it is, however, a much handsomer plant, very distinct from that species. Mexico.

Z. prasina (grass-green). *L.*, leaflets sixteen or seventeen pairs, oblanceolate-cuneate, denticulated towards the apex, bright grass-green above; petioles terete, slightly furrowed in front, and beset with a few white prickles. Honduras, 1881.

Z. princeps (princely). A synonym of *Z. Chigua*.

Z. pumila (dwarf). *L.*, leaflets eighteen to twenty on both sides, obovate-oblong, obtuse, entire or obsoletely serrulated, 2 in. to 2 1/2 in. long; petioles unarmed, scurfy pubescent. *cones* 1 1/2 in. to 3 1/2 in. long, ellipsoid, obtuse. Florida and West Indies, 1812. Stove or greenhouse. (B. M. 2005.) *SYN.* *Z. media* (B. M. 1838).

Z. pygmaea (pigmy). *L.* 5 in. to 8 1/2 in. long; leaflets three to ten pairs, opposite and alternate, obliquely sub-cuneate at base, oval-oblong or oval, the larger ones 1 1/2 in. long, serrated to the middle; petioles terete, unarmed, 2 1/2 in. long. *cones*, males 1 in. long, somewhat ovoid-globose, on long peduncles. Caudex growing underground. West Indies. Plant dwarf, highly glabrous. (B. M. 1741.)

Z. Roëzlii (Roëzli's). *L.* 6 1/2 ft. long, forming an elegant crown; leaflets 12 in. to 16 in. long, linear, acute, falcate, glabrous, shining, longitudinally furrowed. *cones*, females large, cylindrical, obtuse. Trunk thick. New Grenada, 1873. (L. H. 1873, 133-4.)

Z. Skinneri (Skinner's). *L.*, leaflets usually four pairs, opposite or alternate, oblong, acute at both ends, coriaceous, shining, spiny-serrulated from the middle to the apex, the larger ones 1 1/2 in. to 3 1/2 in. broad; rachis and petioles prickly. *cones*, males three or four, aggregated, elongated-cylindrical, shortly pedunculate, 6 in. long, ferruginous-pubescent. Central America, 1851. (B. M. 5242; F. d. S. 2212.) *SYN.* *Aulacophyllum Skinneri*.

Z. tonkinensis (Tonkin-). *L.* pinnatifid, slightly recurved, glabrous, of a beautiful green; leaflets sessile, lanceolate, acuminate at apex, the margins undulated; petioles cylindrical, woolly, furnished with very robust spines. Trunk slender, cylindrical, erect, wholly clothed with large, round, fuscous scales. Tonkin. (L. H. 1885, 547.) This plant is now referred to *Cycas*.

Z. villosus (villous). A synonym of *Encephalartos villosus*.

Z. Wallisii (Wallis').* *L.* solitary, pinnate; leaflets few, lanceolate, plaited, 1 ft. long; petioles reddish, prickly. Trunk short and fleshy. New Grenada, 1875. This plant is allied to *Z. Skinneri*.

ZAMIOCULCAS (from *Zamia*, a cycadaceous genus, and *Culcasia*, belonging to the Aroids; both of which the present plants are supposed to resemble). Including *Gonatopus*. ORD. *Aroidæ* (*Araceæ*). A small genus (two species) of stove, herbaceous perennials, natives of Eastern tropical Africa. Flowers dense; spathe tube convolute, sub-globose, the lamina lanceolate or boat-shaped, horned at apex; spadix sessile, cylindrical, shorter than the spathe, inappendiculate. Leaves many, on thick petioles, imparipinnate with six to eight pairs of alternate pinnae, or bipinnate with opposite pinnae and pinnules; petioles very shortly sheathing at base. These plants thrive in a compost of sandy loam, leaf mould, and small pieces of charcoal, and require a moist atmosphere. Propagation may be effected by division of the root. "Young plants may also be obtained from the leaflets after they have disarticulated from the rachis, as follows: Place some leaflets upon some soil, which must be kept damp; in a few days, the basal ends of the leaflets commence to swell, and each forms, after a short time, a small tuber. The tuber, with the leaf attached, may then be planted in a small pot, but should only be just covered with earth; roots and leaf-buds quickly form, and soon a young plant is established" (N. E. Brown).

Z. Boivini (Boivin's). *f.*, spathe 6in. long, the lamina dirty yellowish-green inside, lurid yellowish-green externally, darkly nerved and striated; spadix equalling the spathe, the female portion 1in. long, the male 4in. long, yellow, terete. *l.* solitary, radical, erect, 2ft. to 3ft. long, triangular-ovate, tritermately pinnate; pinnae opposite, ovate-lanceolate, acuminate, sessile or shortly petiolulate; petioles as thick as the little finger. Rhizome short, dilated. 1873. (B. M. 6026.) SYN. *Gonatopus Boivini*.

Z. Loddigesii (Loddiges'). *f.*, spathe green, thick, the lamina about 2in. long; spadix greenish-yellow, 1½in. to 2in. long, constricted in the middle; scape very short, stout. June. *l.*, pinnae 3in. to 6in. long, alternate, deciduous, obovate or elliptic-lanceolate, shortly petiolulate or sub-sessile; petioles about 2ft. long, terete, clavate at base. Rhizome short, horizontal, giving off large, white, sessile tubers. 1828. (B. M. 533.) SYN. *Caladium zamiaefolium* (L. B. C. 1408).

ZANNICHELLIA (named after John Jerome Zannichelli, 1662-1729, a Venetian botanist). Horned Pondweed. ORD. *Naiadaceæ*. A small genus (one or several species) of hardy, slender, aquatic, annual herbs, inhabiting temperate and tropical regions. Flowers minute, solitary or in pairs, axillary. Leaves usually opposite, linear, submerged. *Z. palustris* is a British plant; it has no horticultural value.

ZANONA PALM. A common name for *Socratea* (which see).

ZANTEDESCHIA (of Koch). A synonym of *Schizomatoglottis* (which see).

ZANTEDESCHIA (of Sprengel). Synonymous with *Homalonema* and *Richardia* (which see).

ZANTE WOOD. The wood of *Chloroxylon Swietenia* and *Rhus Cotinus*.

ZANTHORHIZA. A synonym of *Xanthorrhiza* (which see).

ZANTHOKYLEE. A tribe of *Rutaceæ*.

ZANTHOKYLUM (from *xanthos*, yellow, and *zylon*, wood; alluding to the colour of the roots). Sometimes spelt *Xanthoxylon*. Prickly Ash; Toothache-tree. SYN. *Pterota*. Including *Blackburnia* and *Fagara*. ORD. *Rutaceæ*. A genus embracing about eighty species of stove, greenhouse, half-hardy, or hardy shrubs or trees, often armed with stout prickles, inhabiting tropical and sub-tropical regions. Flowers often white or greenish, small, in axillary or terminal, pedunculate, broad or narrow cymes; calyx three to five-cleft, rarely obsolete; petals three to five, rarely wanting; stamens three to five. Fruit of one to

Zanthoxylum—continued.

five fleshy carpels, often aromatic or strongly scented. Leaves alternate, trifoliolate or unequally pinnate; leaflets opposite or alternate, entire or crenate, often oblique, dotted. A selection of the introduced species is here given. For culture, see *Zizyphus*.

Z. alatum (winged). *f.* apetalous; panicles loose, sparingly branched. Spring. *l.* 1½in. to 8in. long; leaflets two to six pairs, lanceolate, obtusely acuminate, elliptic beneath; petiole and rachis usually broadly winged. Prickles often vertically flattened on the trunk and branches. India. Half-hardy shrub or small tree.

Z. americanum (American). Common Toothache-tree. *f.* apetalous, in axillary umbels. March and April. *l.* leaflets nine or eleven, ovate, obscurely serrated, equal at base; petioles round, and devoid of prickles; stipules replaced by prickles. *h.* 12ft. to 15ft. North America, 1740. Hardy tree.

Z. aromaticum (aromatic). *f.* greenish-white; panicles terminal and axillary, glabrous, verrucose, 3in. to 5in. in diameter. April. *l.* leaflets six to twelve-jugal, elliptic or oblong, crenate, with the crenatures broadly truncate, petiolulate, glabrous, glandular beneath. Prickles short, subulate, or wanting. *h.* 20ft. Jamaica, 1824. Stove tree.

Z. Blackburnia (Blackburnia). *f.* white; petals imbricated; panicles axillary or terminal, loose, shorter than the leaves. May. *l.* pinnate, with a compound petiole of 4in. to 8in.; leaflets three to nine, very obliquely ovate, shortly acuminate, usually 2in. to 3in. long, petiolulate. *h.* 6ft. Australia, 1829. Greenhouse shrub or small tree. SYN. *Blackburnia pinnata*.

Z. clava-Herculis (Hercules' Club) Southern Prickly Ash. *f.* greenish; panicles terminal and axillary, pubescent, 2in. to 4in. in diameter. April. *l.* leaflets five to ten-jugal, lanceolate-oblong, pointed, quite entire or minutely serrated, subsessile, glabrous above, puberulous along the nerves or glabrate beneath. *h.* 20ft. to 50ft. West Indies, 1821. Stove tree.

Z. nitidum (shining). *f.* greenish-white; racemes axillary, fasciated. May. *l.* imparipinnate, two or three-jugal; leaflets oblong, shining, remotely glandular-crenate, elongated and emarginate at apex, the midrib (as well as the petioles and branches) prickly. *h.* 10ft. China, 1823. Greenhouse shrub. (B. M. 258)

Z. piperitum (Pepper-like). Chinese or Japanese Pepper. *f.* white. September. *l.* leaflets oblong, unequal at base, crenate; petioles subulate, jointed; prickles stipular. *h.* 10ft. Japan, 1773. Half-hardy shrub. The small, globose, rugose fruits of this species are called Japan Pepper. SYN. *Fagara piperita*.

Z. Pterota (Pterota). Bastard Ironwood. *f.* greenish, in axillary clusters, single or by pairs; stamens four. August. *l.* leaflets seven to nine, 3in. to 4in. long, obovate, crenate above the middle, sessile; petioles winged, jointed. Branches zigzag, armed with short, curved prickles. *h.* 10ft. South Florida, &c., 1768. Half-hardy tree.

Z. spinifox (thorny). *f.* white, in a short glomerule. July. *l.* leaflets one to three-jugal, oval or spatulate, emarginate or blunt, quite entire, 4in. to 5in. long, glabrous, leathery, bitubercled at the base beneath, devoid of pellucid dots; petioles unarmed. Stipular prickles straight. West Indies, 1825. A low, tortuous, leafy, stove shrub. SYN. *Panara microphylla*.

ZAPANIA. Included under *Lippia* (which see).

ZARA. A synonym of *Pistia* (which see).

ZARABELLIA (of Necker). A synonym of *Berkheya* (which see).

ZAUSCHNERIA (named after H. Zauschner, a German botanist). ORD. *Onagraceæ*. A monotypic. The species is a handsome, small, half-hardy shrub, thriving in any light, but not on heavy soil. It may be multiplied by cuttings, made from young side shoots, in September, inserted in pots of sandy soil, and placed in a frame. If wintered in a cool house or frame, the young plants may be transferred to the open ground in spring, where they will grow and flower profusely the summer and autumn following. Division of old plants in spring, and seeds, are also available methods of increase. The latter should be sown, about March, on a gentle hotbed. In sheltered places and warm situations, this desirable plant proves itself sufficiently hardy to live outside in winter; but it is safer to propagate a young stock annually than to trust too much to its hardiness.

Zauschneria—*continued.*

Z. californica (Californian).* Californian Fuchsia; Humming-bird's Trumpet. *f.* bright red, in loose spikes terminating the branches, large, erect, spreading, and with small, leafy bracts; calyx coloured, much produced, funnel-shaped, globose-inflated at base, the segments spreading; petals four, obovate, or rather deeply two-cleft, rather longer than the calyx lobes; stamens eight, slightly exerted. Summer and autumn. *l.* crowded, linear-lanceolate, narrow, entire or denticulate, sessile, cuneately pubescent, the lower ones opposite, those of the branches alternate. *h.* 1 ft. (California and Mexico, 1847. (F. d. S. 404; P. M. B. xv. 196.)

Z. c. latifolia (broad-leaved). *f.* rather smaller; calyx dull red. *l.* rather broader, and, as well as the branches, villous-canescent. (B. M. 4433.)

ZEA (*Zea* or *Zeia* was the old Greek name for Speltz, or some similar common Cereal, and is found as far back as Homer). **SYN. Mays.** **ORD. Gramineæ.** A monotypic genus. The species is a well-known, tall, half-hardy Grass. Maize, probably, ranks next to Rice in its importance as a food-plant; it is very largely cultivated throughout

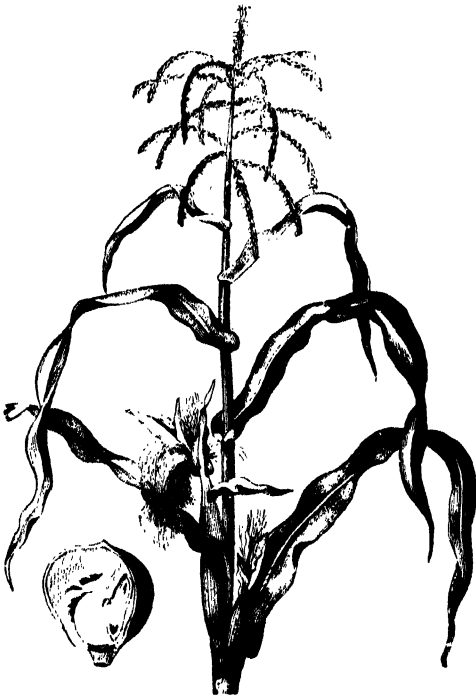


FIG. 253. UPPER PORTION OF PLANT OF ZEA MAYS, showing axillary Female and terminal Male Inflorescences; also Longitudinal Section through Seed.

the warmer regions of the globe, and is imported into England in immense quantities. A fine flour, known as Corn Flour and Maizena, is prepared from the grain of *Z. Mays*, and is largely employed in the making of light puddings, custards, &c. Numerous varieties are grown in gardens, most of them sufficiently hardy to endure the open air. They thrive in any fairly good soil, and may be increased by seeds.

Z. Mays (Maize).* Guinea or Turkey Wheat; Indian Corn; Maize; Mealies. *f.*, spikes its unisexual, monoecious, the males in

Zea—*continued.*

cated pales. *l.* ample, entire, broad, flat. *h.* 3 ft. Probably of American origin, 1562. See Fig. 253. (B. M. Pl. 236.) *gracillima* is a variety of very graceful habit.



FIG. 254. ZEA MAYS VARIEGATA.

Z. M. variegata (variegated).* This differs from the type in its leaves being striped with white. It is an exceedingly ornamental plant. See Fig. 254.

ZEBRA PLANT. A common name for **Calathea zebrina** (which see).

ZEBRA WOOD. A common name for **Myrtus fragrans** and **Guetarda speciosa** (which see).

ZEBRINA (the leaves are striped in a zebra-like manner). **ORD. Commelinaceæ.** A small genus (two species) of stove or greenhouse, loosely decumbent, pendulous or climbing, branched herbs, natives of Mexico. Flowers rather small, shortly pedicellate; calyx trifid, or bifid with one lobe broader; corolla lobes spreading; stamens six; cymes sessile in a spathe, fasciole-like, few or many-flowered; spathes on terminal peduncles. Leaves ovato-lanceolate. *Z. pendula* forms a good basket plant, and is also useful for covering the earth in very large pots or tubs, or as an edging in suitable places. It thrives in a light, rich soil, and may be very quickly increased by cuttings.

Z. pendula (pendulous).* *f.*, calyx tube whitish; corolla tube white, the segments rose-purple, ovate, obtuse; inflorescence glomerate. Summer. *l.* 1 1/2 in. long, 3 in. to 1 in. broad, sub-sessile, ovate-oblong, acute, scarcely acuminate, or somewhat obtuse, green, striped with white and sparsely pubescent above, purplish and densely pubescent beneath. Stems decumbent, branched, glabrous or pilose on one side. 1849. (R. H. 1855, p. 141.)

See Calathea vittata, Pterisanthes zebrina, P. zebrina. These

upper surface of the leaves is suffused with red.

ZEDOARY, ROUND. See **Curcuma Zedoaria.**

ZEHNERIA (named in memory of Joseph Zehner, a of Vienna). **SYN. Piloclyne.** **ORD. Cucurbitaceæ.** A genus embracing about fifteen species of stove

Zehneria—continued.

or greenhouse, prostrate or climbing herbs, with perennial roots; one is found in Norfolk Island, another in Peru, and the rest inhabit tropical and South Africa and Asia. Flowers small, dioecious, rarely monoecious; males fasciated, racemose, or corymbose, with three, rarely four or five, stamens; females solitary, fasciated, or oorymbose, with three rudimentary stamens; calyx minutely five-toothed or five-lobed; corolla rotate, five-parted. Fruit small, baccate, shortly pedunculate. Leaves angularly toothed or lobed, often membranous. Tendrils simple. Only two species have been introduced. For culture, see **Gourds**.

Z. hastata (halbert-shaped). *l.* very ornamental, of a firm texture, lively green in colour, the veins being bordered with silvery-white, ovate, sub-orbicular, oblong, or narrow-lanceolate, glabrous or rarely slightly scabrous below, usually acute or acuminate at apex. Java, 1866. A handsome, tuberous-rooted climber. Its proper name is now *Melothria*.

Z. suavis (soft). *l.* white-dotted and scabrous above, pilose, shortly hirsute, or scabrous beneath, cordate-ovate, angular or somewhat three to five-lobed, emarginate at base, the margins slightly and remotely denticulate. South Africa. Greenhouse. *Melothria punctata* is now the correct name of this plant.

ZENOBIA (so called after the famous Empress of Palmyra, who lived in the third century). **ORD. Ericaceæ.** A monotypic genus. The species is a hardy, highly glabrous, often glaucescent shrub, with terete branchlets. It thrives in a compost of sandy loam and peat. Propagation may be effected by seeds, or by layers.

Z. speciosa (showy).* *fl.* in umbel-like fascicles from axillary buds, mostly racemose on naked branches of the preceding year; calyx lobes short, triangular; corolla white, five-lobed; pedicels drooping. Summer. *l.* coriaceous, oval or oblong, $\frac{1}{2}$ in. to $\frac{2}{3}$ in. long, commonly crenulate or sparsely serrulate, reticulate-veined. *h.* 2 ft. to 4 ft. South United States, 1800. (S. B. F. G. ser. ii. 330.) **SYNS.** *Andromeda cassinaefolia* (B. M. 970), *A. speciosa* (L. B. C. 551).

Z. s. pulverulenta (powdery).* A white, glaucous form.

ZEPHYRANTHES (from *sephyros*, the west wind, and *anthe*, a flower; a fanciful name given by Herbert). Flower of the West Wind; Zephyr Flower. Including *Habranthus* (in part) and *Pyrolirion*. (**ORD. Amaryllidææ.**) A genus comprising nearly thirty species of pretty, stove, greenhouse, or hardy, bulbous plants, inhabiting the warmer parts of America; one species being found in Western tropical Africa. Flower always solitary in a spatheaceous bract, which is entire or bifid at apex and tubular at base, pedicellate or rarely sessile, erect or slightly declinate; perianth pink, white, purplish, or yellowish, sometimes various-coloured in the same species, funnel-shaped, the tube very short or more or less elongated, enlarged above; lobes equal or slightly unequal, erecto-patent above; stamens affixed to the throat, equal, or three rather smaller; scape elongated, fistular. Leaves few, linear or loriform, appearing with or after the flowers. The species best known to gardeners are described below. The plants grow and flower in summer, and rest in winter. They should be grown in a sunny frame, or on a shelf in a greenhouse during warm weather. They must be protected from frost in winter; a dry shelf in a heated greenhouse or shed being the best position for them. Some of the kinds may be left outside if planted in a dry, sunny border. They require a compost of turfy loam, with a little rotten manure and sand; and should be repotted about every two years. Propagated by separating the offset bulbs; or by seeds, which are freely produced.

Z. Andersoni (Anderson's).* *fl.* perianth golden or copper-coloured reddish at base, striated outside, $\frac{1}{2}$ in. long; or more long; spathe divided above; scape reddish, $\frac{1}{2}$ in. to $\frac{4}{5}$ in. long. *l.* narrow-linear, acute, green or slightly glaucous, $\frac{5}{8}$ in. to $\frac{6}{8}$ in. long. Monte Video, 1823. Greenhouse or half-hardy. **SYNS.** *Habranthus Andersoni* (B. R. 1345; L. B. C. 1677; S. B. F. G. ser. ii. 70). *Z. A. aureus* and *Z. A. cupreus* have respectively golden and coppery flowers.

Zephyranthes—continued.

Z. A. texana (Texan). *fl.* perianth yellow; segments round, obtuse. **SYNS.** *Habranthus Andersoni texanus* (B. M. 3596).

Z. Atamasco.* *Atamasco Lily.* *fl.* perianth white (when young, suffused with white, purple, or flesh-colour), the segments recurved, lanceolate, acute; scape terete, $\frac{6}{8}$ in. to $\frac{12}{8}$ in. long. *l.* linear, slightly succulent, channelled, glabrous, nearly $\frac{1}{2}$ in. long. Virginia, &c., 1629. Hardy. (L. B. C. 1899.) **SYNS.** *Amaryllis Atamasco* (B. M. 235).

Z. candida (white).* Peruvian Swamp Lily. *fl.* inodorous, erect, shortly pedicellate; perianth white, greenish at base, the segments sub-equal, ovate, obtuse, $\frac{1}{2}$ in. long; spathe purplish, much shorter than the pedicel; scape erect or declinate, longer or shorter than the leaves. September. *l.* fasciated, linear, flat, highly glabrous, fleshy, of a pleasing green, $\frac{2}{3}$ in. to $\frac{5}{8}$ in. long. Buenos Ayres, 1822. Greenhouse. (B. M. 2107; L. B. C. 1419.) **SYNS.** *Amaryllis candida* (B. R. 724).

Z. carinata (keeled).* *fl.* perianth tube green, $\frac{2}{3}$ in. long, straight, the segments pink, $\frac{2}{3}$ in. long, obovate-oblong, glabrous, many nerved; pedicel $\frac{1}{2}$ in. long, shorter than the tubular, bifid spathe; scape $\frac{1}{2}$ in. high, glabrous, reddish at base. May. *l.* $\frac{1}{2}$ in. broad,

form with pretty, bluish flowers $\frac{3}{4}$ in. long. (B. R. 902 [the flower only; the leaves belong to another species].)

Z. citrina (citron-yellow).* *fl.* perianth tube $\frac{1}{2}$ in. to $\frac{3}{4}$ in. long, the segments bright yellow, $\frac{1}{2}$ in. long, oblong, sub-acute, connivent; pedicel less than $\frac{1}{2}$ in. long; spathe short, tubular; scape $\frac{4}{8}$ in. to $\frac{5}{8}$ in. long, tinged with red-brown below. August. *l.* three or four, narrow-linear, bright green, about $\frac{1}{2}$ in. long, $\frac{1}{2}$ in. broad, deeply channelled above, rounded below, reddish-brown towards the base. Tropical America. (B. M. 6605.)

Z. concolor (one-coloured). *fl.* perianth pale green or sulphur-coloured, nearly regular, erect, the segments oblong, acute; spathe tubular, coloured, shorter than the pedicel. April *l.* erect, glaucescent. *h.* 1 ft. Mexico, 1844. Greenhouse. **SYNS.** *Habranthus concolor* (B. R. 1845, 54).

Z. flava (yellow). *fl.* sessile; perianth of a beautiful pale golden-yellow, $\frac{3}{8}$ in. to $\frac{4}{8}$ in. long, the segments lanceolate, acute; spathe bifid, rather longer than the perianth tube; scape terete, in cultivation shorter than the leaves, longer and more robust in the wild state. May. *l.* one or two, linear, narrowed and recurved at apex, dark green, channelled. *h.* 1 ft. Peru, 1833. Greenhouse. **SYNS.** *Pyrolirion aureum* (H. R. 1724), *P. flavum*.

Z. gracilifolia (slender-leaved). *fl.* pedicellate, erect, closing at night, inodorous; perianth rose-coloured, $\frac{1}{2}$ in. long, the tube

$\frac{1}{4}$ in. long, very slender, sub-cylindrical, shining green, deeply channelled above. South America, 1821. Hardy. **SYNS.** *Habranthus gracilifolius* (B. M. 2464).

Z. g. Boothiana (Booth's). *fl.* perianth pink, nodding; pedicel purplish; scape erect. *l.* glaucous-green, round and blunt at apex. Brazil, 1822. **SYNS.** *Habranthus gracilifolius Boothiana* (B. R. 1967).

Z. grandiflora (large-flowered). A form of *Z. carinata*.

* **Z. macrosiphon** (large-tubed). *fl.* perianth bright rose-red, $\frac{2}{3}$ in. to $\frac{2}{3}$ in. long, the segments sub-erect, obovate, obtuse, about $\frac{1}{2}$ in. broad; pedicel about $\frac{1}{2}$ in. long; spathe two-valved, $\frac{1}{2}$ in. long; scape terete, about as long as the leaves. *l.* three or four, linear, $\frac{1}{2}$ in. long, $\frac{1}{2}$ in. broad, bright green, rather fleshy, shallowly channelled. Mexico, 1881.

Z. mesochloa (half-green). *fl.* perianth green below, white above, red externally, $\frac{1}{2}$ in. long, the tube very short, the outer segments $\frac{1}{2}$ in. broad, the inner ones narrower, all acute; pedicel about $\frac{1}{2}$ in. long; spathe fenestrate or divided at apex; scape $\frac{7}{8}$ in. long. June. *l.* eight or nine, green, channelled, acute. Buenos Ayres, 1825. Half-hardy. (B. R. 1361.)

Z. pumila (dwarf). *fl.* perianth rose-coloured, drooping, the segments spreading; scape short. September. *l.* narrow. Chili, 1831. Greenhouse. **SYNS.** *Habranthus pumilus* (L. B. C. 1771).

Z. robusta (stout). *fl.* perianth purplish-rose, becoming white, $\frac{3}{4}$ in. long, with scarcely any tube, the outer segments broader than the inner ones; spathe $\frac{3}{4}$ in. long, undivided, the pedicel rather longer; scape robust. June. *l.* slightly glaucous, channelled. Bonaria, 1828. Greenhouse. **SYNS.** *Habranthus robustus* (L. B. C. 1761; S. B. F. G. ser. ii. 14).

Z. rosea (rose-coloured).* *fl.* smaller than in *Z. carinata*; perianth rose-coloured, regular, erect, the segments rotate-spreading, oval, apiculate, green below the middle, nearly free to the base; pedicel $\frac{1}{2}$ in. long; spathe reddish, bilobed; scape $\frac{6}{8}$ in. long, compressed. May. *l.* linear, flat, glabrous, striated, rounded at apex, $\frac{6}{8}$ in. or more long, recumbent. Cuba, 1822. Plant tufted, half-hardy. (B. M. 2537; B. R. 821.)

* **Z. umbellata** (umbel). *fl.* perianth tube more than $\frac{1}{2}$ in. long, the limb white, the outer segments more or less red; ovary sessile; style much deflexed. April. *l.* slender, semi-cylindrical, green, $\frac{3}{8}$ in. to $\frac{5}{8}$ in. long. Mexico, 1870. Greenhouse. (Def. B. 212.)

Z. s. striata (striated). *fl.* perianth segments striated with red outside; style longer than the filaments. 1824. **SYNS.** *Z. striata* (B. M. 2593.)

Zephyranthes—continued.

Z. s. verecunda (modest). *f.*, perianth tube green, $\frac{1}{2}$ in. long, the back white, 1 in. long, reddish outside; sepaline filaments narrower, peduncle ones longer, than the style. 1824. SYN. *Z. verecunda* (B. M. 2583; Ref. B. 356).

Z. Spofforthiana (Spofforth). A synonym of *Z. tubispatha hybrida*.

Z. striata (striated). A variety of *Z. sessilis*.

Z. tubispatha (tubular-spathed). *f.*, fragrant, slightly nodding; perianth white, nearly 2 in. long, with scarcely any tube; pedicel nearly 2 in. long; spathe 1 in. long, erect, cylindrical, bifid; scape 3 in. to 4 in. long, purplish at base. May. *l.* few, ligulate-linear, equalling the scape, two to three lines broad, slightly obtuse. Jamaica. Novc. SYN. *Amaryllis tubispatha* (B. M. 1586).

Z. t. hybrida (hybrid). *f.*, perianth flesh-coloured. A hybrid between *Z. tubispatha* and *Z. carinata*. SYN. *Z. Spofforthiana* (B. R. 1745).

Z. verecunda (modest). A variety of *Z.*

Z. versicolor (various-coloured). *f.*, perianth at first rose-coloured, at length white, suffused with rose-colour, red at apex, red-striated below, the middle nerve green, 2 in. long; pedicel $\frac{1}{2}$ in. long, pale green; spathe 1 in. long, erect, cylindrical, bifid, becoming red, the former $\frac{1}{2}$ in. long, the latter 5 in. long. Winter. *l.* three or more, nearly 1 ft. long, $\frac{1}{2}$ in. broad, acute. South America, 1821. Hardy. SYN. *Habranthus versicolor* (B. M. 2485).

ZEPHYR FLOWER. See **Zephyranthes**.

ZERUMBET. Included under **Zingiber** (which see).

ZEUXINA (from *zeuxis*, a joining; so called from the coherence of the petals with the upper sepal). SYNS. Includ

chilus and *Monochilus* (of Wallich). ORD. *Orchideæ*. A genus comprising about seventy-six species of slender or dwarf, stove, terrestrial Orchids, inhabiting the East Indies, the Malayan Archipelago, and tropical Africa. Flowers small, in sessile spikes; upper sepal erect, concave, the lateral ones spreading; petals narrow, often cohering with the upper sepal in a hood; lip adnate to the base of the very short column, erect, concave or slightly saccate at base, within naked, or with two calli, more or less contracted above the base. Leaves linear, ovate, or lanceolate, petiolate. Only one species calls for mention here. It requires similar treatment to that recommended for **Anæctochilus**.

Z. regia (royal). Striped King of the Woods. *f.* white and green, in loose spikes; lip split into a pair of roundish, crenate-lobes. *l.* ovate-lanceolate, 5 in. long, with a dark green margin and a broad, pale lilac or whitish band down the centre. *h.* 5 in. Borneo. SYNS. *Anæctochilus livatus*, *Haplochilus regium*, *Monochilus regium*.

ZEUZERA ÆSCULI (Wood Leopard Moth). A handsome Moth, with a spread of wings of from 2 in. to 3 in. The body is from $\frac{1}{2}$ in. to $\frac{1}{4}$ in. long, and is rather



FIG. 255. ZEUZERA ÆSCULI (FEMALE).

slender; and the wings are narrower than is usual in Moths. All the wings are semi-transparent white, with numerous spots (see Fig. 255), which are blue-black

Zeuzera Æsculi—continued.

on the fore wings, and lighter on the hind wings. The thorax is white, with a row of three large spots on each side, and a smaller one behind. The abdomen is grey. The antennæ are slender in the female, but in the male the basal half of each is like a double comb.



FIG. 256. LARVA OF ZEUZERA ÆSCULI.

The larva (see Fig. 256) is cylindrical, naked, yellowish-white, with raised, shining, black spots, a blackish plate on the front of the ring just behind the head, and a black patch on the last segment. It feeds in the wood of living trees—among the kinds attacked by it being Apple, Elm, Horse-Chestnut, Pear, Plum, and Poplar—but seldom does noteworthy injury to them; indeed, Newman observed that infested trees bore even more abundant fruit than perfectly healthy ones. Should remedies be required, the best are the removal (for firewood) of infested trunks, the capture of the Moths on the trees in early morning, and plastering the lower part of the trunk with clay.

Clay may be injected into holes made by the larvæ, should such be found.

ZEXMENIA (an anagram of *Ximenesia*). SYN. *Lipochale* (in part). ORD. *Compositæ*. A genus embracing about twenty-five species of stove, greenhouse, or hardy, annual or perennial herbs or sub-shrubs, sometimes tall climbers, inhabiting the warmer parts of America. Flower-heads yellow, solitary, corymbose, or sub-umbellate, heterogamous, radiate; involucre variable, the bracts in two, three, or several series; receptacle convex, the pales sheathing the flowers; ray florets ligulate, spreading, entire, or two or three-toothed; disk florets tubular, the apex shortly five-cleft; achenes usually slightly pilose. Leaves opposite, entire or toothed. Only two species call for mention here. They thrive in any fairly rich soil. *Z. aurea* may be increased by cuttings, inserted in sandy soil, under a glass, in heat; and *Z. ovata* may be readily propagated by seeds, sown on the open border.

Z. aurea (golden). *f.*—heads golden-yellow, solitary and terminal in the upper axils; ray florets seven to nine, twice as long as the involucre. September. *l.* opposite, sessile, ovate-lanceolate, obtuse at base, slightly acuminate at apex, serrated, puberulous on both sides. Branches terete, villous-canescens. *h.* 1 ft. Mexico, 1829. Half-hardy sub-shrub. SYNS. *Verbena aurea*, *Wedelia aurea* (B. M. 3384).

Z. ovata (ovate-leaved). *f.*—heads deep orange-yellow; ray florets elliptical; peduncles short, terminal, sometimes solitary, sometimes arranged in a kind of corymb. Autumn. *l.* sessile, the basis (scarcely a petiole) amplexicaul, ovate, acute, serrated, triple-nerved, paler beneath. Stem rounded, branched, hairy. *h.* 2 ft. Mexico, 1823. Hardy annual. SYN. *Tithonia ovata* (B. M. 3901).

Z. texana (Texan). A synonym of *Wedelia hispida*.

ZICHYA. Included under **Kennedyia** (which see).

ZIERIA (named after John Zier, a Polish botanist, who was a friend of Smith, the nomenclator). Australian Turmeric-tree. ORD. *Rutaceæ*. A genus comprising half-a-score species of greenhouse, glabrous, hirsute, or tomentose shrubs or small trees, endemic in Australia. Flowers white, usually small, axillary, in small, trichotomous cymes, or rarely solitary; calyx four-cleft; petals four, imbricated or almost valvate in bud, spreading; stamens four. Leaves usually opposite, with three leaflets, rarely alternate or simple. A selection of the introduced species is here given. They thrive in a mixture of sandy loam and peat, and flower at midsummer. Young cuttings root readily in sand, under a glass.

Zieria—continued.

Z. arborescens (tree-like). A synonym of *Z. Smithii macrophylla*.

Z. hirsuta (hirsute). A synonym of *Z. pilosa*.

Z. laevigata (smooth). *f.*, petals three times as long as the calyx; cymes few-flowered, about as long as the leaves. *l.*, leaflets three on a common petiole, linear, pointed, $\frac{1}{2}$ in. to 1 in. long, the margins closely revolute. *A.* 1½ ft. 1822. A glabrous, erect shrub. (*B.* iv. 185; *P. M. B.* ix. 77.)

Z. lanceolata (lance-leaved). A synonym of *Z. S.*

Z. macrophylla (large-leaved). A form of *Z. Smithii*.

Z. obovata (obcordate). *f.* one to three in the axils, very small, on short, slender pedicels. *l.*, leaflets three, on a very short common petiole, obovate or obcordate, two to four, or rarely six lines long, softly pubescent or tomentose above, more hirsute or velvety and whitish beneath, the margins recurved or revolute. 1824. A shrub of low growth.

Z. pilosa (pilose). *f.* small, solitary, and nearly sessile, or two or three together on short pedicels. *l.*, leaflets three, on a short common petiole, linear, oblong, or lanceolate, obtuse, $\frac{1}{2}$ in. to $\frac{1}{2}$ in., or rarely 1 in. long, slightly pubescent or glabrous above, more or less hirsute or tomentose beneath, the margins recurved or revolute. *A.* 4 ft. 1822. A shrub or under-shrub, with densely pubescent or hirsute branches. *SYN. Z. hirsuta*.

Z. Smithii (Smith's)* Sandfly Bush; Tasmanian Stinkwood. *f.* usually about $\frac{1}{2}$ in. in diameter, in axillary, bi- or trichotomous cymes, shorter than the leaves. *l.*, leaflets three, with a distinct common petiole, lanceolate, or the larger ones oblong, elliptic, acute or rarely obtuse, $\frac{1}{2}$ in. to $\frac{1}{2}$ in. long, flat, or the margins slightly recurved. 1808. A tall shrub or small tree, glabrous or slightly pubescent. (*A. B. R.* 606; *B. M.* 1395.) *SYN. Z. lanceolata* (*L. B. C.* 878).

Z. S. macrophylla (large-leaved). *f.* larger than in the type. *l.*, leaflets often $\frac{1}{2}$ in. long. A more arborescent form. *SYNS. Z. arborescens, Z. macrophylla* (*B. M.* 4451).

ZIETENIA. A synonym of *Stachys* (which see).

ZIGADENUS. See *Zygadenus*.

ZILLA (the Arabic or Egyptian name of the plant). *ORD. Cruciferae*. A small genus (four species) of half-hardy, suffrutescent herbs, inhabiting North Africa, Arabia, and Persia. Flowers white or violet, solitary or loosely racemose, ebracteate. Leaves oblong, toothed, rather thick. Two of the species have been introduced, but probably they are not now in cultivation.

ZINGIBER (from the Greek *Zingiberis*, used by Dioscorides, which is in its turn derived from the Sanscrit, and means in that language horn-shaped; probably in reference to the form of the rhizomes). Including *Zerumbet*. *TRIBE Zingiberæ* of *ORD. Scitamineæ*. A genus comprising about twenty species of stove or greenhouse, perennial herbs, with horizontal, tuberous rhizomes, inhabiting the East Indies, the Malayan Archipelago, and the Mascarene and Pacific Islands. Flowers one to three to a bract, borne in spike-like, dense, cone-formed, or rather long thyrses; calyx tubular, shortly three-lobed; corolla lobes narrow, the upper one erect, incurved, the lateral ones spreading; lip or lips entire or shortly bifid, sometimes slightly crisped. Stems leafy, floriferous or sterile. Several of the species are grown in our hot-houses as curiosities. The rhizomes of *Z. officinale* furnish the well-known spice called ginger. The plants here described thrive in a compost of loam, peat, and sand, and require stove heat. They may be increased by divisions. During the winter many die down, and then, until growth begins again, water should be almost withheld.

Z. brevifolium (short-leaved). *f.* yellow, rather small, with narrow segments, and a narrow, three-lobed lip; spike $\frac{2}{3}$ in. to $\frac{3}{4}$ in. long, fusiform, with adpressed, oblong, orange-yellow bracts, striped with red. *l.* few, oblong-lanceolate or elliptic, $\frac{1}{2}$ in. to $\frac{2}{3}$ in. long, $\frac{1}{2}$ in. to $\frac{1}{2}$ in. broad. Stems naked below. *A.* 1 ft. Philippine Islands, 1836.

Z. Cassumunar (Cassumunar). Bengal Root. *f.* pale sulphur; lip four-cleft, the lateral lobes shorter; bracteoles ovate, bilobed; bracts nearly round, reddish, pilose; thyrses ellipsoid; scape $\frac{8}{10}$ in. to $\frac{14}{10}$ in. long, red-sheathed. July and August. *l.* sessile, lanceolate, pilose beneath and on the sheaths. Stems annual, $\frac{3}{4}$ ft. to 6 ft. high. Root yellow. East Indies, 1807. (*B. M.* 1426.)

Z. Cliffordii (Lady de Clifford's). *f.*, corolla white, the segments lanceolate, sub-equal; lip simple; lower bracts broadly cuneate, the upper ones scarlet, margined with green, ovate,

Zingiber—continued.

obtuse; thyrses ovate; scape $\frac{3}{4}$ in. to $\frac{4}{10}$ in. long. *l.* long-lanceolate. Stem purplish at base. Guinea. Probably a variety of *Z. Cassumunar*. (*A. B. R.* 555.)

Z. coloratum (coloured). *f.* of a creamy-white colour; inflorescence radical, fusiform, acute, densely covered with arborescent bracts. *l.* distichous, lanceolate, acuminate, sub-sessile purplish, leafy, $\frac{3}{4}$ ft. high. North-west Borneo, 1879.

Z. elatum (tall). *f.* of a bright, lively yellow; spikes terminal, solitary, narrow-lanceolate, $\frac{6}{10}$ in. long. July and August. *l.* linear, recurved, 1 ft. to 1½ ft. long, $\frac{1}{2}$ in. broad, smooth above, softly white-hairy beneath. Stems straight, $\frac{4}{10}$ ft. to 5 ft. high. Root tuberous. East Indies, 1820.

Z. officinale (official). Ginger. *f.*, corolla lobes pale yellow, lanceolate; lip dark blue and variegated, three-lobed; bracts imbricated, roundish-ovate, blunt, membranous; spikes ovoid, dense, $\frac{1}{2}$ in. to $\frac{2}{10}$ in. long; scape radical, 1 ft. to 1½ ft. high. July. *l.* linear-lanceolate, acuminate, $\frac{8}{10}$ in. to $\frac{12}{10}$ in. long, tapering towards the bilobed ligule. Sterile stem twice or thrice as long as the scape. East Indies, 1606. (*B. M. Pl.* 270.)

Z. Parishii (Parish's). *f.*, corolla straw-coloured, with purple veins; bracts yellow-green, with a scarlet margin; spikes cylindrical, $\frac{4}{10}$ in. to $\frac{6}{10}$ in. long. July. *l.* elliptic-lanceolate, $\frac{4}{10}$ in. to $\frac{7}{10}$ in. long. Rhizomes creeping, $\frac{3}{4}$ ft. long. *A.* $\frac{3}{4}$ ft. Mouleim, 1873. (*B. M.* 6019.)

Z. Zerumbet (Zerumbet). *f.* pale sulphur, large; lateral lobes of lip very large; bracts one-flowered; spikes oval, obtuse, about the size of a goose egg, on long peduncles. Summer. *l.* sessile, broadly lanceolate, entire, smooth, waved. Stems annual, $\frac{3}{4}$ ft. to 4 ft. high. Root white outside, pale yellow within. East Indies, 1690. (*B. M.* 2000; *S. E. B.* 112.)

ZINGIBERÆ. A tribe of *Scitamineæ*.

ZINNIA (named in honour of John Godfrey Zinn, 1727-1759, Professor of Botany at Gottingen). Youth and Old Age. *SYNS. Crassina, Lejica.* *ORD. Compositæ.* A genus embracing about a dozen species of half-hardy,



FIG. 257. FLOWERING BRANCH OF SINGLE STATE OF *ZINNIA ELEGANS*.

Mexican, annual or perennial herbs or sub-shrubs. Flower-heads variously coloured, heterogamous, radiate, mediocre or large, pedunculate, at the tips or forks of the branches; involucre campanulate or sub-cylindrical, the bracts in three or several series, the outer ones gradually shorter; receptacle conical or at length cylindrical; ray florets

Zinnia—continued.

ligulate, spreading, in one series; disk florets tubular, shortly five-cleft at apex; achenes narrow, striated, glabrous or ciliated at the angles. Leaves opposite, entire. The best-known species (all annuals) are here described. They flower during the summer months. *Z. elegans* and *Z. multiflora* last a long time in beauty. Zinnias succeed best in a rich, deep, loamy soil, and in a sunny situation. Seeds should be sown on a gentle hotbed at the end of March or in April, and the young plants thrive best if pricked off in frames when large enough. They should be transferred to the situations in which they are intended to flower early in or about the middle of June. If sown too early, and allowed to become starved previous to the final planting, they never succeed so well afterwards. From *Z. elegans* most of the garden varieties have descended; there are numerous single and double forms, all of which are fine, free-flowering subjects when well grown.

Z. elegans (elegant)*. *f. heads* scarlet, crimson, rose-coloured, buff, or white; involucre bracts ovate, obtuse, the upper ones margined with black; pales of the receptacle serrate-crested; peduncles cylindrical, solitary, longer than the leaves. *l. sessile, amplexicaul, cordate-ovate*. Stem erect, hairy. *h. 2ft. 1786*. See Fig. 257. The following are varieties: *coccinea*, upper ray florets of a beautiful scarlet (B. R. 1294; P. M. B. 1. 225, under name of *Z. violacea coccinea*); *Darwinii*, a splendid hybrid; *flore-pleno*, a fine, double-flowered variety (B. R. 1861, p. 201, and 1862, p. 193); *violacea*, upper ray florets purplish-violet (A. B. R. 65, under name of *Z. violacea*; B. M. 527, under name of *Z. elegans*).

Z. Haageana (Haage's). *f. heads* similar in size to those of *Z. elegans*; ray florets brilliant golden-yellow or orange. Summer. *l. sub-sessile or sessile, and, as well as the stems, hairy pubescent*. *h. 1ft. to 1½ft.* Central America (?), 1862. (R. G. 1863, 390.)

Z. hybrida (hybrid). *f. heads* scarlet; involucre scales adpressed; pales entire; peduncles terminal, solitary, short. *l. cordate, somewhat lanceolate, sessile, amplexicaul*. Stems erect, pubescent. *h. 2ft. 1818*. Probably a hybrid between *Z. elegans* and *Z. pauciflora*. (B. M. 2123.)

Z. multiflora (many-flowered). *f. heads*, involucre campanulate, with adpressed scales; pales obtuse; ray florets scarlet or red; disk yellow; peduncles exceeding the leaves. *l. scarcely petiolate, ovate-lanceolate*. Stems erect, branched, very slightly hairy. *h. 2ft. 1770*. Allied to *Z. pauciflora*. (B. M. 149.)

Z. pauciflora (few-flowered). *f. heads* yellow; involucre scales adpressed; pales entire; ray florets obovate, obtuse or one or two-toothed at apex; terminal peduncles striated, obconical, the lateral ones slenderer. *l. sessile, cordate-lanceolate, somewhat amplexicaul*. Stem erect, hairy. *h. 2ft. 1753*.

Z. tenuiflora (slender-flowered). *f. heads* on very long, cylindrical peduncles; involucre oblong, the scales adpressed, scarcely margined; ray florets scarlet, seven to eight lines long, entire or bifidate and revolute at apex. *l. very shortly petiolate, cordate-lanceolate*. Stems erect, scarcely pubescent. *h. 2ft. 1759*. (B. M. 553.)

Z. verticillata (whorled). *f. heads* red; involucre campanulate, with adpressed scales; ray florets obovate, emarginate at apex, often in two or three series; peduncles short, obconical. *l. oblong-lanceolate, sometimes crowded in irregular whorls, sometimes spirally disposed*. Stems erect, sparsely hairy. *h. 2ft. 1789*. (A. B. R. 189.) "Probably a robust cultivated state of *Z. elegans*" (Hemsley).

ZIZANIA (adapted from *Zizanon*, the old Greek name of some wild grain; it is the word which, in the New Testament, is translated "tares"). Water or Indian Rice. *Hydrophyrum, Melinum*. ORD. Gramineæ. A small genus (two species) of tall, hardy, aquatic Grasses, natives of North America. Flowers monœcious; spikelets jointed with the club-shaped pedicels, very deciduous; glumes wanting or rudimentary; panicle ample, terminal. Leaves long and flat. The grain of *S. aquatica* (Canada or Indian Rice; Water Oats) is largely gathered for food by the North-west American Indians. The species have no horticultural value.

ZIZIA. Included under *Carum*.

ZISIPHORA (from *Zizi*, which is said to be the Indian name of the flower, and *phoreo*, I bear). ORD. Labiata. A genus comprising about a dozen species of hardy dwarf, annual herbs or diffuse sub-shrubs, inhabiting Central and Western Asia, and the South Mediterranean region.

Zisiphora—continued.

Flowers small, sub-sessile, or on short pedicels; calyx tubular, elongated, bilabiate; corolla tube scarcely exerted, the upper lip erect and entire, the lower one spreading and three-cleft; perfect stamens two; whorls few-flowered, axillary, clustered on the upper part of the stem. Leaves small, entire or few-toothed; floral ones conformed or slightly shorter and broader. The best-known species are here described. Both are half-hardy sub-shrubs, and thrive in any good, light soil. Propagation may be effected by cuttings.

Z. clinopodioides (Clinopodium-like). *f. blue-purple*; corolla nearly twice as long as the calyx; whorls few, six to ten-flowered, approximating in a rather loose, sub-globose head. June. *l. at length nearly all ovate, the upper ones narrow, oblong, or ovate, ½in. long, narrowed to short petioles*. Branches diffuse, 6in. to 12in. long, often purplish. Siberia, 1821.

Z. o. media (intermediate). *f.*, calyx pilose. *l. mostly narrow*. (B. M. 906, under name of *Z. serpyllacea*.)

Z. dasyantha (thick-flowered). *f. red*; calyx very pilose-hispid; corolla shorter than in *Z. clinopodioides*; whorls approximating in an oblong head, or the lower ones distinct. July. *l. ovate or oblong*; floral ones conformed. *h. 6in.* Siberia, 1803. (B. M. 1093, under name of *Z. Pouschkinii*.)

ZIZYPHUS (*Zizouf* is the Arabic name of the Lotus).

ORD. Rhamnear. A genus comprising about fifty species of stove, greenhouse, or hardy trees or shrubs, often decumbent or sarmentose, and frequently prickly; they inhabit tropical Asia and America, and the temperate regions of both hemispheres. Flowers greenish, small, fasciated or in sessile or pedunculate cymes; calyx with five spreading lobes; petals five, enclinate, deflexed, rarely absent; stamens five. Fruit fleshy or dry, with a woody or bony, one to four-seeded and one to four-celled stone. Leaves sub-bifarious, alternate, usually coriaceous. A selection of the introduced species is here given. The fruits of *Z. vulgaris* are commonly eaten, both fresh and in a dried state, in the Mediterranean region, and afford the jujubes of the shops. *Z. Lotus* is supposed to have yielded the seductive, sweet fruits from which the ancient Lotophagi took their name. An excellent dessert fruit is obtained from *Z. Jujuba*, a species largely cultivated by the Chinese. *Z. spina-Christi* is supposed by some persons to have furnished the crown of thorns placed on our Saviour's head at His Crucifixion. The stove and greenhouse species thrive in a compost of sand, loam, and peat, and ripened cuttings of them root readily in sand, under a glass, those of the stove species requiring heat. The hardy kinds are admirably adapted for planting in shrubberies; they may be propagated by ripened cuttings, inserted in soil, under a glass; or by pieces of the root.

Z. incurva (incurved). *f.*, in pedunculate, axillary cymes ½in. long. June. *fr. ½in. long, ellipsoid, two-celled*. *l. 2½in. long, ovate or ovate-oblong, acute or slightly acuminate, crenate-serrated, glabrous*. *h. 6ft. and upwards*. Nepal, 1823. Hardy, unarmed tree.

Z. Jujuba (Jujube). Jujube-tree. *f.*, in cymes ½in. long. April. *fr. ½in. to ¾in. in diameter, globose, fleshy and mealy*. *l. ½in. to 2½in. long, elliptic-ovate to sub-orbicular, dark green and glabrous above, densely woolly-tomentose beneath*. Young branches and flowers densely fuscous-tomentose. *h. 30ft. to 50ft.* North Africa, India, Australia, 1769. Greenhouse tree, usually armed. See Fig. 253. (B. F. F. 17; B. F. S. cxlix; J. B. i. 140.)

Z. Lotus. African or Jujube Lotus. *fr. yellow, roundish-ovate, small, farinaceous*. *l. ovate-oblong, obsoletely crenated, and, as well as the branchlets, glabrous*. Prickles twin, one recurved, the other straight, longer than the petioles. *h. 2ft. to 4ft.* South Europe, North Africa, 1731. Half-hardy shrub.

Z. mucronata (mucronate-leaved). *f.*, cymes axillary, about as long as the petioles. June. *fr. red, scarcely the size of a cherry*. *l. petiolate, ovate or cordate-ovate, obtusely acuminate, mucronulate, ½in. to 2in. long, crenate-serrated, sometimes hairy on the nerves beneath*. Branches greyish, flexuous, prickly. *h. 25ft.* South Africa, 1810. Greenhouse tree.

Z. Palurus (Palurus). A synonym of *Palurus aculeatus*.

Z. spina-Christi. Christ's-Thorn. *f.*, on villous-tomentose, corymbose peduncles. August. *fr. ovate-globose*. *l. ovate, obtuse, toothed, glabrous or pubescent beneath*. Branchlets white; prickles twin, spreading, one straight, the other slightly incurved. *h. 6ft.* West Asia, North Africa, Egypt. Hardy shrub.

Z. vulgaris (common). *f.*, few, fasciated in the axils of the

Zisypus—continued.

leaves. August. *fl.* red or black, succulent, $\frac{1}{2}$ in. in diameter. $l.$ $\frac{1}{2}$ in. to $2\frac{1}{2}$ in. long, sub-obliquely ovate, obtuse or sub-acute, crenate-serrated, glabrous. Prickles usually twin. *A.* 6 ft. and upwards. South Europe, &c., 1640. Hardy shrub or small tree. (S. F. G. 241.)

ZOMICARPA (from *zoma*, a kind of skirt, and *karpos*, a fruit; the pericarp of the fruit, when ripe,

Zomicarpa—continued.

few-flowered; peduncle slender, equalling the leaves. Leaves appearing before the flowers, long-petiolate, reniform, tripedatisect; segments elliptic-oblong, the lateral ones smaller; petioles sheathing towards the base. The species require similar culture to that recommended for **Staurostigma**.



FIG 258. FRUITING BRANCHLET OF ZIZYPHUS JULIFERA

bursts at the bottom and remains, covering the seeds like a skirt). ORD. *Aroideæ* (*Araceæ*). A small genus (three species) of stove, tuberous, perennial herbs, natives of Brazil. Flowers monœcious; perianth none; spathe rather fleshy, persistent, the tube convolute, hooded at base, with connate margins, the throat constricted, the lamina lanceolate, acuminate, reticulate-veined; spadix shorter than, and adnate at base with, the spathe, with a slender appendage; male inflorescence dense, female

Z. Pythonium (Pythonium). *fl.*, spathe glaucous-violet; spadix slightly exceeding the spathe tube, the naked part subulate, shorter than the inflorescence; peduncle terete. *l.* reniform; segments five, distant at base, the lateral ones half-lanceolate and ovate-oblong, the middle one broadly elliptic; petioles slender, terete, rather broadly sheathing, thrice as long as the blades. *h.* 1 ft. 1860. This plant is regarded as an antidote in cases of serpent bites.

Z. Riedeliana (Riedel's). *fl.*, spathe green; spadix much exceeding the spathe tube, the naked part club-shaped, longer than the inflorescence. *l.* reniform; segments mucronate-cuspi-

Zomicarpa—continued.

date, the upper one distant from the approximate lateral ones; petioles thrice as long as the leaves, rather broadly sheathing at base. *h.* 1ft. 1860. (Ref. B. 15.)

Z. Steigeriana (Steiger's). *f.*, spathe blackish-purple, arched at apex; spadix whitish and dark fuscous-purple, not reaching beyond the middle of the spathe, the appendage club-shaped; peduncle rather longer than the petioles. *l.* green, paler beneath, trisected; segments equal or unequal, oblong-ovate-lanceolate, acuminate at apex, abruptly cuneate at base; petioles fuscous-spotted and striolate. *h.* 1ft. 1860.

ZOMICARPELLA (a diminutive of *Zomicarpa*). **ORD.** *Aroidæ* (*Araceæ*). A monotypic genus. The species is a rather small, slender, tuberous-rooted, stove herb, allied to *Zomicarpa*. For culture, see **Staurostigma**.

Z. maoulata (spotted). *f.*, inflorescence very small; spathe dull green, lin. long, lanceolate, spreading out nearly flat, with revolute margins; spadix blackish, 1½ in. long, very slender. *l.* ovate, deeply cordate-sagittate at base, dark green, with a series of irregular, pale green blotches arranged around, near the margins, somewhat resembling those of *Caladium marmoratum*, but much smaller. New Grenada, 1861.

ZORNIA (named after John Zorn, of Bavaria, 1739-1799, a botanical author). Including *Myrsidenus*. **ORD.** *Leguminosæ*. A genus consisting of half-a-score species of stove or greenhouse, annual or perennial herbs, all American, one being also found in South Africa. Flowers interruptedly spicate or solitary, on axillary and terminal peduncles. Pods compressed. Leaves digitately two or four-foliolate; leaflets often pellucid-dotted. Several species have been introduced, but they are more curious than beautiful. Probably, *Z. tetraphylla* is no longer in cultivation.

Z. tetraphylla (four-leafleted). *f.* yellow; bracts glabrous, as long as the pods, five-nerved. July. *fr.*, pods prickly; prickles somewhat scabrous. *l.*, leaflets four, digitate, oblong, acuminate. *h.* 6 in. Carolina, 1824. Greenhouse perennial. **SYN.** *bracteata*.

(from *zoster*, a riband; alluding to the leaves). Grasswreck. **SYN.** *Alga*. **ORD.** *Naiadaceæ*. A small genus (four species) of hardy, Grass-like, marine plants, found on various coasts in the temperate zone. Flowers in two parallel series of alternating anthers and carpels on one surface of a linear, membranous, podunculate spadix, which is inclosed in a sheathing, leaf-like spathe; perianth none. Leaves distichous, sheathing, long-linear. *Z. marina* (Bell Ware; Wrack Grass, &c.) is a British plant, found in muddy and sandy estuaries near low-water mark. *Z. nana* is another native species.

ZOSTEREE. A tribe of *Naiaduceæ*.

ZOSTEROSTYLIS (from *zoster*, a riband, and *stylos*, column; alluding to the band which surrounds the column). *Cryptostylis* is now the correct name. **ORD.** *Orchideæ*. A small genus (seven species) of stove or greenhouse, terrestrial Orobchids; three inhabit the East Indies and the Malayan Archipelago, and the rest are Australian. Flowers rather large, in a loose raceme or spike; sepals and petals sub-equal, very slender, convolute and appearing subulate when the flower opens; lip superior, sessile, with a broad base inclosing the column, contracted above the column, and expanded into an undivided lamina; column very short; sepals leafless, simple, two or many-sheathed; bracts membranous, acute. Leaves few or solitary, on rigid petioles, oblong or narrow, membranous. For culture of *Z. arachnites*, the only species introduced, see **Spiranthes**.

Z. arachnites (cobwebby). *f.*, few or many in a loose spike 3 in. to 5 in. long, sessile; petals dull green, linear, and, as well as the longer sepals, much spreading; lip yellowish, mottled and lined with purple, pubescent or cobwebby, erect, elliptic-ovate or lanceolate, acute, grooved; scape 6 in. to 18 in. high, the base (and petioles) purple. *l.* long-petiolate, ovate, acuminate, striate-nerved. Root consisting of a few elongated tubers. Ceylon, 1863. (B. M. 5381.)

ZUCCAGNIA. A synonym of **Dipodi** (which see).

ZWINGERA. A synonym of **Simaba** (which see).

ZYGADENUS (from *zygos*, a yoke, and *aden*, a gland; the glands are usually arranged in pairs at the base of the perianth segments). Erroneously spelt *Zigadenus*. Including *Amianthemum* and *Antircea*. **ORD.** *Liliaceæ*. A genus comprising about a dozen species of hardy, bulbous or rhizomatous plants; one is a native of Siberia, and the rest inhabit North America, extending as far as Mexico. Flowers in a terminal, simple or paniculately-branched raceme; perianth persistent, the segments sometimes connate at base in a very short, turbinate tube, in other cases distinct, sub-equal, flat; stamens six, thickly shorter than the segments. Leaves radical, or clustered at the base of the stem, long-linear. Stem erect, simple below the inflorescence, with or without a few small leaves. The best-known species are here described; all are North American. A moist, peat soil is best suited to their requirements. Propagation may be readily effected by divisions, or by seeds.

Z. angustifolius (narrow-leaved). *f.*, perianth white, turning purple, 4 in. to 4½ in. long; lower pedicels five to six lines long; raceme 1 in. to 3 in. long, 4 in. to 4½ in. broad. May and June. *l.* nearly 1ft. long, two to three lines broad, firmer and more distinctly ribbed than those of *Z. Muscotoxicum*. Stem slender, 1ft. to 1½ ft. high, with many reduced leaves. 1823. **SYNS.** *Amianthemum angustifolium*, *Helonias angustifolia*, *H. lœta minor* (B. M. 1340).

Z. elegans (elegant). A synonym of *Z. glaucus*.

Z. Fremontii (Fremont's). *f.*, perianth cream-coloured, five to six lines long, the segments oblong, obscurely clawed; racemes corymbose, 2 in. to 4 in. long, simple or paniculate. June. *l.* three or four, linear, rather firm, 1ft. to 1½ ft. long, three to four lines broad, acuminate. 1874.

Z. glaberrimus (highly glabrous).* *f.*, perianth white, five to six lines long, the segments oblong, acute, distinctly clawed; pedicels ascending, three to six lines long; racemes five to ten-flowered, loosely paniculate, 1 in. to 2 in. long. June. *l.* linear, Grass-like, acuminate, 1ft. to 1½ ft. long, three to four lines broad. Stem erect, with many reduced leaves. Rhizome creeping. *h.* 2ft. to 3ft. 1811. **SYN.** *Helonias bracteata* (B. M. 1705).

Z. glaucus (glaucous-leaved). *f.*, perianth greenish externally, whitish inside, five to six lines long, the segments oblong, thickly nerved; pedicels ascending, 4 in. to 1 in. long; racemes loose, 2 in. to 4 in. long, 1 in. to 2 in. broad, simple or loosely paniculate. Summer. *l.* four to six, firm, linear, glaucous-green, thickly nerved, 1ft. to 1½ ft. long, 4 in. to 5 in. broad. Stem 6 in. to 2ft. high, with a few reduced leaves. 1828. **SYNS.** *Z. elegans*, *Helonias glaberrima* (B. M. 1680).

Z. Muscotoxicum (fly-poison). *f.*, perianth greenish-white, 4 in. to 4½ in. long; lower pedicels 4 in. to 4½ in. long; raceme dense, oblong, 2 in. to 4 in. long, 1 in. to 1½ in. broad. Summer. *l.* many, linear-lanceolate, membranous, nearly 1ft. long, 4 in. to 5 in. broad, obtuse. Stem slender, 1ft. to 2ft. high, with a few much-reduced leaves, slightly thickened at base. 1756. (R. G. 1121, f. 1.) **SYNS.** *Antian Muscotoxicum*, *Helonias lœta* (B. M. 803; L. B. C. 938).

Z. Nuttallii (Nuttall's). *f.*, perianth white, 4 in. to 4½ in. long; racemes often simple, dense above, 2 in. to 3 in., rarely 4 in. to 6 in., long; lower pedicels 4 in. to 5 in. long. June. *l.* four to six, linear, 1ft. to 1½ ft. long, 4 in. to 5 in. broad. Stem 6 in. to 18 in. high, with a few reduced leaves. 1835. (R. G. 1121, f. 2.)

ZYGOGLOSSUM. A synonym of **Cirrhopetalum** (which see).

ZYGOMENES. A synonym of **Cyanotis** (which see).

ZYGOMORPHOUS. A term applied to anything that can be bisected in only one plane into similar halves.

ZYGOPETALUM (from *zygos*, a yoke, and *petalon*, a petal; in the original species the sepals and petals adhere by their bases). Including *Bollea*, *Galeottia*, *Huntleya*, *Kefersteinia*, *Pescatorea*, *Promeneæ*, and *Warscewiczeella*. **ORD.** *Orchideæ*. A genus comprising about fifty species of very handsome, stove or greenhouse, epiphytal Orobchids, inhabiting the warmer parts of America. Flowers large and showy; sepals and petals sub-equal, free or very shortly connected at base; lip affixed to the foot of the column, slightly incumbent, forming a short chin, the lateral lobes spreading or erect, clothing the column, the middle one flat and spreading; lip bearing a transverse crest, which, from being ribbed or plaited, has the appearance of a ruff or frill; column incurved, semi-terete, wingless or shortly two-winged at apex, produced in a short foot at base; pollen masses four; floriferous scapes

Zygopetalum—continued.

leafless, many-sheathed, one-flowered or terminated by a loose raceme; bracts small or rather broad. Leaves distichous, membranous or rather rigid, slightly plaited or with elevated veins. Stem leafy, short, at length thickening into a pseudo-bulb. The flowers are generally produced during winter—a circumstance which greatly enhances the value of *Zygopetalum*s as decorative objects. The robust species, such as *Z. Mackayi*, may be grown along with *Cattleya Mossiae*. They should be potted in rough peat and sphagnum, and watered freely when making their growth. During winter, they require only sufficient moisture to keep them from shrivelling. The *Pescatorea* section are much more difficult to manage. The large-leaved kinds may be grown in pans or baskets, using a mixture of peat-fibre, sphagnum, and lumps of charcoal. Some growers place these kinds on flat, dish-like saucers, with several large holes in the bottom, and simply place nodules of peat and charcoal about the roots as they multiply. Others fasten them on to large blocks of birch, placing the plants on the bark side of the block. The small, delicate kinds, such as *Z. gramineum*, thrive best in teak baskets. All the species like plenty of moisture when in full growth, and none should ever be allowed to get quite dry.

Z. africanum (African). A synonym of *Odontoplossum biotense*.

Z. aromaticum (aromatic). *f.* solitary, strongly perfumed, 3in. to 4in. across; sepals and petals white, lanceolate, acute; lip azure-blue, darkening to purple at the base, obreniform, many-lobed, slightly crisped; disk smooth; a many-furrowed callus at the contracted base; scape erect, *l.* cuneate-oblong, acute. Chiriqui. Stove. (G. C. 1868, p. 75; R. X. O. I. 73.) SYNS. *Huntleya aromatica*, *Warceviczella aromatica*.

Z. Backhousianum (Backhouse's). *f.* sepals and petals creamy-white, tipped with bright purplish-violet; lip deep three-lobed, creamy-white, having a deep yellow callus of nineteen ribs, with brownish lines to the keels, the anterior portion yellowish, with small, purplish warts. Summer. Ecuador, 1877. Allied to *Z. Klabechorum*. Stove. SYN. *Pescatorea Backhousiana*.

Z. Beaumontii (Beaumont's). *f.* 2in. across; sepals and petals light green, longitudinally striped with pale olive-brown; lip white, dotted and streaked with pale lilac-purple, trifid, the side lobes toothed, incurved, bearing on the disk between them about seven long, parallel, acute crests; scape erect, one or two-flowered, *l.* plicate, cuneate-oblong, light green. Pseudo-bulbs pyriform, tetragonal. Brazil, 1850. Stove. SYNS. *Batemannia Beaumontii* (R. X. O. III. 215), *Galeottia Beaumontii*.

Z. bellum (pretty). *f.* more than 3in. across; sepals and petals light violet, banded near the tip with dark purplish-violet; lip whitish-yellow, somewhat hooded, with a large callus of twenty-one ribs, the keels of which are purplish on their back line, the tip of the lip blotched with purplish-violet; column purplish, with a yellowish-white, triangular space at base, purplish-spotted. Spring. New Grenada, 1878. Intermediate. SYN. *Pescatorea bella*.

Z. brachypetalum (short-petaled). *f.* sepals and petals brown, marbled with green, short, stiff, convex, oblong, obtuse; lip white, veined with deep bluish-violet, transverse, roundish, emarginate, the crest or frill closely striped with blue; scape tall, many-flowered. *l.* lanceolate-ensiform, shorter than the scape. Brazil. Intermediate. (J. H. S. IV. (Proc.), p. 11.)

Z. Burkei (Burke's). *f.* curiously marked, four or five on a radical scape; sepals and petals green, with thick bands of brown, which here and there break up into spots; lip white, with a ruff of about thirteen crimson plaits or folds. *l.* twin, elongated-lanceolate, acuminate. Pseudo-bulbs clustered, narrow-oblong, furrowed, about 2in. long. Guiana, 1883. Intermediate. (W. O. A. III. 142.)

Z. candidum (white). *f.* 2½in. across; sepals white, lanceolate, acute; petals white, broader, reflexed; lip rosy-purple in the

wearing a large, oblong, many-lobed callus, with a rosy, five-toothed apex, and marked with five bluish-purple bars. *l.* few, oblong-ligulate, forming a loose, distichous tuft. A. Bin. to 9in. Bahia. Stove. SYNS. *Huntleya candida*, *Warrea candida* (F. d. S. VII., p. 125; L. & P. F. G. I., p. 32), *Warceviczella candida*.

Z. cerinum (waxy). *f.* about 3in. across; sepals and petals pale waxy straw-colour, fleshy, concave, the lateral ones rather darker; lip yellow-clawed, convex, retuse, with a thick, semicircular ruff of numerous truncate plaits, within which is sometimes a band of deep purple, surrounding the base of the short, clavate, hoodless column; peduncles axillary, one-flowered, much shorter than the leaves. *l.* tufted, cuneate-oblong, acuminate, 1½ in. long. Chiriqui, 1851. Intermediate. (F. d. S. 1816; R. G. 838.) SYNS. *Huntleya cerina* (R. M. 5598; L. & P. F. G. III., p. 62), *Pescatorea cerina* (F. M. ser. II. 93; R. X. O. I. 65).

Zygopetalum—continued.

Z. citrinum (citron-coloured). *f.* of a deep rich yellow, with a dark crimson blotch at the base of the lip, which is obovate in the front, with two oblong, obtuse, erect basal lobes spotted with crimson; scape deflexed, 2in. to 3in. long, one-flowered. Late summer. *l.* oblong-ligulate, pale green. Pseudo-bulbs clustered, small, ovate, tetragonal, two-leaved. Brazil, 1838. Intermediate. SYN. *Maxillaria citrina*, *Promeneia citrina* (W. O. A. I. 7).

Z. Clayi (Clay's). *f.* freely produced; sepals and petals deep purplish-brown, margined, banded, and sometimes blotched, with green; lip deep violet-purple, with darker purple lines, paler at the edges, 1½ in. wide, the ruff whitish, with bluish-violet plaits; scape radical. 1876. A beautiful hybrid between *Z. citrinum* and *Z. maxillare*. Intermediate. (F. M. n. s. 267; W. O. A. 50.)

Z. cochleare (spoon-like). *f.* white, about 1in. long; sepals and petals ovate, pointed; lip line-variegated, somewhat quadrate-cordate, emarginate at the broadly rounded summit, crested at the base by a broadly reniform, longitudinally many-plaited callus; peduncles 3in. long, one-flowered. *l.* oblong, acute, tapering at the base, 6in. to 10in. long. West Indies. Stove. (B. M. 3585; B. R. 1857.)

Z. caelestis (sky-blue). *f.* 3in. to 4in. across; sepals and the shorter petals light blue at base, deeper mauve in the middle, the marginal tips white; lip deep violet in front, the prominent basal callus yellowish-white; column deep purple-blue, yellow at base; scape 1½ to 3½ ft. high. June and July. *f.* close-set, cuneate-oblong. Columbia, 1878. Closely allied to *Z. Lalindei*. (Greenhouse). SYN. *Bollea caelestis* (B. H. 1879, 9; B. M. 6458; R. (I. 1075).

Z. crinitum (hairy). *f.* large, beautifully variegated; sepals and petals green, barred with brown, oblong-lanceolate; lip white or cream-coloured, streaked with coloured, densely hairy veins, broad-obovate, emarginate; callus yellow, small, incurved; spikes sometimes two from a pseudo-bulb. *l.* lorate-lanceolate, plicate, shorter than the scape. Pseudo-bulbs ovate. Brazil, 1829. Greenhouse. (L. B. C. 1687.) SYNS. *Z. Mackayi crinitum* (B. M. 3402), *Z. stowickianum* (L. B. C. 1923). "The best variety is that called *caeruleum*, which has the veins of a deep, bright blue. There is another form with the veins pink" (B. S. Williams).

Z. Dayanum (Day's). *f.* similar in shape to those of *Z. cerinum*; sepals and petals milky-white, oblong-lanceolate; lip white, clawed, emarginate, with a purplish-violet ruff, the base, as well as the rays in front of the callus, purplish-violet; column yellow, with a broad, reddish band at base. New Grenada, 1873. Stove. SYN. *Pescatorea Dayana*. The following varieties are described by B. S. Williams, in the "Orchid Grower's Manual":

Z. D. candidulum (whitish). *f.* sepals and petals pure white, lip tinted with purplish-crimson. (I. G. C. n. s., III., p. 343, under name of *Pescatorea Dayana candidula*.)

Z. D. rhodacrum (red-tipped). *f.* sepals and petals tipped with purplish-rose. (B. M. 6214, under name of *Pescatorea Dayana rhodacra*.)

Z. D. splendens (splendid). *f.* sepals and petals blotched at the tips with dark violet; lip deep violet, which colour extends to the base of the column.

Z. discolor (discoloured). *f.* sepals and petals straw-coloured, tinged with purple, 1½ in. to 1½ in. long, the lower sepals straight, deflexed, the upper erect, forming with the petals an arch over the column and lip; lip deep velvety-purple, white at base, concave, slightly trilobed, with a yellow, roundish-oblong appendage divided at the edge into strong, diverging teeth, five of which terminate so many distinct ribs. Central America. SYNS. *Warrea discolor* (B. M. 4630; L. & P. F. G. I., p. 73), *Warceviczella discolor* (R. X. O. 83).

Z. Dormantianum (Dorman's). *f.* white, with some light sulphur on the crest, narrower than in *Z. Klabechorum* and *Z. Lehmanni* (which this plant resembles); lip with a continuous row of angles on the hind margin of the side lobes, and three prolonged, connate, median keels; column sagittate at base. Columbia (?), 1881. Intermediate. SYN. *Pescatorea Dormantiana*.

Z. englossa (beautiful-lipped). *f.* of a beautiful lilac colour, similar to those of *Z. Rozei*, but with a shorter lip and a broader callus, the tip of the lip bent underneath, ending in two diverging lobes. Ecuador, 1877. SYN. *Pescatorea englossa*.

Z. expansum (expanded). *f.* sepals green, acute; petals brown than the sepals; lip green, with five interrupted, brown stripes on the basal half, and similar-coloured blotches at the base of the front part, which is fringed. *l.* Grass-like, cuneate-oblong-ligulate, acute. Ecuador (?), 1878.

Z. Ambristum (fringed). *f.* about 2in. across; sepals and petals white in the lower and purple in the apical half, elliptic-oblong, acute; lip yellowish-white, with rosy dots, revolute and irregularly fringed on the margins; crest semicircular, composed of seventeen to nineteen dark purple ridges; peduncles short, one-flowered. Columbia, 1880. Intermediate. SYN. *Pescatorea Ambrista* (B. G. 1006).

Z. Galtrianum (Galr's). *f.* large; sepals and petals deep violet, oblong-ligulate, the anterior part deep black-purple within; lip purplish-rose or light purple-mauve, the front part reflexed on

Zygopetalum—*continued*.

the limb, so as to be nearly hood-shaped, marked by obscure, longitudinal keels, with numerous warts between; ruff of fifteen to seventeen radiating keels, in some forms orange with purple ridges; column dark violet above, whitish-yellow with some purple spots at the base. Ecuador, 1879. Stove. SYN. *Pescatorea Gairiana*.

Z. Gautieri (Gautier's). * *f.* large; sepals and petals green, blotched and barred with brown, oblong, acute; lip deep purplish-blue, lighter at the edge, the ruff around the column large, and of a deep velvety-purple; racemes drooping, on scapes springing up in the midst of the young leaf-tufts. *l.* elongated-oblong, dark green, plaited. Pseudo-bulbs oblong, deeply furrowed. Brazil, 1868. Greenhouse. (W. O. A. i. 28.) The colour of the lip varies in several varieties from pale mauve (L. H. 1867, 535) to deep bluish-purple.

Z. gemma (gem). *f.* of a very pale colour, not much exceeding in size those of *Z. sanguinolentum*; lip marked with numerous dark blotches, denticulate and crisped. New Grenada, 1874. A small species. Intermediate. SYN. *Kefersteinia gemma*.

Z. gramineum (grass-like). *f.* dirty yellow, copiously brown-spotted; petals rather narrower than the sepals; lip broadly oval, gibbous at base beneath, concave in the centre above, the upper half suddenly bending downwards and emarginate at apex, the edge minutely denticulate; scapes three to five, clustered. *l.* about 8 in. long, erect or spreading, lanceolate. Pseudo-bulbs none. Popayan, 1857. Intermediate. SYN. *Kefersteinia graminea* (B. M. 5046; R. X. O. 25, ii.)

Z. intermedium (intermediate), of Loddiges. *f.* sepals and petals green, tinged with brown, oblong, acute; lip blue, streaked with deep purple, downy-pubescent, large, flat, roundish, bilobed, undulated. Autumn. *l.* ensiform, shorter than the raceme. Brazil, 1844. Holchenbach regards this as a variety of *Z. Mackayi*. Greenhouse. SYN. *Z. volutinum*.

Z. Klabochorum (Klaboch's). * *f.* 3 in. to 3½ in. across; sepals oblong, obtuse; petals shorter, cuneate; both white, deeply tipped with chocolate-purple; lip ochre or white, covered with lines of purple-tipped papillae, trowel-shaped, three-lobed; ruff of nineteen lamellae, sulphur-coloured, with brown keels; column yellowish, washed with brown and purple. Ecuador, 1879. Intermediate. SYN. *Pescatorea Klabochorum* (L. H. ser. iii. 431; L. & P. K. G., re-issue, 21; W. O. A. i. 17). Of this free-flowering species several varieties have been observed.

Z. K. burfordiensis (Burford). * *f.* with broader and darker lamellae on the callus, the broad, middle line of the front part of the lip dark reddish-violet, the whole surface covered with styliform processes. 1879.

Z. K. ornatisimum (very ornamental). A fine variety, with very dark mauve-purple tips, and numerous similar spots at the base, of the petals, and a single spot at the base of the odd sepal. 1884.

Z. lactoum (milk-white). *f.* white, with a few brownish dots and streaks at the base, small; sepals and petals oblong, acute; lip very broad, cuneate-oblong, retuse; callus depressed, bifid at apex; column dilated in the middle, sometimes angled; peduncles one-flowered. *l.* exceedingly stout, cuneate-oblong, acute. Chiriqui, 1872. Intermediate. SYN. *Kefersteinia lactea*.

Z. Lalindei (Lalinde's). *f.* about 3 in. across; sepals and petals lilac at base, pale rose above, or the flowers sometimes bright violet, the upper sepal tipped with green, and the lower part of the lateral ones brownish-purple; lip golden or orange-yellow, with about thirteen close-set lamellae; column rose-coloured, arched, broader than the lamellate disk; scapes solitary. *l.* elliptic-lanceolate, narrowing to the base, 1 ft. long, distichous, five-nerved. New Grenada, 1874. Intermediate. SYN. *Bollea Lalindei* (B. M. 6331).

Z. lamellosum (lamellate). *f.* 2½ in. across, on stout, solitary peduncles 3 in. long; sepals and petals yellowish-green, the dorsal sepal elliptic, acute, the lateral one larger, oblong, the petals spatulate; lip yellowish-white, nearly orbicular, cordate at base, the crest orange and brown, much raised, formed of close-set, concentric plates. August. *l.* 1 ft. long, narrow-lanceolate, acuminate, narrowed to the base, five-ribbed. Pseudo-bulbs none. Columbia, 1875. Plant densely tufted. Stove. SYN. *Pescatorea lamellosa* (B. M. 6240).

Z. Lawrenceanum (Lawrence's). *f.* white, solitary, on axillary scapes, 3½ in. to 4 in. across; sepals and petals blotched with violet or mauve at the tips; lip much shorter than the other parts, nearly square, the sides revolute, the apex of an intense, rich, velvety purple, the basal callus bright yellow, white on each side, large; column white, conspicuous, hooded. *l.* distichous, broadly ligulate, acuminate, keeled. Columbia, 1878. Intermediate. (R. X. O. iii. 221.) SYN. *Bollea Lawrenceana*.

Z. Lehmanni (Lehmann's). *f.* solitary, axillary, 3 in. to 3½ in. across, very showy; sepals and petals white, closely lined with reddish-purple, broadly cuneate-oblong; lip deep mauve purple, the anterior part oblong, revolute, retuse, covered with long, bristle-like, purplish papillae, the callus of about eleven chestnut-brown ridges. *l.* linear-lorate, acute, 1 ft. to 1½ ft. high about 1 in. across. Ecuador. Stove. SYN. *Pescatorea Lehmanni* (G. C. n. s., xvii, p. 46; L. H. ser. iii. 471; W. O. A. ii. 57).

Z. leopardinum (leopard-spotted). *f.* sepals and petals light greenish-yellow, spotted with brown; lip with a transverse,

Zygopetalum—*continued*.

obtuse-angled, cordate blade of a beautiful mauve-purple, and an ochreous callus with thirteen teeth. 1885. Garden hybrid. Intermediate.

Z. Mackayi (Mackay's). * *f.* large, five or six in a raceme; sepals and petals yellowish-green, blotched with brownish-purple lanceolate; lip white, lined and spotted with purplish-blue, large, roundish, undulated, emarginate, horizontally spreading, the ruff white, striped with blue, large and convex; scape radical, 1½ ft. long. *l.* distichous, linear-lanceolate. Pseudo-bulbs large, ovate, scarred, bearing numerous leaves. Brazil, 1825. Greenhouse. (B. M. 2748; L. B. C. 1664; P. M. B. iii. 97.) SYN. *Eulophia Mackaiana* (B. R. 1433). Of this species there are several varieties.

Z. M. crinitum (hairy). A synonym of *Z. crinitum*.

Z. M. intermedium (intermediate), of gardens. *f.* of a paler colour than in the type, with a fine, large, expanded lip *l.* longer. A very distinct plant.

Z. marginatum (margined). *f.* clear straw-colour, with some purple markings on the nearly square appendix to the lip; lateral sepals abruptly bent back, the upper one erect, all tipped with green; petals rolled back above the middle; lip circular, retuse, the edges bent downwards, the claw yellow, with a slight tubercle; column pure white. *l.* pale green, oblong, acute, flat, 6 in. long. Columbia. Allied to *Z. discolor*. Intermediate. SYNS. *Warrea quadrata* (B. M. 4766), *Warsceviczella marginata* (R. X. O. 23, f. 2).

Z. maxillare (jaw-shaped). * *f.* large and showy; sepals and petals green, transversely blotched and barred with chocolate-brown, ovate-oblong, acute; lip rich bluish-purple, with a large, roundish front lobe and a blunt spur; lip large, deeper purple, shaped like a horse's hoof, and united to the small, erect lateral lobes of the lip; spikes drooping; on radical scapes. *l.* lanceolate, attenuated at base, nerved. Pseudo-bulbs oblong, furrowed. As many as seventy flowers have been produced by one plant. Greenhouse. (B. M. 345; B. M. 3686; L. R. C. 1776; P. M. B. iv. 271; R. G. 1879, iii.)

Z. Meleagris (Meleagris). *f.* 3 in. to 4 in. across; sepals and petals tessellated, pale yellow on the basal half and purplish-brown upwards, broad at base, the two lateral sepals folded inwards on the inner margin at base; lip about half as large as the petals, similar but clawed, white, tipped with purplish-brown, and having at the base of the claw a crescent-shaped plate, fringed with long, yellowish hairs; peduncles axillary, one-flowered. June and July. *l.* broadly lanceolate, 1 ft. long, distichous. Stem short, erect. Brazil. Stove. SYNS. *Batemannia Meleagris* (R. X. O. 66, figs. i., ii.), *Huntleya Meleagris* (B. iii. 146; B. R. 1839, 14).

Z. M. albido-fulvum (whitish-fulvous). *f.* upper half of the sepals and petals fulvous, the lower part white; lip and column white, the former tipped with rosy-carmine, the latter with yellowish-green. *l.* light shining green. Stem none. Roots numerous. Brazil, 1868. Intermediate. SYN. *Huntleya albido-fulva* (L. H. 1868, 556).

Z. micropterum (small-winged). *f.* sepals and petals creamy-white or ochre; lip white, with three transverse bars of dull crimson on the disk, and small, purple spots at the base, the front lobes elongated, lanceolate, the two lateral ones minute. Summer. Related to *Z. xanthinum*. Intermediate. SYN. *Promeneva microptera*.

Z. Murrayanum (Murray's). *f.* many in a raceme; sepals and petals greenish, ovate-lanceolate, acute; lip white, the lateral lobes erect, the middle one reflexed, four times as large, purple-spotted at base, the prominent callus yellow, with five straight, violet-brown lines. *l.* lanceolate, striated. Pseudo-bulbs ovate, deeply furrowed. Organ Mountains, 1837. (B. M. 3674.)

Z. mystacinum (moustached). *f.* sepals, petals, and blade of the lip yellowish-green; callus and stalk of the lip, and column, white, with purple dots, the blade of the lip broken up into numerous fringes. Otherwise closely resembling *Z. gramineum*. Columbia, 1881. SYN. *Kefersteinia mystacina*.

Z. obtusatum (obtus). *f.* disposed in a long raceme; sepals and petals green, with narrow, transverse brown bars, narrow, long, obtuse; lip of a very light violet, with a more purplish, retuse lower callus; bracts obtuse. 1878. This plant is very near *Z. mazillare*.

Z. pallens (pale). *f.* sepals and petals light mauve, with greenish-yellow tips, the basal inner borders of the lateral sepals cinnamon-coloured, their lower halves being light yellow; lip light ochre, the orange-coloured callus painted with brownish-purple. 1881. Intermediate. SYN. *Bollea pallens*.

Z. Patinii (Patin's). *f.* solitary, upwards of 3 in. across; dorsal sepal and the oblong, undulated petals rosy-pink, the two lower sepals pink along the upper half, and deep rose along the lower side; lip yellow, short, the disk with a frill of about thirteen lamellae; column pink, large, convex, arching over the lip; scapes axillary, decurved. *l.* distichous, broadly oblong-ligulate, narrow at base, acute at apex, nerved. New Grenada, 1874. Stove. SYN. *Bollea Patinii* (K. M. ser. ii. 147; G. C. n. iii., p. 9).

Z. pentachromum (five-coloured). *f.* sepals and petals green,

Zygopetalum—continued.

marbled with dark brown; lip white, blotched and lined with mauve, cuneate-obovate; callus or ruff like that of *Z. Mackayi*, with adhering, acute, falcate side lobes. 1885. A hybrid between *Z. Mackayi* and *Z. maxillare*. Greenhouse

Zygopetalum—continued.

in front, and a few parallel ones on the sides; sepals pale greenish or yellowish-white. 1883. SYN. *Warasoviczella picta*.
Z. Rivieri (Rivieri's). *f.* very large, disposed in racemes; sepals and petals green, blotched with light brown; lip white, label-

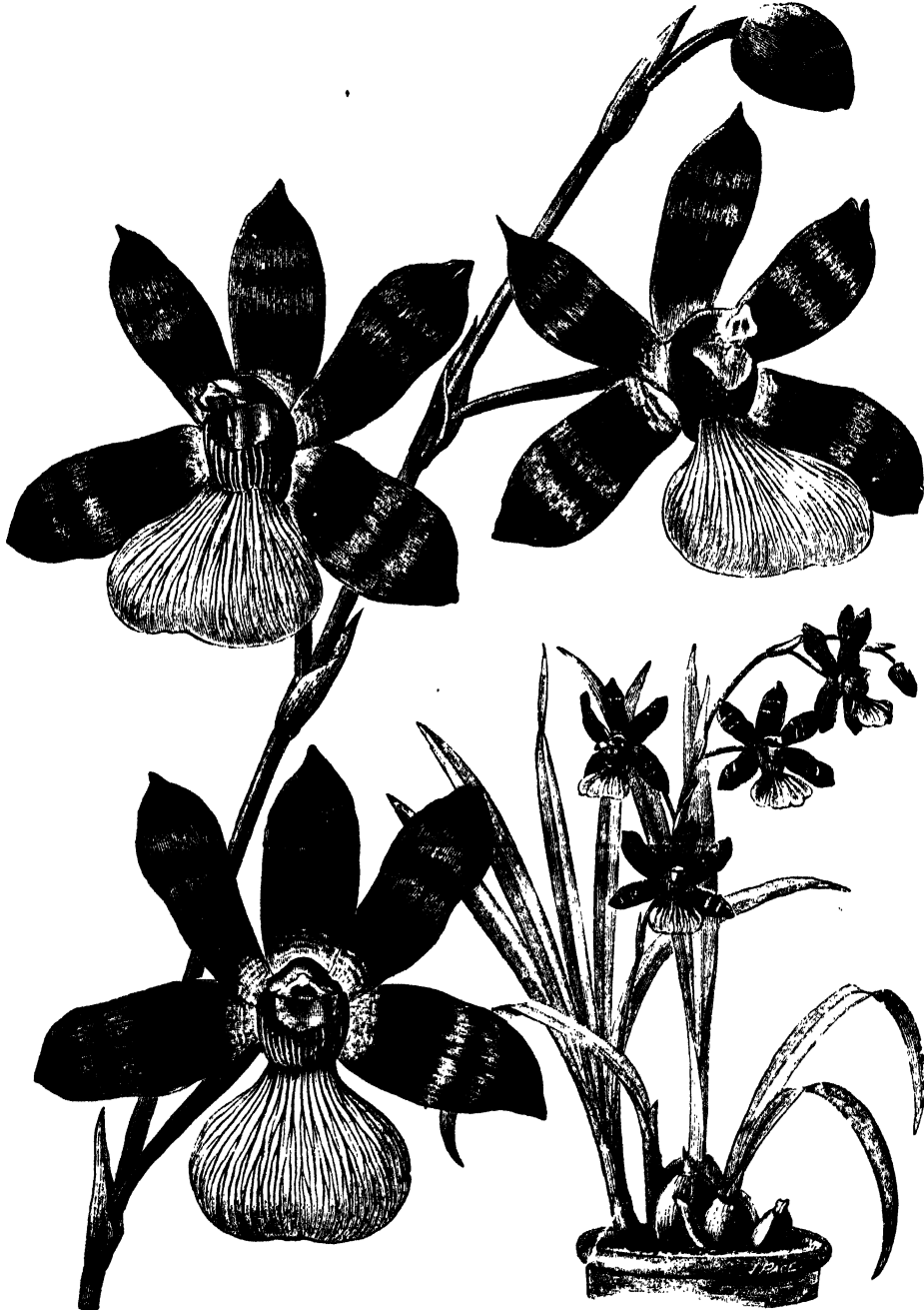


FIG. 258. ZYGOPETALUM SEDENI, showing Habit and detached Inflorescence.

Z. pictum (painted). Much like *Z. discolor*, differing chiefly in the lip, which is rhomboid and crisped, yellowish-white, with numerous, broad, marginal, dark purple lines, brownish basal borders, and a greenish, tablet-like, basal callus, with two teeth

lately veined with lilac-rose, and exhaling a perfume similar to that of the Hyacinth. *f. ensiformis*, above 1½ ft. long. Brazil, 1873. Possibly this may be a large-flowered form of *Z. Mackayi* (t. H. 1873, 191.)

Zygopetalum—continued.

Z. Roëzlii (Roëz's). *f.* variable; sepals and petals usually white, beautifully tipped with violet-lilac or purplish-rose, the former oblong, the latter cuneate-obovate; blade of the lip, excepting the callus, of the same showy colours. Ecuador, 1874. Allied to *Z. Dayanum*. Stove. SYN. *Pescatorea Roëzlii*.

Z. Rollissoni (Rollisson's). *f.*, sepals and petals pale yellow; lip whitish, spotted with crimson, the middle lobe oblong, apiculate, the lateral ones narrow-ovate, acute, resembling two erect bars standing up from the base; scapes deflexed, from the lower axis. Autumn. *l.* oblong-lanceolate, venose. Pseudo-bulbs roundish, compressed, bearing about two leaves at the top and other accessory ones from the base. Brazil, 1843. Intermediate. SYN. *Maxillaria Rollissoni* (B. R. 1838, 40), *Promenaea Rollissoni*.

Z. rostratum (beaked). *f.* 6 in. deep; dorsal sepals and two petals whitish at base, then green, marked in the centre with dull brownish-purple, linear-lanceolate, 3 in. long; lip nearly 3 in. long, ovate, recurved, white, yellowish behind the disk, which bears a small, pale lilac-purple frill or ruff, about ten lines of the same colour radiating from it towards the front; scapes radical, one or two-flowered. *l.* lanceolate, acute, plaited. Rhizome creeping, forming compressed pseudo-bulbs at intervals. This species requires more heat and moisture than any other. Stove. (B. M. 2819; W. O. A. II. 78.) SYN. *Zygopetalum rostratum* (Ref. B. 106).

Z. Russelianum (Russel's). *f.* large, freely produced; sepals and petals cream-coloured, tipped with reddish-purple; lip of the same reddish-purple tint, the yellow ruff or callus having fifteen lamellæ with deep crimson-purple angles; column yellowish in front, with a lemon-yellow area at base. Ecuador, 1878. Allied to *Z. Dayanum*. Stove. SYN. *Pescatorea Russeliana*.

Z. sanguinolentum (dark bloody). *f.* pale straw-coloured or greenish, with dark bloody spots; sepals broadly lanceolate, petals oblong-ovate, both acute; lip cuneate-lanceolate, lobulate at apex, undulate, denticulated, the basilar callus dark purple at base, bidentate at apex. *l.* distichous, cuneate-lanceolate, acute, glaucous. Roots adventitious, cylindrical. Caracas. Intermediate. SYN. *Kepfersteinia sanguinolenta* (R. X. O. I. 25, 1).

Z. Sedeni (Seden's). *f.* large, in bold racemes; sepals and petals deep purplish brown, evenly bordered with pale green; lip rich bluish-purple, deeper coloured towards the base, and breaking out into forked veins near the margin, broad, emarginate, the ruff bluish-purple, bold. *l.* narrow-lanceolate, plaited. 1874. A hybrid between *Z. Mackaysi* and *Z. maxillare*, and much resembling the latter. See Fig. 259, for which we are indebted to Mr. Wm. Hull. (F. M. ser. II. 417; B. G. 1883, 280.)

Z. stapelioides (Stapelia-like). *f.*, sepals and petals greenish yellow, transversely barred and spotted with dark purple, roundish-ovate, acute; lip deep purple, oblong, three-lobed, the lateral lobes linear, erect, the terminal one ovate-oblong, hooded at base, the margins paler and cross-banded; peduncles deflexed, two-flowered. July to September. *l.* thin, lanceolate, light green. Pseudo-bulbs small, ovate, tetragonal, one or two-leaved. Brazil, 1843. Intermediate. SYN. *Maxillaria stapelioides* (B. M. 3877; B. R. 1839, 17), *Promenaea stapelioides*.

Z. stenochilum (narrow-lipped). A synonym of *Z. crinitum*.

Z. triumphans (triumphant). *f.* fleshy; sepals and petals snowy-white, blue at apex, the former elliptic, apiculate, the latter narrower, cuneate at base; lip blue-black, with a ligulate claw, oblong-rhomboid, emarginate, minutely papillose in the anterior portion; peduncles thick, terete, 4 in. to 6 in. long. *l.* few, distichous, Grass-like, lanceolate, acute. New Grenada. Stove. SYN. *Pescatorea triumphans* (R. X. O. I. 11).

Z. volatum (velled). *f.* yellowish-white, solitary, fragrant; dorsal sepal and petals broadly ovate, acute, the lateral sepals narrow, all spreading upwards; lip margined with crimson, broad, flat, five-lobed, the disk radially striated with numerous purple-crimson bars; at the base is a stout callus resembling a semicircular row of five to seven teeth; scape rather stout, shorter than the leaves. *l.* few, oblong-ligulate, acute, 9 in. long. New Grenada, 1866. Intermediate. SYN. *Warsceviczella velata* (B. H. 1878, 10, f. 4; B. M. 5082; R. X. O. I. 23, f. 1).

Z. velutinum (velvety). A synonym of *Z. intermedium*.

Z. violaceum (violet). *f.* of a deep rich violet, tipped with greenish-yellow, melting downwards into white, 2 in. to 3 in. across; sepals and petals curved in at the points, crisped; lip united to the pouch of the lateral sepals by a short, narrow foot; column large, fleshy, curved at apex. *l.* 8 in. to 9 in. long, erect, acute, tufted. British Guiana, 1835. Stove. SYN. *Boletia violacea* (R. X. O. 66, III.), *Huntleya sessiliflora*, *H. violacea*.

Z. Wallesianum (Wall's). *f.* of moderate size, scented like Sweet Pens; sepals and petals white or cream-coloured; lip white, stained along the centre with violet, having at the base a crest of five radiating, violet, finger-like bars, which are free except at their origin. Autumn. *l.* dark, evergreen. Brazil. Stove. (B. H. 1878, 10, f. 1; L. & P. F. G. I., p. 73.) SYN. *Warsceviczella Wallesiana*, *Warsceviczella Wallesiana*.

Z. Wallisi (Wall's). *f.* 3 in. across; sepals and petals creamy-white, tipped with bluish-violet, the former oblong, apiculate, the latter rhomboid; lip deeper violet, margined with white, oblong, retuse, furrowed, the ruff of seven- or eight keels white,

Zygopetalum—continued.

tinted in front with purple; column white, banded with dark violet at base; scapes short, axillary, one-flowered. *l.* linear, acuminate. Ecuador, 1869. Greenhouse. SYN. *Pescatorea Wallisi* (F. d. S. 1828).

Z. Wendlandii (Wendland's). *f.* 4 in. to 5 in. across; sepals and petals white, lanceolate, somewhat twisted; lip white, blotched and lined with violet-purple, ovate-cordate, many-lobuled, much undulated at the margins, the ruff of seven to nine violet-purple ribs; peduncles stout, axillary. August and September. *l.* tufted, distichous, oblong-ligulate. Costa Rica. A handsome, bulbless species. Stove. SYN. *Warsceviczella Wendlandii*.

Z. W. discolor (discoloured). *f.* solitary, deliciously scented; sepals and petals yellowish-green; lip white, with a large, bright violet blotch in the centre, much crisped and minutely lobed at the margin, 1 1/2 in. broad; peduncles axillary. *l.* light green. Costa Rica. SYN. *Warsceviczella Wendlandii discolor* (W. O. A. III. 126).

Z. xanthinum (yellow). *f.* yellow, deeper-coloured towards the centre; sepals and petals oblong, acute, spreading; lip oblong, three-lobed, the lateral lobes profusely spotted, erect, linear, entire, the middle one bilabiate with the upper lip fleshy and five-toothed; bracts cucullate; scapes ascending, one-flowered. *l.* narrow-lanceolate. Pseudo-bulbs oval, tetragonal. Brazil, 1843. Intermediate. SYN. *Maxillaria xanthina*, *Promenaea xanthina*.

ZYGOPHYLLÆ. A natural order of shrubs or herbs, very rarely trees, principally inhabiting the hot and extra-tropical regions of both hemispheres. Flowers white, red, or yellow, rarely blue, hermaphrodite; sepals five, rarely four, generally imbricated; petals five or four, very rarely wanting, hypogynous, free, imbricated, or twisted, rarely valvate; disk convex or depressed, rarely annular, inconspicuous, or wanting; stamens usually double, or rarely treble or equal to, the number of petals, biserial, the outer opposite the sepals; anthers versatile, longitudinally dehiscent; peduncles usually one or two, springing from the axils of the stipules, ebracteate or rarely bracteolate, one-flowered. Fruit coriaceous or crustaceous, sometimes septoidal and dividing into two to ten cocci, sometimes a loculicidal capsule. Leaves opposite or alternate from the suppression of one, stipulate, bifoliate or pinnate, rarely three-foliate; leaflets entire, dotless, sometimes connate; stipules twin, persistent, sometimes spiny. The wood of *Guaicum* is very hard, and heavier than water; it is employed by cabinet-makers for the manufacture of objects exposed to weight or friction. The order embraces seventeen genera, and about 100 species. Examples: *Chilonia*, *Guaicum*, and *phylum*.

ZYGOPHYLLUM (from *zygon*, a yoke, and *phylon*, a leaf; alluding to the pairs of leaflets). Bean Caper. Including *Fabago* and *Rapera*. ORD. *Zygophyllæ*. A genus comprising about fifty-four species of small, often prostrate shrubs, under-shrubs, or perennial herbs, all, with one exception, confined to the Old World, and mostly found in Australia and South Africa. Flowers white or red, mostly with a purple or red basilar spot; calyx four or five-parted, imbricated; petals four or five-clawed, imbricated and twisted; stamens eight or ten, longer than the petals; peduncles one-flowered, axillary, solitary or rarely two together. Fruit four or five-angled or four or five-winged, capsular. Leaves opposite; leaflets two, very rarely one, often fleshy; stipules two, often spiny. A selection of the introduced species is here given. They should be grown in a compost of loam, peat, and sand. Except where otherwise stated, all require greenhouse treatment. Propagation may be effected by cuttings, inserted in sand, under a glass; or by seeds, when these are obtainable. *Z. Fabago* grows freely in any sunny spot, in dry, well-drained soil.

Z. album (white-flowered). *f.* on erect pedicels; petals white, crenate, blunt. October and November. *l.* leaflets cylindrical, club-shaped, fleshy, corbebbly. Stem procumbent. North Africa, 1779. (S. F. G. 371.)

Z. coccineum (scarlet-flowered). *f.* on erect pedicels; petals scarlet, acuminate. August. *l.* leaflets cylindrical, fleshy, smooth. A. 174. 1823. North Africa and Scinde.

Z. cordifolium (cordate-leaved). *f.* four or five-cleft; petals yellowish, broad, thrice as long as the calyx; peduncles about as

Zygophyllum—continued.

long as the leaves. October. *l.* simple, sessile, mostly subcordate at base, some oblique at base, or half-cordate. Stem 1ft. or more high, ash-coloured. South Africa, 1774.

Z. Fabago (Fabago). Syrian Bean-Caper. *fl.* on erect pedicels; petals yellow, but of coppery-brick colour at the base, undivided. July to September. *l.* leaflets flat, smooth, obovate. Root thick, fleshy, striking deeply into the ground. *h.* 1ft. to 4ft. Syria, Tauria, Persia, Afghanistan, &c. Hardy perennial. *SYN. Fabago major* (S. B. F. G. ser. ii. 226).

Z. foetidum (foetid). *fl.*, petals orange-yellow, with a purple spot at base, four times longer than the pubescent calyx; peduncles nodding, $\frac{1}{2}$ in. long. June. *l.* leaflets obovate, obtuse, oblique at base, the larger ones 1in. to 1 $\frac{1}{2}$ in. long; petioles $\frac{1}{2}$ in. long. Branches herbaceous. *h.* 2ft. to 4ft. South Africa, 1780. Subshrub. *Z. insuave* (B. M. 372) is a mere form of this species, with narrower petals.

Z. fruticosum (small shrub). *fl.* four-cleft; petals yellow; filaments subulate, without wings. July. *l.* leaflets obliquely oblong or lanceolate, rarely ovate. Australia, 1820. A low, diffuse or divaricately-branched shrub. *SYN. Raspera fabaginifolia.*

Z. f. bilobum (two-lobed). *l.* leaflets narrow, continuous with the petiole. *SYN. Raspera aurantiaca.*

Z. fulvum (fulvous). *fl.* petals fulvous or yellow, with a red basal blotch, twice as long as the calyx; peduncles $\frac{1}{2}$ in. to 1in. long, reflexed after flowering. July. *l.* sessile; leaflets lanceolate-ovate, acute, somewhat narrowed at base, the larger ones ten to twelve lines long, very fleshy. *h.* 3ft. South Africa, 1713. (B. M. 2184, under name of *Z. sessilifolium.*)

Z. insuave (disagreeable). A form of *Z. foetidum.*

Z. Morgsana (Morgsana). *fl.* nodding, four or five-cleft; petals yellow, obovate, thrice as long as the glabrous calyx; peduncles $\frac{1}{2}$ in. to $\frac{3}{4}$ in. long. August. *l.* shortly petiolate, the larger ones

Zygophyllum—continued.

1in. to 1 $\frac{1}{2}$ in. long; leaflets obovate, obtuse, sub-oblique at base. Stem terete. *h.* 4ft. South Africa, 1732.

Z. spinosum (spiny). *fl.* five-cleft, nodding; petals yellowish or cream-coloured, red-streaked from base to middle or with a purple spot at base, twice or thrice as long as the calyx; peduncles equalling or exceeding the leaves. July. *l.* sessile; leaflets linear, flat or with the margins slightly revolute, acute, fleshy, four to ten lines long. Branches grey. *h.* 1ft. to 2ft. South Africa, 1830.

ZYGOSEPALUM ROSTRATUM. A synonym of **Zygopetalum rostratum** (which see).

ZYGOSTATES (from *zygos*, a yoke, and *statos*, standing; alluding to the two processes which stand out horizontally from the base of the column, and together somewhat resemble a yoke). *SYN. Dactylostyles.* *ORD. Orchidæ.* A small genus (three or four species) of dwarf, epiphytal, stove Orchids, found in Brazil. Flowers small, racemose, on axillary peduncles; sepals sub-equal, free, spreading or reflexed; petals similar or broader; lip continuous with the base of the column, spreading, concave, undivided, with an incurved appendage at base; column arched, semi-terete. Leaves fleshy or coriaceous; sheaths scarcely thickened into pseudo-bulbs. Only one species has been introduced. For culture, see **Burlingtonia.**

Z. Greeniana (Green's). *fl.* sepals oblong, obtuse; petals white, ovate, toothleted; lip white, streaked with green, foveate, rounded; peduncles short, two-flowered. *l.* cuneate-ligulate, trigonal, fleshy, superposed. Pseudo-bulbs minute, somewhat pear-shaped, one-leaved. 1869. A curious little plant.

Plants which have been introduced to cultivation in this country since the publication of the various portions of this Work will be described at the end of the Supplement.

DATES OF PUBLICATION.

THE DICTIONARY OF GARDENING having been first issued in the form of Monthly Parts, it is necessary to give here the extent of each part, and the date of its publication. This Table will be found useful in determining the first adoption of a new name, and for other purposes. In several instances, Plants will be found described under their correct names for the first time in any horticultural work.

A	to	Allium	March,	1884	Cleisostoma	to	Corylus	October,	1884
Allium	"	Apple	April,		Corylus	"	Dahlia	November,	
Apple	"	Anbergine	May,		Dahlia	"	Dipladenia	December,	
Aubrietia	"	Black Fly	June,	"	Dipladenia	"	Eritrichium	January,	
Black Fly	"	Caleasa	July,	"	Eritrichium	"	Freyinetia	February,	
Caleasa	"	Celonia	August,	"	Freyinetia	"	Gleichenia	March,	
Celonia	"	Cleft	September	"	Gleichenia	"	Hedera	April,	

Dates of Publication—*continued.*

Hedera	to	Hypericum	May,	1885	Populus	to	Pteris	August,	1886
Hypericum	"	Karatas	June,	"	Pteris	"	Red Lychnis	September,	"
Karatas	"	Leucoium	July,	"	Red Maggot	"	Rosa	October,	"
Leucoium	"	Lychnis	August,	"	Rosa	"	Sarcocochilus	November,	"
Lychnis	"	Melaspærula	September,	"	Sarcocochilus	"	Seaside Grounds	December,	"
Melaspærula	"	Mormodes	October,	"	Seaside Grounds	"	Skimmia	January,	1887
Mormodes	"	Nectarine	November,	"	Skimmia	"	Sprengelia	February,	"
Nectarine	"	Oak Galls	December,	"	Sprengelia	"	Strychnos	March,	"
Oak Galls	"	Orange	January,	1886	Strychnos	"	Thelebolus	April,	"
Orange	"	Ozothamnus	February,	"	Thelebolus	"	Tradescantia	May,	"
Pachidendron	"	Pea	March,	"	Tradescantia	"	Tulipa	June,	"
Pea	"	Peronospora	April,	"	Tulipa	"	Verbena	July,	"
Peronospora	"	Phytophthora	May,	"	Verbena	"	Viscum	August,	"
Phytophthora	"	Pleione	June,	"	Viscum	"	Xerotes	September,	"
Pleios	"	Populus	July,	"	Xerotes	"	Zygostates	October,	"



Supplement to the
DICTIONARY OF GARDENING.

SUPPLEMENT

TO

THE DICTIONARY OF GARDENING.

PREFACE.

THE main object of this Supplement to the DICTIONARY OF GARDENING is to treat in collective groups the plants that have already been dealt with and described individually. Although the alphabetical arrangement of the Dictionary admits of ready reference to any one genus, yet, when the gardener, whether amateur or professional, is called upon to plant a Shrubbery or Rockery, to furnish a Greenhouse or Conservatory, or to select a plant for any particular purpose, he often needs some further assistance. The Supplement will, it is hoped, provide this. In addition, it contains other information of a useful character, much of which is not, so far as we are aware, to be found in any other work on Horticulture. The following are the principal divisions of the Supplement:

Described Genera and their Authors. It has been thought desirable to give an alphabetical list of all the Genera described, together with their Authorities, as the latter have been omitted in the body of the work except in some cases of duplicated generic names.

Pronouncing Dictionary of Ordinal, Generic, and Specific Names. Mispronunciation of Latin and Greek words is, unfortunately, an error of too frequent occurrence amongst horticulturists of all classes: and it is hoped that this division of the Supplement will tend to remedy the evil, and to make pronunciation more uniform than it is.

Herbaceous Plants for Special Purposes. Under this heading are given selections of plants suitable for a variety of purposes, with abbreviated information as to colours of flowers, &c.

Colours of Flowers. This is a somewhat rough classification of the prevailing or ground Colours of the Flowers of herbaceous plants, but it is believed that it will be of great assistance to gardeners who aim at obtaining harmony of colour in floral effects, or who require blossoms of certain hues for any special object.

Shrubs. These are arranged under two divisions, "Deciduous" and "Evergreen," with abbreviated information as to colours of flowers or variegation of leaves. This will be useful when arranging Shrubberies, and even for the ornamental planting of small gardens.

Periods of Flowering. Under each month are given the names of plants then in blossom, together with heights and the colours of the flowers. The value of such information will be readily understood by all who have at any time endeavoured to add to their collections plants which blossom at certain seasons.

Heights of Herbaceous Plants (Hardy and Half-hardy). Arranged under two headings, "Flowering" and "Foliage," and in order of height, this portion of the Supplement will be useful when selecting plants for particular situations. By its help subjects for groups, edgings, and other purposes, may be expeditiously chosen, without fear that on the plants attaining maturity any one species or variety may over-top others to which it was intended that it should be subordinate.

Ferns and Lycopods, Bulbous Plants, Orchids, Cacti and other Succulents, Palms, and Cycads. These are classified according to degrees of hardiness, as a guide to the planting of gardens or the furnishing of houses.

Trees and Shrubs for Special Situations and Soils. These lists will be serviceable to persons laying out plantations, parks, and landscape gardens.

Animals Beneficial or Injurious to Horticulture. Alphabetical lists of Insects and other Animals mentioned in the body of the work are given, the useful being separated from the Hurtful species for the guidance of gardeners in the extirpation of pests.

Synonyms and Cross-references. Under this heading is given a copious list of synonyms with references to the correct names.

Newly-introduced Plants. The publication of this work in parts has extended over nearly four years, and many plants have been introduced to our gardens since the earlier sheets were printed. These are described in the Supplement.

It will be easily comprehended that in a First Edition of such matter as this, abundant opportunity is afforded for errors of omission to occur, and in some cases—notably in such divisions as Colours, Periods of Flowering, and Heights of Plants—the information given may be at variance with the experience of the reader; but the Publisher will cordially welcome any corrections for use in future editions.

DESCRIBED GENERA AND THEIR AUTHORS.

IN order to prevent, as far as possible, any misconception as to the identity of garden plants, &c., a list of all the Genera described in this work, with their Authors, is here presented. The frequent duplication in botanical nomenclature will be noticed by any reader who has the *DICTIONARY OF GARDENING* in frequent use—*e.g.*, the *Reinwardtias* of Dumortier, Blume, and Korthals, and the *Renalmias* of Linnæus, Linnæus, jun., Houttuyn, and R. Brown—and to many amateur gardeners who are anxious to acquire a knowledge of Systematic Botany, this becomes a source of no little confusion.

Bentham and Hooker's "Genera Plantarum" has, for the most part, been taken as the standard of generic limitation in the compilation of this work, at least, so far as Phanerogamous Plants are concerned: in the Ferns, Hooker and Baker's "Synopsis Filicum" has been followed. In several instances, however, it has been thought desirable, for horticultural purposes, to place certain sections of genera under separate headings; *e.g.*, *Amygdalus*, *Azalea*, and *Ligularia*, are included, by Bentham and Hooker, under *Prunus*, *Rhododendron*, and *Senecio*, respectively, but in this work they have been accorded generic rank.

Abelia, R. Brown.	Achillea, Linnæus.	Actinella, Nuttall.
Abies, Jussieu.	Achimenes, P. Browne.	Actinidia, Lindley.
Abobra, Naudin.	Acineta, Lindley.	Actinopterus, Link.
Abronia, Jacquin.	Aciotis, Don.	Actinocarpus, R. Brown.
Abronia, Jussieu.	Aciphylla, Forster.	Actinomeris, Nuttall.
Abrus, Linnæus.	Acis, Salisbury.	Actinotus, Labillardière.
Abuta, Aublet.	Acisantha, P. Browne.	Ada, Lindley.
Abutilon, Gærtner.	Acomadenia, Bartling and Wendland.	Adamia, Wallich.
Acacia, Willdenow.	Acomena, De Candolle.	Adansonia, Linnæus.
Acena, Linnæus.	Aconitum, Linnæus.	Adelobotrys, De Candolle.
Acalypha, Linnæus.	Acorus, Linnæus.	Adenandra, Willdenow.
Acanthophippium, Blume.	Acoradenia, Kippist.	Adenanthera, Linnæus.
Acantholimon, Boissier.	Acridocarpus, Guillemin and Perrottet.	Adenanthos, Labillardière.
Acanthopanax, Wendland.	Acrochia, Reinwardt.	Adenium, Römer and Schultea.
Acanthorhiza, Wendland.	Acroclinium, Asa Gray.	Adenocalymna, Martius.
Acanthostachys, Link, Klotzsch, and Otto.	Acrocomia, Martius.	Adenocarpus, De Candolle.
Acanthus, Linnæus.	Acronychia, Forster.	Adenophora, Fischer.
Acer, Linnæus.	Acrophyllum, Benthams.	Adenostoma, Hooker and Arnott.
Aceras, R. Brown.	Acrostichum, Linnæus.	Adesmia, De Candolle.
Aceratium, De Candolle.	Acrotiche, R. Brown.	Adhatoda, Nees.
	Actea, Linnæus.	Adiantum, Linnæus.

Genera and their Authors—continued.

- Adina**, Salisbury.
Adlumia, Rafinesque.
Adonis, Linnæus.
Æchmea, Ruiz and Pavon.
Ægiceras, Gärtner.
Ægiphila, Jacquin.
Ægle, Correa.
Æolanthus, Martius.
Æeranthus, Lindley.
 Loureiro.
Æschynanthus, Jack.
- Æsculius**, Linnæus.
Æthionoma, Brown.
Azolia, Smith.
Agamyla, Blume.
Aganisia, Lindley.
Aganosma, G. Don.
Agapanthus, L'Héritier.
Agapetes, G. Don.
Agaricus, Linnæus.
Agastache, R. Brown.
Agathama, Cassini.
Agathophyllum, Jussieu.
Agathosma, Willdenow.
Agati, Desvoux.
Agave, Linnæus.
Ageratum, Linnæus.
Aglaia, Loureiro.
Aglaonema, Schott.
Agrimonia, Linnæus.
Agrostemma, Linnæus.
Agrostis, Linnæus.
Ailantus, Desfontaines.
Ainslia, De Candolle.
Aira, Linnæus.
Aitonia, Linnæus, jun.
Aizoon, Linnæus.
Ajuga, Linnæus.
Akebia, Decaisne.
Alangium, La Marek.
Albizzia, Durazzini.
Albucca, Linnæus.
Alchemilla, Linnæus.
Alotris, Linnæus.
Aleurites, Forster.
Alhagi, Desvoux.
Alibertia, Achille Richard.
Alisma, Linnæus.
Allamanda, Linnæus.
Allantodia, Wallich.
Allium, Linnæus.
Alloplectus, Martius.
Almeida, St. Hilaire.
Alnus, Gärtner.
Alocasia, Schott.
Aloe, Linnæus.
Alomia, Humboldt, Bonpland, and
 Kunth.
Alona, Lindley.
Alonnia, Ruiz and Pavon.
Aloysia, Ortega.
Alpinia, Linnæus.
Alsodeia, Thouars.
Alsophila, Brown.
Alstonia, R. Brown.
Alströmeria, Linnæus.
Alternanthera, Forskahl.
Althæa, Linnæus.
Alyseum, Linnæus.
Amarantus, Linnæus.
Amaryllis, Linnæus.
Amasonia, Linnæus, jun.
- Ambrosinia**, Linnæus.
Amelanchier, Lindley.
Amellus, Linnæus.
Amerimnon, P. Browne.
Amherstia, Wallich.
Amicia, Humboldt, Bonpland, and
 Kunth.
Ammobium, R. Brown.
Amodendron, Fischer.
Amomum, Linnæus.
Amorpha, Linnæus.
Amorphophallus, Blume.
Ampelopsis, Michaux.
Amphicarpæa, Elliott.
Amphicome, Royle.
Amphilophium, Kunth.
Amsonia, Walter.
Amygdalus, Linnæus.
Amyris, Linnæus.
Anacampteros, Linnæus.
Anacardium, Rottboell.
Anagallis, Linnæus.
Anagyris, Linnæus.
Ananas, Adanson.
Anantherix, Nuttall.
Anarrhinum, Desfontaines.
Anastatica, Linnæus.
Anchietea, St. Hilaire.
Anchomanes, Schott.
Anchusa, Linnæus.
Andersonia, R. Brown.
Andira, La Marek.
Androcymbium, Willdenow.
Androlepis, Brongniart.
Andromeda, Linnæus.
Andropogon, Linnæus.
Androsace, Linnæus.
Androstephium, Torrey.
Andryala, Linnæus.
Aneilema, R. Brown.
Anemia, Swartz.
Anemone, Linnæus.
Anemonopsis, Siebold and Zuccarini.
Anemopagma, Martius.
Anethum, Linnæus.
Angelica, Linnæus.
Angelonia, Humboldt and Bonpland.
Angiopteris, Smith.
Angophora, Cavanilles.
Angræcum, Thouars.
Anguloa, Ruiz and Pavon.
Anguria, Linnæus.
Anigozanthos, Labillardière.
Anisochilus, Wallich.
Anisomeles, R. Brown.
Anæctochilus, Blume.
Anomatheca, Ker.
Anona, Linnæus.
Anopterus, Labillardière.
Ansellia, Lindley.
Antennaria, Gärtner.
Anthemis, Linnæus.
Anthericum, Linnæus.
Anthocercis, Labillardière.
Antholoma, Labillardière.
Antholyza, Linnæus.
Anthospermum, Linnæus.
Anthoxanthum, Linnæus.
Anthurium, Schott.
Anthyllis, Linnæus.
Antiaris, Leschenault.
Antigonon, Endlicher.
Antirrhinum, Linnæus.
- Antrophyum**, Kaulfuss.
Aotus, Smith.
Apeiba, Aublet.
Aphelandra, R. Brown.
Aphelexis, Bojer.
Aphyllanthes, Linnæus.
Apiera, Willdenow.
Apios, Mœnch.
Apium, Linnæus.
Aplectrum, Nuttall.
Apocynum, Linnæus.
Aponogeton, Thunberg.
Aquilegia, Linnæus.
Arabis, Linnæus.
Arachis, Linnæus.
Aralia, Linnæus.
Arancoaria, Jussieu.
Arbutus, Linnæus.
Arctostaphylos, Adanson.
Arctotheca, Wendland.
Arctotis, Linnæus.
Ardisia, Swartz.
Arduina, Linnæus.
Arcea, Linnæus.
Arenaria, Linnæus.
Arenga, Labillardière.
Arcthusa, Linnæus.
Argania, Römer and Schultes.
Argemone, Linnæus.
Argyreia, Loureiro.
Argyroxiphium, De Candolle.
Arisæma, Martius.
Arisarum, Targioni Tozzetti.
Aristea, Aiton.
Aristolochia, Linnæus.
Aristotelia, L'Héritier.
Armeniaca, Jussieu.
Armeria, Willdenow.
Arnebia, Forskahl.
Arnica, Linnæus.
Arpophyllum, Ilave.
Arracacha, De Candolle.
Artabotrys, R. Brown.
Artanema, Don.
Artemisia, Linnæus.
Arthropodium, R. Brown.
Arthrostemma, Ruiz and Pavon.
Artocarpus, Forster.
Arum, Linnæus.
Arundinaria, Michaux.
Arundo, Linnæus.
Asarum, Linnæus.
Asclepias, Linnæus.
Ascyrum, Linnæus.
Asimina, Adanson.
Aspalathus, Linnæus.
Asparagus, Linnæus.
Aspasia, Lindley.
Asperula, Linnæus.
Asphodeline, Reichenbach.
Asphodelus, Linnæus.
Aspidistra, Ker.
Aspidium, Swartz and R. Brown.
Asplenium, Linnæus.
Assonia, Cavanilles.
Astartea, De Candolle.
Astelma, R. Brown.
Astephanus, R. Brown.
Aster, Linnæus.
Asteracantha, Nees.
Astilbe, Hamilton.
Astragalus, Linnæus.
Astrantia, Linnæus.

Genera and their Authors—continued.

- Astrapea*, Lindley.
Astrocaryum, G. W. Meyer.
Astroloma, R. Brown.
Asystasia, Blume.
Atalantia, Correa.
Athamanta, Linnæus.
Athanasia, Linnæus.
Atherosperma, Labillardière.
Athrixia, Ker.
Athrotaxis, Don.
Atragene, Linnæus.
Atriplex, Linnæus.
Atropa, Linnæus.
Attalea, Humboldt, Bonpland, and Kunth.
Aubrieta, Adanson.
Aucuba, Thunberg.
Andouinia, Brongniart.
Aulax, Bergius.
Avena, Linnæus.
Averrhoa, Linnæus.
Azalea, Linnæus.
Azara, Ruiz and Pavon.
- Babiana*, Ker.
Babingtonia, Lindley.
Baccharis, Linnæus.
Backhousia, Hooker and Harvey.
Bæctris, Jacquin.
Bacularia, F. Mueller.
Bæa, Commerson.
Bæckea, Linnæus.
Bæria, Fischer and Meyer.
Bahia, Lagasca.
Balbisia, Cavanilles.
Balsamodendron, Kunth.
Bambusa, Schreber.
Banisteria, Linnæus.
Banksia, Linnæus, jun.
Baphia, Afzelius.
Baptisia, Ventenat.
Barbacenia, Vandelli.
Barbarea, Brown.
Barbieria, De Candolle.
Barkeria, Knowles and Westcott.
Barklya, F. Mueller.
Barleria, Linnæus.
Barnadesia, Mutis.
Barosma, Willdenow.
Barringtonia, Forster.
Bartonia, Sims.
Basella, Linnæus.
Basia, Linnæus.
Batatas, Choisy.
Batemannia, Lindley.
Bauera, Banks.
Bauhinia, Linnæus.
Beaucarnea, Lemaire.
Beaufortia, R. Brown.
Beaumontia, Wallich.
Bedfordia, De Candolle.
Befaria, Mutis.
Begonia, Linnæus.
Bellevalia, Lapeyrouse.
Bellidiastrum, Micheli.
Bellis, Linnæus.
Bellium, Linnæus.
Beloperone, Nees.
Benthamia, Lindley.
Berardia, Villars.
Berberidopsis, J. D. Hooker.
Berberis, Linnæus.
- Berchemia*, Necker.
Bergera, Kœnig.
Berkheya, Ehrhart.
Bertholletia, Humboldt and Bonpland.
Bertolonia, Raddi.
Berzelia, Brongniart.
Beschorneria, Kunth.
Beeleria, Linnæus.
Bossera, Schultz.
Beta, Linnæus.
Retula, Linnæus.
Biarum, Schott.
Bidens, Linnæus.
Biebersteinia, Stephan.
Bifrenaria, Lindley.
Bigelovia, De Candolle.
Bignonia, Linnæus.
Billardiera, Smith.
Billbergia, Thunberg.
Biophytum, De Candolle.
Biscutella, Linnæus.
Bivonæa, De Candolle.
Bixa, Linnæus.
Blæria, Linnæus.
Blakea, Linnæus.
Blandfordia, Smith.
Blechnum, Linnæus.
Blechum, P. Brown.
Blepharis, Jussieu.
Blephilia, Rafinesque.
Bletia, Ruiz and Pavon.
Blumenbachia, Schrader.
Bobartia, Ker.
Bocconia, Linnæus.
Bœbera, Willdenow.
Bœhmeria, Jacquin.
Boletus, Dillenius.
Bolenus, Desvaux.
Boltonia, L'Héritier.
Bomarea, Mirbel.
Bombax, Linnæus.
Bonatea, Willdenow.
Bongardia, C. A. Meyer.
Bonnaya, Link and Otto.
Bonnetia, Martius and Zuccarini.
Borago, Linnæus.
Borassus, Linnæus.
Borbonia, Linnæus.
Boronia, Smith.
Borreria, G. F. W. Meyer.
Boscia, La Marck.
Bossiaea, Ventenat.
Boswellia, Roxburgh.
Botrychium, Swartz.
Boucerosia, Wight and Arnott.
Bouchea, Chamisso.
Bougainvillea, Spach.
Boussingaultia, Humboldt, Bonpland, and Kunth.
Bouvardia, Salisbury.
Bowenia, Hooker.
Bowiea, Harvey.
Brabeium, Linnæus.
Brachychiton, Schott.
Brachycome, Cassini.
Brachylæna, R. Brown.
Brachyotum, Triana.
Brachysema, R. Brown.
Brachyspatha, Schott.
Brachystelma, R. Brown.
Brahea, Martius.
Brainea, Hooker.
Brassavola, R. Brown.
- Brassia*, R. Brown.
Brassica, Linnæus.
Bravoa, Llave.
Bredia, Blume.
Brexia, Thouars.
Brillantaisia, Palisot de Beauvois.
Briza, Linnæus.
Brodiaea, Smith.
Bromelia, Linnæus.
Bromheadia, Lindley.
Bromus, Linnæus.
Brongniartia, Humboldt, Bonpland, and Kunth.
Brosimum, Swartz.
Broughtonia, R. Brown.
Broussonetia, Ventenat.
Browallia, Linnæus.
Brownea, Jacquin.
Brownlowia, Roxburgh.
Brucea, Miller.
Brunfelsia, Linnæus.
Brunia, Linnæus.
Brunonia, Smith.
Brunsvigia, Heister.
Brya, P. Browne.
Bryanthus, Gmelin.
Bryonia, Linnæus.
Bryophyllum, Salisbury.
Bucklandia, Brown.
Buddleia, Linnæus.
Buettneria, Linnæus.
Bulbine, Linnæus.
Bulboecodium, Linnæus.
Bulbophyllum, Thouars.
Bunchosia, L. C. Richard.
Buphthalmum, Linnæus.
Bupleurum, Linnæus.
Burbridgea, J. D. Hooker.
Burchardia, R. Brown.
Burchellia, R. Brown.
Burlingtonia, Lindley.
Bursaria, Cavanilles.
Bursaria, Linnæus.
Burtonia, R. Brown.
Butea, Roxburgh.
Butomus, Linnæus.
Buxus, Linnæus.
Byrsosima, L. C. Richard.
Bystropogon, L'Héritier.
- Cabomba*, Aublet.
Cacalia, Linnæus.
Cacoucia, Aublet.
Cassalpinia, Linnæus.
Cajanus, De Candolle.
Cakile, Gærtner.
Caladenia, R. Brown.
Caladium, Ventenat.
Calamagrostis, Adanson.
Calamintha, Mœnch.
Calamus, Linnæus.
Calandrinia, Humboldt, Bonpland, and Kunth.
Calanthe, R. Brown.
Calathea, G. F. W. Meyer.
Calceolaria, Linnæus.
Caldcluvia, Don.
Calea, Linnæus.
Caleana, R. Brown.
Calcectasia, R. Brown.
Calendula, Linnæus.
Caliphuria, Herbert.

Genera and their Authors—*continued.*

- Calla, Linnæus.
 Calliandra, Bentham.
 Callicarpa, Linnæus.
 Callichroa, Fischer and Meyer.
 Callicoma, Andrews.
 Calligonum, Linnæus.
 Calliprora, Lindley.
 Callipsyche, Herbert.
 Callipteris, Bory.
 Callirhoe, Nuttall.
 Callistemon, R. Brown.
 Callistephus, Cassini.
 Callitris, Ventenat.
 Calluna, Salisbury.
 Calochilus, R. Brown.
 Calochortus, Pursh.
 Calodendron, Thunberg.
 Calophaca, Fischer.
 Calophanes, Don.
 Calophyllum, Linnæus.
 Calopogon, R. Brown.
 Caloscardum, Herbert.
 Calostemma, R. Brown.
 Calothamnus, Labillardière.
 Calotia, R. Brown.
 Calotropis, R. Brown.
 Caltha, Linnæus.
 Calycanthus, Linnæus.
 Calycophyllum, De Candolle.
 Calycotome, Link.
 Calypso, Salisbury.
 Calyptranthes, Swartz.
 Calyptrorhynchus, Blume.
 Calyptrorhynchus, H. Wendland.
 Calystegia, R. Brown.
 Calythrix, Labillardière.
 Camaridium, Lindley.
 Camassia, Lindley.
 Cambessedes, De Candolle.
 Camellia, Linnæus.
 Camoensia, Welwitsch.
 Campana, Decaisne.
 Campanula, Linnæus.
 Campanulæna, Blume.
 Camphora, Nees.
 Campsidium, Seemann.
 Campopus, J. D. Hooker.
 Canarina, Linnæus.
 Canarium, Linnæus.
 Canavalia, Adanson.
 Canbia, Parry.
 Candollea, Labillardière.
 Canella, Swartz.
 Canistrum, Morren.
 Canna, Linnæus.
 Cannabis, Linnæus.
 Canscora, La Marck.
 Cantua, Jussieu.
 Capparis, Linnæus.
 Capsicum, Linnæus.
 Caragana, La Marck.
 Caragana, Lindley.
 Carallia, Roxburgh.
 Caralluma, R. Brown.
 Carapa, Aublet.
 Cardamine, Linnæus.
 Cardandra, Siebold and Zuccarini.
 Carduncellus, Adanson.
 Carduus, Linnæus.
 Carex, Linnæus.
 Careya, Roxburgh.
 Carica, Linnæus.
 Carissa, Linnæus.
- Carlina, Linnæus.
 Carludovicia, Ruiz and Pavon.
 Carmichaelia, R. Brown.
 Carpenteria, Torrey.
 Carpinus, Linnæus.
 Carpodinus, R. Brown.
 Carpolyza, Salisbury.
 Carthamus, Linnæus.
 Carum, Linnæus.
 Carya, Nuttall.
 Caryocar, Linnæus.
 Caryophyllus, Linnæus.
 Caryopteris, Bunge.
 Caryota, Linnæus.
 Casearia, Jacquin.
 Casimiroa, Llave.
 Cassandra, Don.
 Cassebeera, Kaulfuss.
 Cassia, Linnæus.
 Cassine, Linnæus.
 Cassinia, R. Brown.
 Cassiopa, Don.
 Castanea, Gartner.
 Castanospermum, Allan Cunningham.
 Castilleja, Linnæus, jun.
 Castilloa, Cervantes.
 Casuarina, Forster.
 Catalpa, Jussieu.
 Catananche, Linnæus.
 , L. C. Richard.
 , Linnæus.
- Catha, Forskahl.
 Cathartica, J. D. Hooker.
 Catoblastus, H. Wendland.
 Catopsis, Grisebach.
 Cattleya, Lindley.
 Caulophyllum, Michaux.
 Ceanothus, Linnæus.
 Cecropia, Linnæus.
 Cedrela, Linnæus.
 Cedronella, Moench.
 Cedrus, Loudon.
 Celastrus, Linnæus.
 Colosia, Linnæus.
 Celsia, Linnæus.
 Celtis, Linnæus.
 Centaurea, Linnæus.
 Centothea, Desvaux.
 Centradenia, G. Don.
 Centranthus, De Candolle.
 Centronia, Don.
 Centropogon, Presl.
 Centrosolenia, Bentham.
 Cephaelis, Swartz.
 Cephalanthus, L. C. Richard.
 Cephalanthus, Linnæus.
 Cephalaria, Schrader.
 Cephalotaxus, Siebold and Zuccarini.
 Cephalotaxus, Labillardière.
 Cerastium, Linnæus.
 Cerasus, Jussieu.
 Ceratiola, Michaux.
 Ceratolobus, Blume.
 Ceratonia, Linnæus.
 Ceratopetalum, Smith.
 Ceratopteris, Brongniart.
 Ceratostema, Jussieu.
 Ceratozamia, Brongniart.
 Corbera, Linnæus.
 Cercis, Linnæus.
 Cercocarpus, Humboldt, Bonpland,
 and Kunth.
 Cercus, Haworth.
- Cerinthe, Linnæus.
 Ceropogia, Linnæus.
 Ceroylon, Humboldt and Bonpland.
 Cespedesia, Goudot.
 Cestrum, Linnæus.
 Chænostoma, Bentham.
 Chærophyllum, Linnæus.
 Chætanthera, Ruiz and Pavon.
 Chætocalyx, De Candolle.
 Chætogastra, Naudin.
 Chamæbatia, Bentham.
 Chamæcyparis, Spach.
 Chamædorea, Willdenow.
 Chamælaucium, Desfontaines.
 Chamæpence, De Candolle.
 Chamæranthemum, Nees.
 Chamærhodos, Bunge.
 Chamærops, Linnæus.
 Chamissoa, Humboldt, Bonpland, and
 Kunth.
 Chaptalia, Ventenat.
 Charicis, Cassini.
 Chæceanum, E. Meyer.
 Cheilanthes, Swartz.
 Cheiranthus, Linnæus.
 Cheirotomon, Humboldt and Bon-
 pland.
 Cheirostylis, Blume.
 Chelidonium, Linnæus.
 Chelone, Linnæus.
 Chenopodium, Linnæus.
 Chilopsis, Don.
 Chimaphila, Pursh.
 Chimonanthus, Lindley.
 Chiococca, Linnæus.
 Chionanthus, Linnæus.
 Chionodoxa, Boissier.
 Chionographis, Maximowicz.
 Chirita, Hamilton.
 Chironia, Linnæus.
 Chlidanthus, Herbert.
 Chloanthus, R. Brown.
 Chlora, Linnæus.
 Chloris, Swartz.
 Chlorogalum, Kunth.
 Chlorophytum, Ker.
 Chlorospatha, Endlicher.
 Chloroxylon, De Candolle.
 Choisya, Kunth.
 Chomelia, Jacquin.
 Chondrorhyncha, Lindley.
 Chorispora, De Candolle.
 Chorizema, Labillardière.
 Chrysalidocarpus, H. Wendland.
 Chrysanthemum, Linnæus.
 Chrysobactron, J. D. Hooker.
 Chrysobalanus, Linnæus.
 Chrysocoma, Linnæus.
 Chrysogonum, Linnæus.
 Chrysophyllum, Linnæus.
 Chrysopsis, Nuttall.
 Chrysosplenium, Linnæus.
 Chysis, Lindley.
 Cicca, Linnæus.
 Cichorium, Linnæus.
 Cienkowskia, Solms.
 Cimicifuga, Linnæus.
 Cinchona, Linnæus.
 Cineraria, Linnæus.
 Cinnamodendron, Endlicher.
 Cinnamomum, Blume.
 Cipura, Aublet.
 Circea, Linnæus.

Genera and their Authors—continued.

- Cirrhaea, Lindley.
 Cirrhopetalum, Lindley.
 Cissampelos, Linnæus.
 Cissus, Linnæus.
 Cistus, Linnæus.
 Citharexylum, Linnæus.
 Citrullus, Schrader.
 Citrus, Linnæus.
 Cladrastis, Rafinesque.
 Clarkia, Pursh.
 Clausena, Burmann.
 Clavija, Ruiz and Pavon.
 Claytonia, Linnæus.
 Cleistostoma, Blume.
 Clematis, Linnæus.
 Cleome, Linnæus.
 Clerodendron, Linnæus.
 Clethra, Linnæus.
 Cleyera, De Candolle.
 Clianthus, Solander.
 Clidemia, Don.
 Clintonia, Rafinesque.
 Clitoria, Linnæus.
 Clivia, Lindley.
 Clowesia, Lindley.
 Clusia, Linnæus.
 Cluytia, Linnæus.
 Cneorum, Linnæus.
 Cnestis, Jussieu.
 Cnicus, Linnæus.
 Cobæa, Cavanilles.
 Coccocypselum, P. Browne.
 Cocoloba, Linnæus.
 Cocculus, De Candolle.
 Cochlearia, Linnæus.
 Cochlostema, Lemaire.
 Cochlospermum, Kunth.
 Cocos, Linnæus.
 Codium, Rumphius.
 Codonopsis, Wallich.
 Coelestina, Cassini.
 Cœlia, Lindley.
 Cœliopsis, Reichenbach, jun.
 Cologyne, Lindley.
 Coffea, Linnæus.
 Coix, Linnæus.
 Cola, Schott.
 Colobium, Linnæus.
 Coldenia, Linnæus.
 Colea, Bojer.
 Colebrookia, Smith.
 Coleonema, Bartling and Wendlan.
 Coleus, Loureiro.
 Colletia, Commerson.
 Collinsia, Nuttall.
 Collinsonia, Linnæus.
 Collomia, Nuttall.
 Colocasia, Schott.
 Cologania, Kunth.
 Colquhounia, Wallich.
 Colubrina, L. C. Richard.
 Columellia, Ruiz and Pavon.
 Columnnea, Linnæus.
 Coluria, Brown.
 Colutea, Linnæus.
 Comaropsis, L. C. Richard.
 Comarostaphylis, Zuccarini.
 Comarum, Linnæus.
 Combretum, Linnæus.
 Comesperma, Labillardière
 Commelina, Linnæus.
 Comoladia, P. Browne.
 Comparettia, Poeppig.
 Comptonia, Banks.
 Conandron, Siebold and Zuccarini.
 Conanthera, Ruiz and Pavon.
 Conium, Linnæus.
 Connarus, Linnæus.
 Conocarpus, Gærtner.
 Conospermum, Smith.
 Conostegia, Don.
 Conostephium, Bentham.
 Convallaria, Linnæus.
 Convolvulus, Linnæus.
 Conyza, Lessing.
 Cookia, Sonnerat.
 Cooperia, Herbert.
 Copaifera, Linnæus.
 Copernicia, Martius.
 Coprosma, Forster.
 Coptis, Salisbury.
 Corchorus, Linnæus.
 Cordia, Linnæus.
 Cordyline, Commerson
 Corema, Don.
 Coreopsis, Linnæus.
 Corethrostylis, Endlicher.
 Coriandrum, Linnæus.
 Coriaria, Linnæus.
 Coris, Linnæus.
 Cornus, Linnæus.
 Cornutia, Linnæus.
 Corokia, Allan Cunningham.
 Coronilla, Linnæus.
 Correa, Smith.
 Cortusa, Linnæus.
 Coryanthos, Hooker.
 Corydalis, De Candolle.
 Corylopsis, Siebold and Zuccarini.
 Corylus, Linnæus.
 Corynocarpus, Forster.
 Corynophallus, Schott.
 Corynostylis, Martius.
 Corypha, Linnæus.
 Corysanthes, R. Brown.
 Coscinium, Colebrook.
 Cosmanthus, Nolte.
 Cosmelia, R. Brown.
 Cosmibuena, Ruiz and Pavon.
 Cosmos, Cavanilles.
 Cossignia, Commerson.
 Costus, Linnæus.
 Cotoneaster, Medikus.
 Cotyledon, Linnæus.
 Coulteria, Humboldt, Bonpland, and
 Kunth.
 Couroupita, Aublet.
 Coursetia, De Candolle.
 Cousinia, Cassini.
 Coutarea, Aublet.
 Coutoubea, Aublet.
 Cowania, Don.
 Crambe, Linnæus.
 Crassula, Linnæus.
 Cratægus, Linnæus.
 Cratæva, Linnæus.
 Crawfordia, Wallich.
 Crepis, Linnæus.
 Crescentia, Linnæus.
 Crinum, Linnæus.
 Cristaria, Cavanilles.
 Crithmum, Linnæus.
 Crocosmia, Planchon.
 Crocus, Linnæus.
 Crossandra, Salisbury.
 Crotalaria, Linnæus.
 Croton, Linnæus.
 Crowea, Smith.
 Crucianella, Linnæus.
 Cryptanthus, Otto and Dietrich.
 Cryptochilus, Wallich.
 Cryptocoryne, Fischer.
 Cryptogramme, R. Brown.
 Cryptomeria, Don.
 Cryptostegia, R. Brown.
 Cryptostemma, R. Brown.
 Cucumis, Linnæus.
 Cucurbita, Linnæus.
 Culcasia, Palisot de Beauvois.
 Cunila, Linnæus.
 Cunninghamia, R. Brown.
 Cunonia, Linnæus.
 Cupania, Linnæus.
 Cuphea, P. Browne.
 Cupressus, Linnæus.
 Curatella, Linnæus.
 Curculigo, Gærtner.
 Curcuma, Linnæus.
 Curtisia, Aiton.
 Cuscuta, Linnæus.
 Cussonia, Thunberg.
 Cyananthus, Wallich.
 Cyanella, Linnæus.
 Cyanophyllum, Naudin.
 Cyanotis, Don.
 Cyathea, Smith.
 Cyathodes, Labillardière.
 Cycas, Linnæus.
 Cyclamen, Linnæus.
 Cyenochos, Lindley.
 Cydonia, Tournefort.
 Cylista, Aiton.
 Cymbidium, Swartz.
 Cynanchum, Linnæus.
 Cynara, Linnæus.
 Cynoglossum, Linnæus.
 Cynometra, Linnæus.
 Cypella, Herbert.
 Cyperus, Linnæus.
 Cyphia, Bergius.
 Cyphokentia, Brongniart.
 Cyphomandra, Sendtner.
 Cyphosperma, H. Wendlan.
 Cypripedium, Linnæus.
 Cyrilla, Garden.
 Cyrtanthera, Nees.
 Cyrtanthus, Aiton.
 Cyrtoceras, Bennett.
 Cyrtocentrum, Humboldt, Bonpland,
 and Kunth.
 Cyrtopodium, R. Brown.
 Cyrtostachys, Blume.
 Cystacanthus, T. Anderson.
 Cystopteris, Bernhardt.
 Cytisus, Lin.
 Dabœcia, Don.
 Dacrydium, Solander.
 Dactylis, Linnæus.
 Dactyloctenium, Willdenow.
 Dæmia, R. Brown.
 Dæmonorops, Blume.
 Dablia, Cavanilles.
 Dais, Linnæus.
 Dalbergia, Linnæus, jun.
 Dalea, Li.
 Dalechampia, Linnæus
 Dalibarda, Linnæus.

Genera and their Authors—con

- Dammara*, Lambert.
Dammacanthus, Gärtner.
Dampiera, R. Brown.
Dansea, Smith.
Daphne, Linnæus.
Darlingtonia, Torrey.
Darwinia, Rudge.
Dasylyrion, Zuccarini.
Datisca, Linnæus.
Datura, Linnæus.
Daubenya, Lindley.
Daucus, Linnæus.
Davallia, Smith.
Davidsonia, Mueller.
Daviesia, Smith.
Decabelone, Decaisne.
Decaisnea, J. D. Hooker and Thomson.
Decumaria, Linnæus.
Deherainia, Decaisne.
Delabechia, Lindley.
Delarbraea, Vieillard.
Delima, Linnæus.
Delostoma, Don.
Delphinium, Linnæus.
Dendrobium, Swartz.
Dendrochilum, Blume.
Dendromecon, Bentham.
Dendropanax, Decaisne.
Dendroseris, Don.
Dentaria, Linnæus.
Deparia, Hooker and Greville.
Deppea, Chamisso and Schlechtendahl.
Desfontainea, Ruiz and Pavon.
Desmanthus, Willdenow.
Desmodium, Desvaux.
Desmonous, Martius.
Deutzia, Thunberg.
Diacalpe, Blume.
Dianella, La Marck.
Dianthera, Linnæus.
Dianthus, Linnæus.
Diapensia, Linnæus.
Diascia, Link and Otto.
Dicontra, Borkhausen.
Dichæa, Lindley.
Dichorisandra, Mikan.
Dichrostachys, De Candolle.
Dichrotrichum, Reinwardt.
Dicksonia, L'Héritier.
Dioliptera, Jussieu.
Dictamnus, Linnæus.
Dietyanthus, Decaisne.
Dietyosperma, H. Wendland.
Dietyoxiphium, Hooker.
Dietyrta, Regel.
Didymocarpus, Wallich.
Didymochlæna, Desvaux.
Didymosperma, H. Wendland and Drude.
Dieffenbachia, Schott.
Diervilla, Tournefort.
Digitalis, Linnæus.
Dilatris, Bergius.
Dillenia, Linnæus.
Dillwynia, Smith.
Dimorphanthus, Miquel.
Dimorphotheca, Mönch.
Dionæa, Ellis.
Dioon, Lindley.
Dioscorea, Linnæus.
Diosma, Linnæus.
Diospyros, Linnæus.
Diotis, Desfontainea.
Dipcadi, Medikus.
Diphyllaia, Michaux.
Diphysea, Jacquin.
Diplacus, Nuttall.
Dipladenia, Alphonse de Candolle.
Diplolæna, Brown.
Diplothemium, Martius.
Dipsacus, Linnæus.
Dipteryx, Schreber.
Dirca, Linnæus.
Disa, Bergius.
Discaria, Hooker.
Dischidia, R. Brown.
Disocactus, Pfeiffer.
Disporum, Salisbury.
Disteganthus, Lemaire.
Distylium, Siebold and Zuccarini.
Diuris, Smith.
Dodecatheon, Linnæus.
Dolichos, Linnæus.
Doliocarpus, Roland.
Dombeya, La Marck.
Doodia, R. Brown.
Dorema, Don.
Doronicum, Linnæus.
Dorstenia, Linnæus.
Doryanthes, Correa da Serra.
Doryenium, Villars.
Dossinia, Morren.
Douglasia, Lindley.
Downingia, Torrey.
Draba, Linnæus.
Dracæna, Linnæus.
Dracocephalum, Linnæus.
Dracontium, Linnæus.
Dracophyllum, Labillardière.
Dracunculus, Schott.
Drakæa, Lindley.
Drepanocarpus, G. A. F. W. Meyer.
Drimis, Jacquin.
Drimiopsis, Lindley.
Drimys, Forster.
Drosera, Linnæus.
Drosophyllum, Link.
Dryandra, R. Brown.
Dryas, Linnæus.
Drymoda, Lindley.
Drymoglossum, Presl.
Drymonia, Martius.
Drymophilæus, Zippel.
Dryobalanops, Gärtner.
Drypetes, Vahl.
Drypis, Linnæus.
Duboisia, R. Brown.
Dumasia, De Candolle.
Duranta, Linnæus.
Durio, Linnæus.
Duvalia, Haworth.
Duvaua, Kunth.
Dyckia, Schultes.
Dypsis, Noronha.
Dysodia, Cavanilles.
Earina, Lindley.
Ebenus, Linnæus.
Ebermaiera, Nees.
Eoballium, L. C. Richard.
Eccremocarpus, Ruiz and Pavon.
Echidnium, Schott.
Echidnopsis, J. D. Hooker.
Echinacea, Mönch.
Echinocactus, Link and Otto.
Echinops, Linnæus.
Echinopsis, Zuccarini.
Echinosperrum, Swartz.
Echites, Linnæus.
Echium, Linnæus.
Edgeworthia, Meissner.
Ehretia, Linnæus.
Eichhornia, Kunth.
Ekebergia, Sparrmann.
Elæagnus, Linnæus.
Elæis, Jacquin.
Elæocarpus, Linnæus.
Elæodendron, Jacquin, jun.
Elettaria, Maton.
Eleusine, Gärtner.
Elisena, Herbert.
Elleanthus, Presl.
Elliotia, Muhlenberg.
Elodea, Michaux.
Elymus, Linnæus.
Embelia, Jussieu.
Embothrium, Forster.
Emmenanthe, Bentham.
Empetrum, Linnæus.
Emplenrum, Solander.
Encophalartos, Lehmann.
Eukianthus, Loureiro.
Entada, Adanson.
Entelea, Brown.
Eomecon, Hance.
Epacris, Cavanilles.
Ephedra, Linnæus.
Epidendrum, Linnæus.
Epigæa, Linnæus.
Epilobium, Linnæus.
Epimedium, Linnæus.
Epipactis, R. Brown.
Epiphyllum, Pfeiffer.
Epipremnum, Schott.
Episcia, Martius.
Epistephium, Kunth.
Equisetum, Linnæus.
Eragrostis, Palisot de Beauvois.
Eranthemum, Linnæus.
Eranthis, Salisbury.
Ercilla, Adrien de Jussieu.
Eremia, Don.
Eremostachys, Bunge.
Eremurus, Bieberstein.
Eria, Lindley.
Erianthus, Michaux.
Erica, Linnæus.
Ericinella, Klotzsch.
Erigeron, Linnæus.
Erinus, Linnæus.
Eriocaulon, Linnæus.
Eriochilus, R. Brown.
Eriocnema, Naudin.
Eriodendron, De Candolle.
Eriogonum, Michaux.
Eriophorum, Linnæus.
Eriophyllum, Lagasca.
Eriopsis, Lindley.
Eriosema, De Candolle.
Eriospermum, Jacquin.
Eriostemon, Smith.
Erithalis, Linnæus.
Eritrichium, Schrader.
Erodium, L'Héritier.
Eryngium, Linnæus.
Erysimum, Linnæus.
Erythea, S. Watson.
Erythraea, L. C. Richard

Genera and their Authors—continued.

- Erythrina, Linnæus.
 Erythrochiton, Nees and Martius.
 Erythronium, Linnæus.
 Erythrophloeum, Afzelius.
 Erythroxyton, Linnæus.
 Escallonia, Linnæus, jun.
 Eschscholtzia, Chamisso.
 Espeletia, Humboldt and Bonpland.
 Eudenia, Oliver.
 Eucalyptus, L'Héritier.
 Euchætia, Bartling and Wendland.
 Eucharidium, Fischer and Meyer.
 Eucharis, Planchon.
 Euclæna, Schrader.
 Euclis, Linnæus.
 Eucomia, L'Héritier.
 Euerosia, Ker.
 Eucryphia, Cavanilles.
 Eugenia, Linnæus.
 Eulalia, Trinius.
 Eulophia, R. Brown.
 Eunomia, De Candolle.
 Eucnymus, Linnæus.
 Eupatorium, Linnæus.
 Euphorbia, Linnæus.
 Euphrasia, Linnæus.
 Eupomatia, R. Brown.
 Eurya, Thunberg.
 Euryale, Salisbury.
 Eurycles, Salisbury.
 Eurygania, Klotzsch.
 Euscaphis, Siebold and Zuccarini.
 Eustegia, R. Brown.
 Eustoma, Salisbury.
 Eustrephus, R. Brown.
 Eutaxia, R. Brown.
 Euterpe, Gærtner.
 Evolvulus, Linnæus.
 Exacum, Linnæus.
 Exochorda, Lindley.
 Exostemma, L. C. Richard.
 Eysenhardtia, Humboldt, Bonpland,
 and Kunth.
- Fabia, Tournefort.
 Fabiana, Ruiz and Pavon.
 Fadyenia, Hooker.
 Fagelia, Necker.
 Fagopyrum, Gærtner.
 Fagraea, Thunberg.
 Fagus, Linnæus.
 Falkia, Linnæus, jun.
 Fallugia, Endlicher.
 Faramea, Aublet.
 Farsetia, Desvoux.
 Fatsia, Decaisne and Planchon.
 Fedia, Mönch.
 Felicia, Cassini.
 Fernandezia, Lindley.
 Fernelia, Commerson.
 Feronia, Correa.
 Ferraria, Linnæus.
 Ferula, Linnæus.
 Festuca, Linnæus.
 Fevillea, Linnæus.
 Ficus, Linnæus.
 Fieldia, Allan Cunningham.
 Fischeria, De Candolle.
 Fittonia, E. Coëmans.
 Fitaroya, J. D. Hooker.
 Flacourtia, Commerson.
 Flaveria, Jussieu.
- Flindersia, Brown.
 Fluggea, Willdenow.
 Focpiculum, Adanson.
 Fotidia, Commerson.
 Fontanesia, Labillardière.
 Forrestia, A. Richard.
 Forsythia, Vahl.
 Fothergilla, Linnæus.
 Fouquiera, Humboldt, Bonpland, and
 Kunth.
 Fragaria, Linnæus.
 Francoa, Cavanilles.
 Frankenia, Linnæus.
 Fraxera, Walter.
 Fraxinus, Linnæus.
 Freesia, Klatt.
 Fremontia, Torrey.
 Freyinetia, Gaudichaud.
 Freziera, Swartz.
 Friesia, De Candolle.
 Fritillaria, Linnæus.
 Frolichia, Mönch.
 Fucozia, Linnæus.
 Fugosia, Jussieu.
 Fumana, Dunal.
 Fumaria, Linnæus.
 Funkia, Sprengel.
 Furcraea, Ventenat.
- Gærtnera, Lu Marck.
 Gagea, Salisbury.
 Gagnebina, De Candolle.
 Gaillardia, Fougère.
 Galactites, Mönch.
 Galactodendron, Humboldt, Bonpland,
 and Kunth.
 Galanthus, Linnæus.
 Galax, Linnæus.
 Galaxia, Thunberg.
 Galeandra, Lindley.
 Galega, Linnæus.
 Galeola, Loureiro.
 Galeopsis, Linnæus.
 Galipea, Aublet.
 Galium, Linnæus.
 Galphimia, Cavanilles.
 Galtonia, Decaisne.
 Garcinia, Linnæus.
 Gardenia, Linnæus.
 Gardoquia, Ruiz and Pavon.
 Garrya, Douglas.
 Garuga, Roxburgh.
 Gasteria, Duval.
 Gastonia, Commerson.
 Gastrodia, R. Brown.
 Gastrolobium, R. Brown.
 Gaudichaudia, Humboldt, Bonpland,
 and Kunth.
 Gaultheria, Linnæus.
 Gaura, Linnæus.
 Gaussia, H. Wendland.
 Gaylussacia, Humboldt, Bonpland, and
 Kunth.
 Gazania, Gærtner.
 Geaster, Persoon.
 Geissois, Labillardière.
 Geissomeria, Lindley.
 Geissorhiza, Ker.
 Gelasine, Herbert.
 Gelsemium, Jussieu.
 Genipa, Linnæus.
 Genista, Linnæus.
- Gentiana, Linnæus.
 Goodenium, Jackson.
 Geoffraea, Linnæus.
 Geonoma, Willdenow.
 Geranium, Linnæus.
 Gerardia, Linnæus.
 Gesnera, Martius.
 Gethyllis, Linnæus.
 Geum, Linnæus.
 Gilla, Ruiz and Pavon.
 Gilbertia, Ruiz and Pavon.
 Gillenia, Mönch.
 Gilliesia, Lindley.
 Ginkgo, Linnæus.
 Gladiolus, Linnæus.
 Glaucoium, Jussieu.
 Glaux, Linnæus.
 Gleditschia, Linnæus.
 Gleichenia, Smith.
 Globba, Linnæus.
 Globularia, Linnæus.
 Gloriosa, Linnæus.
 Glossodia, R. Brown.
 Glossula, Lindley.
 Gloxinia, L'Héritier.
 Glycine, Linnæus.
 Glycosmia, Correa.
 Glycyrrhiza, Linnæus.
 Glyphæa, J. D. Hooker.
 Glyphosperma, S. Watson.
 Gmelina, Linnæus.
 Gnaphalium, Linnæus.
 Gnidia, Linnæus.
 Godoya, Ruiz and Pavon.
 Goethea, Nees and Martius.
 Gomphia, Schrober.
 Gomphocarpus, R. Brown.
 Gompholobium, Smith.
 Gomphrena, Linnæus.
 Gonatanthus, Klotzsch.
 Gongora, Ruiz and Pavon.
 Gonocalyx, Planchon and Linden.
 Gonolobus, Michaux.
 Goodenia, Smith.
 Goodia, Salisbury.
 Goodyera, R. Brown.
 Gordonia, Ellis.
 Gossypium, Linnæus.
 Gouania, Linnæus.
 Govenia, Lindley.
 Grabowskia, Schlechtendahl.
 Grammangis, Reichenbach, jun.
 Grammanthes, De Candolle.
 Grammatocarpus, Presl.
 Grammatophyllum, Blume.
 Graptophyllum, Nees.
 Gratiola, Linnæus.
 Gravesia, Naudin.
 Groigia, Regel.
 Grevillea, R. Brown.
 Grewia, Linnæus.
 Groyia, Hooker and Harvey.
 Grias, Linnæus.
 Griffinia, Ker.
 Grindelia, Willdenow.
 Griselinia, Forster.
 Griseia, Linnæus.
 Grobya, Lindley.
 Gronovia, Linnæus.
 Guaiaoum, Linnæus.
 Guarea, Linnæus.
 Guatteria, Ruiz and Pavon.
 Guazuma, Plumier.

Genera and their Authors—continued.

- Guettarda, Linnæus.
 Guevina, Molina.
 Guichenotia, J. Gay.
 Guilielma, Martius.
 Gundelia, Linnæus.
 Gunnera, Linnæus.
 Gustavia, Linnæus.
 Gutierrezia, Lagasca.
 Guzmania, Ruiz and Pavon.
 Gymnadenia, R. Brown.
 Gymnema, R. Brown.
 Gymnocladus, La Marek.
 Gymnogramme, Desvieux.
 Gymnolomia, Humboldt, Bonpland, and Kunth.
 Gymnostachys, R. Brown.
 Gymnostachyum, Nees.
 Gynandropsis, De Candolle.
 Gynurum, Humboldt and Bonpland.
 Gynura, Cassini.
 Gypsophila, Linnæus.
- Habenaria, Willdenow.
 Haberlea, Frivaldsky.
 Hablitzia, Bieberstein.
 Habranthus, Herbert.
 Haecquotia, Necker.
 Hæmanthus, Linnæus.
 Hæmaria, Lindley.
 Hæmatoxyton, Linnæus.
 Hæmodorum, Smith.
 Hakea, Schrader.
 Halesia, Linnæus.
 Halimodendron, Fischer.
 Halleria, Linnæus.
 Hallia, Thunberg.
 Hamamelis, Linnæus.
 Hamelia, Jacquin.
 Hamiltonia, Roxburgh.
 Hancockia, Gomez.
 Haplopappus, Cassini.
 Hardenbergia, Bentham.
 Hardwickia, Roxburgh.
 Haronga, Thouars.
 Harpagophytum, De Candolle.
 Hartogia, Thunberg.
 Hartwegia, Lindley.
 Haworthia, Duval.
 Hebecladus, Miers.
 Hebenstretia, Linnæus.
 Hechtia, Klotzsch.
 Hedera, Linnæus.
 Hedwigia, Swartz.
 Hedychium, Kœnig.
 Hedyсарum, Linnæus.
 Hedysepe, H. Wendland.
 Heeria, Schlechtendahl.
 Heinsia, De Candolle.
 Heisteria, Linnæus.
 Helenium, Linnæus.
 Helianthophora, Bentham.
 Helianthemum, Persoon.
 Helianthus, Linnæus.
 Helichrysum, Gærtner.
 Helicodicoeros, Schott.
 Heliconia, Linnæus.
 Helicteres, Linnæus.
 Helinus, E. Meyer.
 Heliocarpus, Linnæus.
 Heliphila, Linnæus.
 Helipais, Persoon.
 Heliotropium, Linnæus.
- Holipterum, De Candolle.
 Helleborus, Linnæus.
 Helmholtzia, F. Mueller.
 Helmia, Kunth.
 Helminthostachys, Kaulfuss.
 Helonias, Linnæus.
 Helwingia, Willdenow.
 Hemerocallis, Linnæus.
 Hemiandra, R. Brown.
 Hemichæna, Bentham.
 Hemimeris, Thunberg.
 Hemionitis, Linnæus.
 Hemiphragma, Wallich.
 Hemitelia, Brown.
 Heptapleurum, Gærtner.
 Horacleum, Linnæus.
 Herbertia, Sweet.
 Heritiera, Aiton.
 Hermannia, Linnæus.
 Herminiera, Guillemin and Perrottet.
 Herminium, Linnæus.
 Hernandia, Linnæus.
 Herniaria, Linnæus.
 Herpestis, Gærtner, jun.
 Herrania, Gondot.
 Herreria, Ruiz and Pavon.
 Hesperantha, Ker.
 Hesperis, Linnæus.
 Hessea, Herbert.
 Heteranthera, Ruiz and Pavon.
 Heteropappus, Lessing.
 Heteropterys, Kunth.
 Heterospatha, Scheffer.
 Heterotheca, Cassini.
 Heterotoma, Zuccarini.
 Heterotropa, Morron and Decaisne.
 Heuchera, Linnæus.
 Hovea, Aublet.
 Hexaglottis, Ventenat.
 Hibbertia, Andrews.
 Hibiscus, Linnæus.
 Hieracium, Linnæus.
 Hierochloa, Gmelin.
 Hillia, Jacquin.
 Hindsia, Bentham.
 Hippeastrum, Herbert.
 Hippia, Linnæus.
 Hippobromus, Ecklon and Zeyher.
 Hippocrepis, Linnæus.
 Hippomane, Linnæus.
 Hippophae, Linnæus.
 Hippuris, Linnæus.
 Hodgsonia, Joseph D. Hooker and Thomson.
 Hoffmannia, Swartz.
 Holbœllia, Wallich.
 Holcus, Linnæus.
 Holmskioldia, Retz.
 Homalanthus, A. Jussieu.
 Homalomena, Schott.
 Homeria, Ventenat.
 Homogyne, Cassini.
 Honckenya, Willdenow.
 Hoodia, Sweet.
 Hordeum, Linnæus.
 Horminum, Linnæus.
 Horsfieldia, Blume.
 Hosackia, Douglas.
 Hottonia, Linnæus.
 Houletia, A. Brongniart.
 Houstonia, Linnæus.
 Houttea, Decaisne.
 Houttuynia, Thunberg.
- Hovea, R. Brown.
 Hovenia, Thunberg.
 Hovea, Beccari.
 Hoya, R. Brown.
 Hudsonia, Linnæus.
 Huernia, R. Brown.
 Humea, Smith.
 Humulus, Linnæus.
 Hunnemanna, Sweet.
 Hura, Linnæus.
 Hutchesia, Brown.
 Hyacinthus, Linnæus.
 Hybernia, Latreille.
 Hydnum, Linnæus.
 Hydrangea, Linnæus.
 Hydrastis, Linnæus.
 Hydriastele, H. Wendland and Drude.
 Hydrocharis, Linnæus.
 Hydrolea, Linnæus.
 Hydropeltis, Michaux.
 Hydrophyllum, Linnæus.
 Hymenæa, Linnæus.
 Hymenandra, Alphonse de Candolle.
 Hymenanchora, R. Brown.
 Hymenocallis, Salisbury.
 Hymenodictyon, Wallich.
 Hymenophyllum, Linnæus.
 Hyophorbe, Gærtner.
 Hyoscyamus, Linnæus.
 Hyospatha, Martius.
 Hypecoum, Linnæus.
 Hypericum, Linnæus.
 Hyphæna, Gærtner.
 Hypocalymma, Endlicher.
 Hypocalyptus, Thunberg.
 Hypocyrtia, Martius.
 Hypoderris, Brown.
 Hypoestes, R. Brown.
 Hypolepis, Bernhardt.
 Hypolytrum, L. C. Richard.
 Hypoxis, Linnæus.
 Hyssopus, Linnæus.
- Ibbetsonia, Sims.
 Iberidella, Boissier.
 Iberis, Linnæus.
 Icacina, A. Jussieu.
 Ichnocarpus, R. Brown.
 Idesia, Maximowicz.
 Ilex, Linnæus.
 Illecebrum, Linnæus.
 Illicium, Linnæus.
 Imantophyllum, Hooker.
 Impatiens, Linnæus.
 Incarvillea, Jussieu.
 Indigofera, Linnæus.
 Inga, Willdenow.
 Inocarpus, Forster.
 Inula, Linnæus.
 Iochroma, Bentham.
 Ione, Lindley.
 Ionidium, Ventenat.
 Ionopidium, Reichenbach.
 Ionopsis, Humboldt, Bonpland, and Kunth.
 Iostephane, Bentham.
 Ipomœa, Linnæus.
 Iresine, Linnæus.
 Iriartea, Ruiz and Pavon.
 Iris, Linnæus.
 Isatis, Linnæus.
 Ischarum, Blume.

Genera and their Authors—*continued.*

- Iertia*, Schreber.
Isochilus, R. Brown.
Isoloma, Bentham.
Isomeris, Nuttall.
Isonandra, Wight.
Isoplexis, Lindley.
Isopogon, R. Brown.
Isopyrum, Linnaeus.
Isotoma, Lindley.
Isotropis, Bentham.
Itea, Linnaeus.
Ixanthus, Grisebach.
Ixia, Linnaeus.
Ixiolirion, Herbert.
Ixodia, R. Brown.
Ixora, Linnaeus.
- Jaborosa*, Jussieu.
Jacaranda, Jussieu.
Jacksonia, R. Brown.
Jacobinia, Moricand.
Jacquemontia, Choisy.
Jacquinia, Linnaeus.
Jamesia, Torrey and Gray.
Jamesonia, Hooker and Greville.
Jasione, Linnaeus.
Jasminum, Linnaeus.
Jateorhiza, Miers.
Jatropha, Linnaeus.
Jeffersonia, Barton.
Jerdonia, Wight.
Juanulloa, Ruiz and Pavon.
Jubaea, Humboldt, Bonpland, and Kunth.
Juglans, Linnaeus.
Juncus, Linnaeus.
Juniperus, Linnaeus.
Jurinea, Cassini.
Jussiaea, Linnaeus.
Justicia, Linnaeus.
- Kadsura*, Kämpfer.
Kämpferia, Linnaeus.
Kageneckia, Ruiz and Pavon.
Kalanchoe, Adanson.
Kalmia, Linnaeus.
Karatas, Adanson.
Kaulfussia, Blume.
Kennedyia, Ventenat.
Kentia, Blume.
Kentiopsis, Brongniart.
Kentrophyllum, Necker.
Keramanthus, J. D. Hooker.
Kerria, De Candolle.
Kielmeyera, Martius.
Kingia, R. Brown.
Kitaibelia, Willdenow.
Kleinovia, Linnaeus.
Klugia, Schlechtendahl.
Knightsia, R. Brown.
Kniphofia, Mönch.
Knowltonia, Salisbury.
Knoxia, Linnaeus.
Koellikeria, Regel.
Koßreuteria, Laxmann.
Koeniga, Brown.
Kopsia, Blume.
Korthalsia, Blume.
Krameria, Linnaeus.
Kreysigia, Reichenbach.
Kuhnia, Linnaeus.
- Kunzea*, Reichenbach.
Kydia, Roxburgh.
Kyllinga, Rottboell.
- Labichea*, Gandichaud.
Labisia, Lindley.
Lablab, Adanson.
Laburnum, Grisebach.
Lacama, Lindley.
Lachenalia, Jacquin.
Lachnaea, Linnaeus.
Lachnanthes, Elliott.
Lachnostoma, Humboldt, Bonpland, and Kunth.
Lactuca, Linnaeus.
Laelia, Lindley.
Laeliopsis, Lindley.
Lafoënsia, Vandelii.
Lagasea, Cavanilles.
Lagenaria, Seringe.
Lagenophora, Cassini.
Lagerströmia, Linnaeus.
Lagetta, Jussieu.
Lagunaria, G. Don.
Lagurus, Linnaeus.
Lallemantia, Fischer and Meyer.
Lamarckia, Mönch.
Lambertia, Smith.
Lamium, Linnaeus.
Lamourouxia, Humboldt, Bonpland, and Kunth.
Lanaria, Aiton.
Landolphia, Palisot de Beauvois.
Lankesteria, Lindley.
Lantana, Linnaeus.
Lapageria, Ruiz and Pavon.
Lapeyrousia, Pourret.
Laplacea, Humboldt, Bonpland, and Kunth.
Laportea, Gandichaud.
Lardizabala, Ruiz and Pavon.
Larix, Miller.
Larrea, Cavanilles.
Lasiopetalum, Smith.
Lasiospermum, Lagascea.
Lasthenia, Cassini.
Latania, Commerson.
Lathraea, Linnaeus.
Lathyrus, Linnaeus.
Latua, Philippi.
Laurelia, Jussieu.
Laurentia, Necker.
Laurus, Linnaeus.
Lavandula, Linnaeus.
Lavatera, Linnaeus.
Lavradia, Vellozo.
Lawsonia, Linnaeus.
Laxmannia, R. Brown.
Laya, Hooker and Arnott.
Leavenworthia, Torrey.
Lebeckia, Thunberg.
Lecythis, Linnaeus.
Ledenbergia, Klotzsch.
Ledum, Linnaeus.
Leea, Linnaeus.
Loianthus, Grisebach.
Leiochilus, Knowles and Westcott.
Leiophyllum, Persoon.
Lemna, Linnaeus.
Lens, Grenier and Godron.
Leonotis, Persoon.
Leontice, Linnaeus.
- Leontodon*, Linnaeus.
Leontopodium, R. Brown.
Lepanthes, Swartz.
Lepchinia, Willdenow.
Lepidagathis, Willdenow.
Lepidium, Linnaeus.
Leptinella, Cassini.
Leptodermis, Wallich.
Leptomeria, R. Brown.
Leptospermum, Forster.
Leptosyne, De Candolle.
Leschenaultia, R. Brown.
Lespedeza, Michaux.
Lessertia, De Candolle.
Leucadendron, R. Brown.
Leuchtenbergia, Hooker.
Leucocarpus, Don.
Leucocoryne, Lindley.
Leucocium, Linnaeus.
Leucopogon, R. Brown.
Leucospermum, R. Brown.
Leucotois, Don.
Leuzea, De Candolle.
Levisticum, Koch.
Lewisia, Pursh.
Leycesteria, Wallich.
Leyssera, Linnaeus.
Lhotzkya, Schauer.
Liabum, Adanson.
Liatris, Schreber.
Libertia, Sprengel.
Libocedrus, Endlicher.
Libonia, C. Koch.
Licuala, Thunberg.
Lietzia, Regel and Schmidt.
Lightfootia, L'Heritier.
Ligularia, Cassini.
Ligusticum, Linnaeus.
Ligustrum, Linnaeus.
Lilium, Linnaeus.
Limnanthemum, S. P. Gmelin.
Limnanthes, R. Brown.
Limnocharis, Humboldt, Bonpland, and Kunth.
Limonia, Linnaeus.
Limoniastrum, Mönch.
Linaria, Jussieu.
Linconia, Linnaeus.
Lindlofia, Lohmann.
Lindenia, Bentham.
Lindera, Thunberg.
Lindheimera, Asa Gray.
Lindleya, Humboldt, Bonpland, and Kunth.
Lindsaya, Dryander.
Linnaea, Gronovius.
Linum, Linnaeus.
Liparia, Linnaeus.
Liparis (plants), L. C. Richard.
Liparis (insects), Ochsenheimer.
Lippia, Linnaeus.
Liquidambar, Linnaeus.
Liriodendron, Linnaeus.
Liriope, Loureiro.
Lisianthus, Aublet.
Lissanthe, R. Brown.
Lissochilus, R. Brown.
Litanthus, Harvey.
Lithospermum, Linnaeus.
Litsea, La Marek.
Littonia, Hooker.
Livistona, R. Brown.
Llavea, Lagascea.

Genera and their Authors—continued.

- Lloydia, Salisbury.
 Loasa, Jussieu.
 Lobelia, Linnæus.
 Lobostemon, Lehmann.
 Lockhartia, Hooker.
 Loddigesia, Sims.
 Lodoicea, Labillardière.
 Lœselia, Linnæus.
 Logania, R. Brown.
 Loiseleuria, Desvaux.
 Lolium, Linnæus.
 Lomaria, Willdenow.
 Lomatia, R. Brown.
 Lomatophyllum, Willdenow.
 Lonas, Adanson.
 Lonchitis, Linnæus.
 Lonchocarpus, Humboldt, Bonpland, and Kunth.
 Lonocera, Linnæus.
 Lopezia, Cavanilles.
 Lophanthus, Benthams.
 Lophiola, Ker.
 Lophira, Banks.
 Lophyrus, Latreille.
 Loreya, De Candolle.
 Loropetalum, Brown.
 Lotus, Linnæus.
 Loxococcus, H. Wendland and Drude.
 Loxsoma, Brown.
 Lucaeus, Scopoli.
 Luculia, Sweet.
 Lucuma, Jussieu.
 Ludia, La Marek.
 Luffa, Cavanilles.
 Luhea, Willdenow.
 Luisia, Gaudichaud.
 Lunaria, Linnæus.
 Lupinus, Linnæus.
 Luxemburgia, St. Hilairo.
 Luzuriaga, Ruiz and Pavon.
 Lycaste, Lindley.
 Lychnis, Linnæus.
 Lycium, Linnæus.
 Lycoperdon, Tournefort.
 Lycopersicum, Miller.
 Lycopodium, Linnæus.
 Lycoria, Herbert.
 Lyda, Fabricius.
 Lygoum, Linnæus.
 Lygodium, Swartz.
 Lyonia, Nuttall.
 Lyonsia, R. Brown.
 Lyperia, Benthams.
 Lysimachia, Linnæus.
 Lysinema, R. Brown.
 Lysionotus, Don.
 Lythrum, Linnæus.

 Maba, Forster.
 Macadamia, F. Mueller.

 Mackaya, Harvey.
 Macleania, Hooker.
 MacLura, Nuttall.
 Macodes, Blume.
 Macradenia, R. Brown.
 Macrocnemum, P. Browne.
 Macroglossa, Ochseneheimer.
 Maeromeria, Don.
 Maerostylis, Bartling and Wendland.
 Maerozamia, Miquel.
 Madia, Molina.

 Mæna, Forskahl.
 Mæsa, Forskahl.
 Magnolia, Linnæus.
 Mahernia, Linnæus.
 Mahurea, Aublet.
 Maianthemum,
 Mairia, Nees.
 Malabaila, Hoffmann.
 Malachra, Linnæus.
 Malacocarpus, Salm-Dyck.
 Malaxis, Swartz.
 Malcolmia, Brown.
 Malope, Linnæus.
 Malortia, H. Wendland.
 Malpighia, Linnæus.
 Malva, Linnæus.
 Malvastrum, Asa Gray.
 Malvaviscus, Dillenius.
 Mamestra, Treitschko.
 Mammæa, Linnæus.
 Mammillaria, Haworth.
 Mandevilla, Lindley.
 Mandragora, Jussieu.
 Manettia, Mutis.
 Mangifera, Linnæus.
 Manicaria, Gærtner.
 Manihot, Adanson.
 Mantisia, Sims.
 Manulea, Linnæus.
 Maranta, Linnæus.
 Marasmius, Fries.
 Marattia, Smith.
 Margyricarpus, Ruiz and Pavon.
 Marianthus, Hügel.
 Marica, Ker.
 Marila, Swartz.
 Marlea, Roxburgh.
 Marrubium, Linnæus.
 Marsdenia, R. Brown.
 Marshallia, Schreber.
 Marsilea, Linnæus.
 Martinezia, Ruiz and Pavon.
 Martynia, Linnæus.
 Mascaronhasia, Alphonse de Candolle.
 Masdevallia, Ruiz and Pavon.
 Massanea, Morren.
 Massonia, Thunberg.
 Mathiola, Brown.
 Matonia, Brown.
 Matricaria, Linnæus.
 Maurandya, Ortega.
 Mauria, Kunth.
 Mauritia, Linnæus, jun.
 Maxillaria, Ruiz and Pavon.
 Maximiliana, Martius.
 Maytenus, Feuillé.
 Mazus, Loureiro.
 Meconopsis, Viguier.
 Medeola, Linnæus.
 Medicago, Linnæus.
 Medinilla, Gaudichaud.
 Megacarpæa, De Candolle.
 Megacolinium, Lindley.
 Megarrhiza, Torrey and Gray.
 Meiraquilium, Reichenbach, jun.
 Melaleuca, Linnæus.
 Melampyrum, Linnæus.
 Melanorrhœa, Wallich.
 Melanthera, Rohr.
 Melanthium, Linnæus.
 Melasma, Bergius.
 Melaspharula, Ker.
 Melastoma, Linnæus.

 Melhania, Forskahl.
 Melia, Linnæus.
 Melianthus, Linnæus.
 Melichrus, R. Brown.
 Melioccoa, Linnæus.
 Melicope, Forster.
 Melilotus, Jussieu.
 Melissa, Linnæus.
 Melittis, Linnæus.
 Melocactus, Link and Otto.
 Melodinus, Forster.
 Memecylon, Linnæus.
 Meniscium, Schreber.
 Menispermum, Linnæus.
 Mentha, Linnæus.
 Mentzelia, Linnæus.
 Menyanthes, Linnæus.
 Menziesia, Smith.
 Mercurialis, Linnæus.
 Merendera, Ramond.
 Meriania, Swartz.
 Mertensia, Roth.
 Merulius, Haller.
 Meryta, Forster.
 Mesembryanthemum,
 Mespilus, Linnæus.
 Mesua, Linnæus.
 Metrodorea, St. Hilairo.
 Metrosideros, Banks.
 Metroxylon, Rottboell.
 Metternichia, Mikan.
 Meum, Jacquin.
 Michauxia, L'Héritier.
 Michelia, Linnæus.
 Miconia, Ruiz and Pavon.
 Microcachrys, J. D. Hooker.
 Microgaster, Latreille.
 Microglossa, De Candolle.
 Microlicia, Don.
 Microloma, E. Brown.
 Micromeria, Benthams.
 Micromyrtus, Benthams.
 Microstylis, Nuttall.
 Mikania, Willdenow.
 Milla, Cavanilles.
 Millettia, Wight and Arnott.
 Millingtonia, Linnæus, jun.
 Miltonia, Lindley.
 Mimetes, Salisbury.
 Mimosa, Linnæus.
 Mimulus, Linnæus.
 Mimusops, Linnæus.
 Mirabilis, Linnæus.
 Mirbelia, Smith.
 Miscanthus, Anderson.
 Mitohella, Linnæus.
 Mitella, Linnæus.
 Mitracarpum, Zuccarini.
 Mitraria, Cavanilles.
 Mitriostigma, Hochstetter.
 Modecoa, La Marek.
 Modiola, Mœnch.
 Mœhringia, Linnæus.
 Mohria, Swartz.
 Molinia, Sohrank.
 Molopospermum, Koch.
 Moltkia, Lehmann.
 Moluccella, Linnæus.
 Momordica, Linnæus.
 Monanthes, Haworth.
 Monarda, Linnæus.
 Monardella, Benthams.
 Moneses, Salisbury.

Genera and their Authors—continued.

Monimia, Thouars.
 Monnina, Ruiz and Pavon.
 Monochæstum, Naudin.
 Monochilus, Fischer and Meyer.
 Monochoria, Presl.
 Monodora, Danal.
 Monogramme, Schrank.
 Monolena, Triana.
 Monolopia, De Candolle.
 Monomeria, Lindley.
 Monopanax, Regel.
 Monotoca, R. Brown.
 Monsonia, Linnæus.
 Monstera, Adanson.
 Montanoa, Llave and Lexarza.
 Montezuma, De Candolle.
 Montrichardia, Crüger.
 Moquilea, Aublet.
 Moræa, Linnæus.
 Moricandia, De Candolle.
 Morina, Linnæus.
 Morinda, Linnæus.
 Moringa, Jussieu.
 Morisonia, Linnæus.
 Mormodes, Lindley.
 Moronobea, Aublet.
 Morus, Linnæus.
 Moscharia, Ruiz and Pavon.
 Mucona, Adanson.
 Muehlenbeckia, Meissner.
 Muelleria, Linnæus.
 Mukia, Arnot.
 Mundtia, Kunth.
 Muntingia, Linnæus.
 Muraltia, Necker.
 Murraya, Linnæus.
 Musa, Linnæus.
 Muscari, Miller.
 Muscænda, Linnæus.
 Muscchia, Dumortier.
 Mutisia, Linnæus, jun.
 Myanthus, Lindley.
 Myrinda, Linnæus.
 Mylocaryum, Willdenow.
 Myoporum, Banks and Solander.
 Myosotidium, Hooker.
 Myosotis, Linnæus.
 Myrcia, De Candolle.
 Myrica, Linnæus.
 Myricaria, Desvauz.
 Myriophyllum, Linnæus.
 Myristica, Linnæus.
 Myrodia, Swartz.
 Myrospermum, Jacquin.
 Myroxylon, Linnæus, jun.
 Myrrhis, Scopoli.
 Myrsine, Linnæus.
 Myrsiphyllum, Willdenow.
 Myrtus, Linnæus.

Nasturtium, Brown.
 Nancelea, Linnæus.
 Nectandra, Rolander.
 Nectaroscordum, Lindley.
 Negundo, Mœnch.
 Neillia, Don.
 Neja, D. Don.
 Nelitris, Gärtner.
 Nelumbium, Jussieu.
 Nemastylis, Nuttall.
 Nematanthus, Martius.
 Nematus, Leach.
 Nemesia, Ventenat.
 Nemopantes, Rafinesque.
 Nemophila, Nuttall.
 Nenga, H. Wendland.
 Nengella, Beccari.
 Neottia, Linnæus.
 Nepenthes, Linnæus.
 Nepeta, Linnæus.
 Nephelaphyllum, Blume.
 Nephelium, Linnæus.
 Nephrodium, L. C. Richard.
 Nephrolepis, Schott.
 Nephrosperma, Ralfour, jun.
 Nephthytis, Schott.
 Neptunia, Loureiro.
 Nerine, Herbert.
 Nerium, Linnæus.
 Nertera, Banks and Solander.
 Nessæa, Commerson.
 Neuroleuca, R. Brown.
 Newbouldia, Seemann.
 Nicandra, Adanson.
 Nicotiana, Linnæus.
 Nierembergia, Ruiz and Pavon.
 Nigella, Linnæus.
 Nipa, Wurmbr.
 Niphæa, Lindley.
 Nissolia, Jacquin.
 Nivenia, R. Brown.
 Noctua, Guénéé.
 Noisettia, Humboldt, Bonpland, and Kunth.
 Nolana, Linnæus.
 Nolina, Michaux.
 Nonnea, Mœnch.
 Nopalea, Salm-Dyck.
 Norantea, Aublet.
 Notelæa, Ventenat.
 Nothochlæna, R. Brown.
 Nothoscordum, Kunth.
 Notospartium, J. D. Hooker.
 Notylia, Lindley.
 Nuphar, Smith.
 Nuttallia, Torrey and Gray.
 Nuytsia, R. Brown.
 Nyctanthes, Linnæus.
 Nyctocalos, Teijsmann.
 Nymphæa, Linnæus.

Ocotomeria, R. Brown.
 Odontadenia, Bentham.
 Odontoglossum, Humboldt, Bonpland, and Kunth.
 Odontospermum, Necker.
 Odera, Linnæus.
 Oenocarpus, Martius.
 Enothera, Linnæus.
 Oftia, Adanson.
 Ohlendorflia, Lehmann.
 Oidium, Link.
 Olax, Linnæus.
 Oldenlandia, Linnæus.
 Oldfieldia, Hooker.
 Olea, Linnæus.
 Oleandra, Cavanilles.
 Olearia, Mœnch.
 Omphalea, Linnæus.
 Omphalodes, Mœnch.
 Oncidium, Swartz.
 Oncosperma, Blume.
 Onobrychis, Gärtner.
 Onoclea, Linnæus.
 Ononis, Linnæus.
 Onopordon, Linnæus.
 Onoseris, De Candolle.
 Onosma, Linnæus.
 Onosmodium, Michaux.
 Onychium, Kaulfuss.
 Opercularia, Gärtner.
 Ophiocaulon, J. D. Hooker.
 Ophioglossum, Linnæus.
 Ophiopogon, Ker.
 Ophrys, Linnæus.
 Oplismenus, Palisot de Beauvois.
 Opuntia, Miller.
 Orania, Zippelius.
 Orchestes, Illiger.
 Orchis, Linnæus.
 Oreodoxa, Willdenow.
 Oreopanax, Decaisne and Planchon.
 Orgyia, Oelsenheimer.
 Origanum, Linnæus.
 Ormocarpum, Palisot de Beauvois.
 Ormosia, Jackson.
 Ornithidium, Salisbury.
 Ornithocephalus, Hooker.
 Ornithochilus, Wallich.
 Ornithogalum, Linnæus.
 Ornithoglossum, Salisbury.
 Ornithopus, Linnæus.
 Orobanche, Linnæus.
 Orobus, Linnæus.
 Orontium, Linnæus.
 Oroxylum, Ventenat.
 Orphium, Ernst Meyer.
 Orthoceras, R. Brown.
 Orthosiphon, Bentham.
 Orthrosanthus, Sweet.
 Orvala, Linnæus.
 Orza, Linnæus.
 Osbeckia, Linnæus.
 Osmanthus, Loureiro.
 Osmunda, Linnæus.
 Ossaea, De Candolle.
 Osteospermum, Linnæus.
 Ostrya, Scopoli.
 Oxyris, Linnæus.
 Otacanthus, Lindley.
 Othera, Thunberg.
 Othonna,

Negelia, Regel.
 Nama, Linnæus.
 Nandina, Thunberg.
 Nannorhops, H. Wendland.
 Nanodes, Lindley.
 Napoleona, Palisot de Beauvois.
 Naravelia, De Candolle.
 Narcissus, Linnæus.
 Nardostachys, De Candolle.
 Nardhecium, Mœhring.
 Nasonia, Lindley.

Oberonia, Lindley.
 Ochna, Schreber.
 Ochrocarpus, Thouars.
 Ochroma, Swartz.
 Ochropteris, J. Smith.
 Ochrosia, Jussieu.
 Ocimum, Linnæus.
 Ocotea, Aublet.
 Octadesmia, Bentham.

Genera and their Authors—*continued.*

- Othonnopsis, Jaubert and Spach.
 Otiorrhynchus, Germar.
 Otochilus, Lindley.
 Ottelia, Persoon.
 Ourisia, Commerson.
 Ouvirandra, Thouars.
 Oxalis, Linnæus.
 Oxyanthus, De Candolle.
 Oxybaphus, Vahl.
 Oxycoocus, Persoon.
 Oxydendron, De Candolle.
 Oxylobium, Andrews.
 Oxyptalum, R. Brown.
 Oxyzoora, De Candolle.
 Oxystelma, R. Brown.
 Oxytropis, De Candolle.
 Ozothamnus, Lessing.

 Pachira, Aublet.
 Pachynoma, Brown.
 Pachyphyllum, Humboldt, Bonpland,
 and Kunth.
 Pachypodium, Lindley.
 Pachyrhizus, L. C. Richard.
 Pachysandra, Michaux.
 Pachystima, Rafinesque.
 Pachystoma, Blume.
 Pæderia, Linnæus.
 Pæderota, Linnæus.
 Pæonia, Linnæus.
 Palafoxia, Lagasca.
 Palava, Cavanilles.
 Paliavana, Vandolli.
 Palicourea, Aublet.
 Palicota, Reichenbach.
 Paliurus, Jussieu.
 Pallenis, Cassini.
 Palma, Endlicher.
 Palumbina, Reichenbach, jun.
 Panax, Linnæus.
 Paneratum, Linnæus.
 Pandanus, Linnæus, jun.
 Panicum, Linnæus.
 Papaver, Linnæus.
 Papyrus, Willdenow.
 Paracaryum, Boissier.
 Paradisanthus, Reichenbach, jun.
 Paradisia, Mazzucato.
 Pardanthus, Ker.
 Parinarium, Jussieu.
 Paris, Linnæus.
 Parkia, R. Brown.
 Parkinsonia, Linnæus.
 Parmentiera, De Candolle.
 Parnassia, Linnæus.
 Parochetus, Hamilton.
 Paronychia, Jussieu.
 Parrotia, C. A. Meyer.
 Parrya, Brown.
 Parsonsia, E. Brown.
 Parthenium, Linnæus.
 Pascalia, Ortega.
 Paspalum, Linnæus.
 Passiflora, Linnæus.
 Patagonula, Linnæus.
 Patersonia, R. Brown.
 Patrinia, Jussieu.
 Paullinia, Linnæus.
 Paulownia, Siebold and Zuccarini.
 Pavetta, Linnæus.
 Pavia, Poiret.
 Pavonia, Cavanilles.
 Pectis, Linnæus.
 Pedalium, Linnæus.
 Pedicularis, Linnæus.
 Pedilanthus, Necker.
 Peganum, Linnæus.
 Pelargonium, L'Héritier.
 Pelecyphora, Ehrenberg.
 Pelexia, Lindley.
 Peliosanthus, Andrews.
 Pellaea, Link and Hooker.
 Pellionia, Gandichand.
 Peltandra, Rafinesque.
 Peltaria, Linnæus.
 Peltophorum, Vogel.
 Peltostigma, Walpers.
 Pempigus, Hartig.
 Pennæa, Linnæus.
 Pennisetum, Persoon.
 Pentachæta, Nuttall.
 Pentadesma, Sabine.
 Pentagonia, Bentham.
 Pentapora, Klotzsch.
 Pentapetes, Linnæus.
 Pentapterygium, Klotzsch.
 Pentarhaphia, Lindley.
 Pentas, Bentham.
 Pentstemon, Mitchell.
 Pentzia, Thunberg.
 Peperomia, Ruiz and Pavon.
 Peplis, Linnæus.
 Pereskia, Miller.
 Perezia, Lagasca.
 Pergularia, Linnæus.
 Peridermium, Link.
 Perilomia, Humboldt, Bonpland, and
 Kunth.
 Periploca, Linnæus.
 Peristeria, Hooker.
 Peristrophe, Nees.
 Peritoma, De Candolle.
 Pernettya, Gandichand.
 Peronospora, Corda.
 Persea, Gærtner, jun.
 Persica, Tournefort.
 Persoonia, Smith.
 Petalacte, Don.
 Petalidium, Nees.
 Petalostemon, Michaux.
 Petasites, Gærtner.
 Petiveria, Linnæus.
 Petrona, Linnæus.
 Petrobium, R. Brown.
 Petrophila, R. Brown.
 Petteria, Presl.
 Potunga, De Candolle.
 Potunia, Jussieu.
 Peucedanum, Linnæus.
 Peumus, Persoon.
 Peziza, Dillenius.
 Pfaffia, Martius.
 Phaca, Linnæus.
 Phacelia, Jussieu.
 Phaedon, Megerle.
 Phædranassa, Herbert.
 Phænocoma, Don.
 Phænosperma, Munro.
 Phaius, Loureiro.
 Phalænopsis, Blume.
 Phalaris, Linnæus.
 Phaleria, Jack.
 Pharnaceum, Linnæus.
 Pharus, Linnæus.
 Phaseolus, Linnæus.
 Phebalium, Ventenat.
 Phelepæa, Desfontaines.
 Philadelphus, Linnæus.
 Philageria, Masters.
 Philesia, Commerson.
 Philibertia, Humboldt, Bonpland, and
 Kunth.
 Phillyrea, Linnæus.
 Philodendron, Schott.
 Philotheca, Kudge.
 Philydrum, Banks.
 Phinæa, Bentham.
 Phleum, Linnæus.
 Phlogacanthus, Nees.
 Phlomis, Linnæus.
 Phlox, Linnæus.
 Phœnix, Linnæus.
 Pholidocarpus, Blume.
 Pholidota, Lindley.
 Phormium, Forster.
 Phorodon, Passerini.
 Photinia, Lindley.
 Phragmidium, Link.
 Phratora, Chevrolat.
 Phryma, Linnæus.
 Phrynium, Willdenow.
 Phuopsis, Grisebach.
 Phygeline, E. Meyer.
 Phylcia,
 Phyllagathis, Blume.
 Phyllanthus, Linnæus.
 Phyllarthron, De Candolle.
 Phyllis, Linnæus.
 Phyllobius, Schönherr.
 Phyllocactus, Link.
 Phyllocalyx, Bergius.
 Phyllocladus, L. C. Richard.
 Phyllodoce, Salisbury.
 Phyllostachys, Siebold and Zucca-
 rini.
 Phyllota, De Candolle.
 Phyllotreta, Chevrolat.
 Physalis, Linnæus.
 Physianthus, Martius.
 Physidium, Schrader.
 Physoclaina, G. Don.
 Physosiphon, Lindley.
 Physospermum, Casson.
 Physostegia, Bentham.
 Physostelma, Wight.
 Physostigma, Balfour.
 Physurus, L. C. Richard.
 Phytelephas, Ruiz and Pavon.
 Phyteuma, Linnæus.
 Phytocrene, Wallich.
 Phytolacca, Linnæus.
 Phytomyza, Fallén.
 Phytophthora, De Bary.
 Piaranthus, R. Brown.
 Picea, Link.
 Pierorhiza, Royle.
 Pictetia, De Candolle.
 Pieris, Don.
 Pigafetta, Beccari.
 Pilea, Lindley.
 Pileanthus, Labillardière.
 Pilocarpus, Vahl.
 Pilocereus, Lemaire.
 Pilularia, Linnæus.
 Pimelea, Banks.

Genera and their Authors—continued.

- Pimenta, Lindley.
 Pimpinella, Linnæus.
 Pinanga, Blume.
 Pinokneya, J. C. Richard.
 Pinellia, Tenore.
 Pinguiola, Linnæus.
 Pinus, Linnæus.
 Pionea, Guinée.
 Piophila, Falen.
 Piper, Linnæus.
 Piptadenia, Bentham.
 Piptanthus, D. Don.
 Piptospatha, N. E. Brown.
 Piqueria, Cavanilles.
 Pisidia, Linnæus.
 Pisonia, Linnæus.
 Pisodes, Germar.
 Pistacia, Linnæus.
 Pistia, Linnæus.
 Pium, Linnæus.
 Pitcairnia, L'Héritier.
 Pithecoctenium, Martius.
 Pithecolobium, Martius.
 Pittosporum, Banks.
 Placca, Miers.
 ianthus, Forster.
 Plagiolirion, Baker.
 Planera, Gmelin.
 Plantago, Linnæus.
 Plasmodiophora, Woronin.
 Platanus, Linnæus.
 Platycarpha, Lessing.
 Platycarpum, Humboldt and Bonpland.
 Platycarya, Siebold and Zuccarini.
 Platycerium, Desvaux.
 Platyclinis, Bentham.
 Platycodon, Alphonse de Candolle.
 Platycrater, Siebold and Zuccarini.
 Platylepis, A. Richard.
 Platylobium, Smith.
 Platylophus, Don.
 Platypetalum, Brown.
 Platystemon, Bentham.
 Platystigma, Bentham.
 Platythea, Steetz.
 Platyzoma, Brown.
 Plectocomia, Martius and Blume.
 Plectranthus, L'Héritier.
 Plectritis, De Candolle.
 Plectronia, Linnæus.
 Pleca, Michaux.
 Pleospora, Rabenhorst.
 Pleroma, Don.
 Pleurogyne, Eschscholtz.
 Pleuropetalum, J. D. Hooker.
 Pleurospermum, Hoffmann.
 Pleurothallis, R. Brown.
 Plocama, Aiton.
 Plocoglottis, Blume.
 Pluchea, Cassini.
 Plumbago, Linnæus.
 Plumeria, Linnæus.
 Plusia, Freitschke.
 Plutella, Schrank.
 Poa, Linnæus.
 Podalyria, La Marek.
 Podanthes, Haworth.
 Podanthus, Lagasca.
 Podocarpus, L'Héritier.
 Podolasia, N. E. Brown.
 Podolepis, Labillardière.
 Podophyllum, Linnæus.
 Podopteris, Humboldt and Bonpland.
 Podostigma, Elliott.
 Podothea, Cassini.
 Pogogyne, Bentham.
 Pogonia, Jussieu.
 Pogonopus, Klotzsch.
 Pogostemon, Desfontaines.
 Poinciana, Linnæus.
 Poirertia, Ventenat.
 Poitaea, Ventenat.
 Poivre, Commerson.
 Polanisia, Rafinesque.
 Polemonium, Linnæus.
 Polianthes, Linnæus.
 Polyalthia, Blume.
 Polycalymma, F. Mueller.
 Polycarpus, La Marek.
 Polycyonis, Reichenbach, jun.
 Polygala, Linnæus.
 Polygonatum, Adanson.
 Polygonum, Linnæus.
 Polymnia, Linnæus.
 Polypodium, Linnæus.
 Polyporus, Michaux.
 Polystachya, Hooker.
 Polyxena, Kunth.
 Pomaderris, Labillardière.
 Pomaria, Cavanilles.
 Pomax, Solander.
 Poneria, Lindley.
 Pongamia, Ventenat.
 Pontederia, Linnæus.
 Ponthieva, R. Brown.
 Populus, .
 Porana, Burmann.
 Porcnthera, Rudge.
 Porlieria, Ruiz and Pavon.
 Portea, C. Koch.
 Portlandia, P. Brown.
 Portulaca, Linnæus.
 Portulacaria, Jacquin.
 Posoqueria, Aublet.
 Potamogeton, Linnæus.
 Potentilla, Linnæus.
 Poterium, Linnæus.
 Pothos, .
 Pourouma, Aublet.
 Prasophyllum, R. Brown.
 Pratia, Gaudichaud.
 Premna, Linnæus.
 Prenanthes, Linnæus.
 Prepupa, Martius.
 Prescottia, Lindley.
 Preslia, Opitz.
 Prestoea, J. D. Hooker.
 Prestonia, R. Brown.
 Priestleya, De Candolle.
 Primula, .
 Pronium, E. Meyer.
 Prismatocarpus, L'Héritier.
 Pritchardia, Seemann and H. Wendlan.
 Priva, Adanson.
 Prockia, Linnæus.
 Proclesia, Klotzsch.
 Pronaya, Hügel.
 Proserpinaca, Linnæus.
 Prosopis, Linnæus.
 Prostanthera, Labillardière.
 Protea, Linnæus.
 Proustia, Lagasca.
 Prunella, Linnæus.
 Prunus, Linnæus.
 Psamma, Palisot de Beauvois.
 Klotzsch.
 Pseudodracontium, N. E. Brown.
 Pseudolarix, Gordon.
 Pseudopanax, C. Koch.
 Pseudotsuga, Carrière.
 Psidium, Linnæus.
 Psilotum, Swartz.
 Psoralea, Linnæus.
 Psychotria, Linnæus.
 Psylla, Geoffroy.
 Ptelea, Linnæus.
 Ptelidium, Thouars.
 Pteris, Linnæus.
 Pterocarpus, Linnæus.
 Pterocarya, Kunth.
 Pterodiscus, Hooker.
 Pterolobium, R. Brown.
 Pteroneurum, De Candolle.
 Pterospermum, Schreber.
 Pterostylis, R. Brown.
 Pterygodium, Swartz.
 Ptilomorpha, Nuttall.
 Ptychosperma, Labillardière.
 Puocinia, Persoon.
 Pueraria, De Candolle.
 Pulmonaria, Linnæus.
 Pultenea, Smith.
 Punica, Linnæus.
 Pupalia, Jussieu.
 Purshia, De Candolle.
 Puschkinia, Adams.
 Putoria, Persoon.
 Putterlickia, Endlicher.
 Puya, Molina.
 Pycnostachys, Hooker.
 Pyralis, Linnæus.
 Pyrethrum, Gartner.
 Pyrola, Linnæus.
 Pyralia, Michaux.
 Pyrus, Linnæus.
 Pythium, Nees.
 Pyxidanthora, Michaux.
 Qualea, Aublet.
 Quaque, N. E. Brown.
 Quassia, Linnæus.
 Quekettia, Lindley.
 Quercus, Linnæus.
 Quosnelia, Gaudichaud.
 Quillaja, Molina.
 Quisqualis, Linnæus.
 Quivisia, Commerson.
 Rafnia, Thunberg.
 Raillardia, Gaudichaud.
 Ramondia, J. C. Richard.
 Ramularia, Unger.
 Randia, .
 Ranunculus, Linnæus.
 Raphanus, Linnæus.
 Raphia, Palisot de Beauvois.
 Raphistemma, Wallich.
 Raspalia, Brongniart.
 Ratonia, De Candolle.
 Rauwolfia, Linnæus.
 Ravenala, Adanson.
 Ravenas, Bouché.

Genera and their Authors—continued.

- Ravenia*, Vellozo.
Reaumuria, Linnaeus.
Reevesia, Lindley.
Regelia, Schauer.
Rohmannia, Liboschitz.
Reineckea, Kunth.
Reinwardtia, Dumortier.
Relbania, L'Héritier.
Remusalia, Schott.
Renanthera, Loureiro.
Benacalmia, Linnaeus, jun.
Roseda, Linnaeus.
Rostio, Linnaeus.
Rostropia, Humboldt, Bonpland, and Kunth.
Retanilla, Brongniart.
Retinia, Guénée.
Retiniphyllum, Humboldt and Bonpland.
Retzia, Thunberg.
Rhagodia, R. Brown.
Rhamnus, Linnaeus.
Rhaphidophora, Schott.
Rhaphirolepis, Lindley.
Rhaphithamnus, Miers.
Rhapidophyllum, H. Wendland and Drude.
Rhapis, Linnaeus, jun.
Rhaponticum, La Marck.
Rheedia, Linnaeus.
Rheum, Linnaeus.
Rhexia, Linnaeus.
Rhinacanthus, Nees.
Rhinanthus, Linnaeus.
Rhipogonum, Forster, Gærtner.
Rhizophora, Linnaeus.
Rhodamnia, Jack.
Rhodites, Hartig.
Rhodochiton, Zuccarini.
Rhododendron, Linnaeus.
Rhodoleia, Hooker.
Rhodomyrtus, De Candolle.
Rhodora, Linnaeus.
Rhodospatha, Poeppig and Endlicher.
Rhodostachys, Philippi.
Rhodothamnus, Reichenbach.
Rhodotypos, Siebold and Zuccarini.
Rhoco, Hancock.
Rhopalostylis, H. Wendland and Drude.
Rhus, Linnaeus.
Rhynchanthera, De Candolle.
Rhynchitis, Horbst.
Rhynhoglossum, Blume.
Rhynchosia, Loureiro.
Rhynchosstylis, Blume.
Rhynchotechum, Blume.
Rhytidophyllum, Martius.
Rhytisma, Fries.
Ribes, Linnaeus.
Richardia, Kunth.
Richardsonia, Kunth.
Richea, R. Brown.
Ricinus, Linnaeus.
Ricotia, Linnaeus.
Rigidella, Lindley.
Riocrexia, Decaisne.
Ritchiea, Brown.
Rivea, Choisy.
Rivina, Linnaeus.
Robinia, Linnaeus.
Rochea, De Candolle.
Rodgersia, Asa Gray.
Rodriguezia, Ruiz and Pavon.
Roella, Linnaeus.
Roemeria, De Candolle.
Roezlia, Regel.
Rohdea, Roth.
Rolandra, Rottboell.
Romanzoffia, Chamisso.
Romneya, Harvey.
Romulea, Maratti.
Rondeletia, Linnaeus.
Ronbergia, Morren.
Rosa, Linnaeus.
Roscheria, H. Wendland.
Roscoea, Smith.
Rosmarinus, Linnaeus.
Rottboellia, Linnaeus, jun.
Roupala, Aublet.
Roupellia, Wallich.
Rourea, Aublet.
Royena, Linnaeus.
Roylea, Wallich.
Rubia, Linnaeus.
Rubus, Linnaeus.
Rudbeckia, Linnaeus.
Rudgea, Salisbury.
Rudolphia, Willdenow.
Ruellia, Linnaeus.
Ruizia, Cavanilles.
Rulingia, R. Brown.
Rumex, Linnaeus.
Ruppia, Linnaeus.
Ruscus, Linnaeus.
Russelia, Jacquin.
Ruta,
Ruyschia, Jacquin.
Ryania, Vahl.
Rysopterys, Blume.
Sabal, Adanson.
Sabbatia, Adanson.
Sabicea, Aublet.
Sabinea, De Candolle.
Saccharum, Linnaeus.
Saccolabium, Blume.
Sadleria, Kaulfuss.
Sagoretia, Brongniart.
Sagina, Linnaeus.
Sagittaria, Linnaeus.
Sagraea, De Candolle.
Salacia, Linnaeus.
Salicornia, Linnaeus.
Salix, Linnaeus.
Salmea, De Candolle.
Salpichroa, Miers, Ruiz and Pavon.
Salsola, Linnaeus.
Salvadora, Linnaeus.
Salvia, Linnaeus.
Salvinia, Michaux.
Sambucus, Linnaeus.
Samolus, Linnaeus.
Namyda, Linnaeus.
Sanchezia, Ruiz and Pavon.
Sandersonia, Hooker.
Sandoricum, Cavanilles.
Sanguinaria, Linnaeus.
Sanseveria, Thunberg.
Santalum, Linnaeus.
Santolina, Linnaeus.
Sanvitalia, La Marck.
Saperda, Fabricius.
Sapindus, Linnaeus.
Sapium, P. Brown.
Saponaria, Linnaeus.
Sapota, Gærtner.
Saraca, Linnaeus.
Saracha, Ruiz and Pavon.
Sarcanthus, Lindley.
Sarcocapnos, De Candolle.
Sarcoaulon, De Candolle.
Sarcocephalus, Afzelius.
Sarcochilus, R. Brown.
Sarcococca, Lindley.
Sarcocolla, Kunth.
Sarcobolus, R. Brown.
Sarcostemma, R. Brown.
Sarmienta, Ruiz and Pavon.
Sarracenia, Linnaeus.
Sassafras, Nees.
Satureia, Linnaeus.
Satyrium, Swartz.
Saundersia, Reichenbach, jun.
Saurauja, Willdenow.
Sauromatum, Schott.
Sauropus, Blume.
Saururus, Linnaeus.
Saussurea, De Candolle.
Sauvagesia, Linnaeus.
Saxegothea, Lindley.
Saxifraga, Linnaeus.
Saxofridericia, Robert Schomburgk.
Scabiosa, Linnaeus.
Scavola, Linnaeus.
Scaphyglottis, Poeppig and Endlicher.
Scalochilus, Klotzsch.
Schæfferia, Jacquin.
Schaneria, Nees.
Scheelea, Karsten.
Schelhamera, R. Brown.
Scheuchzeria, Linnaeus.
Schima, Reinwardt.
Schinus, Linnaeus.
Schismatoglottis, Zolliker and Morren.
Schismus, Palisot de Beauvois.
Schizæa, Smith.
Schizandra, Michaux.
Schizanthus, Ruiz and Pavon.
Schizobasis, Baker.
Schizodium, Lindley.
Schizolobium, Vogel.
Schizomeria, Don.
Schizopetalon, Sims.
Schizophragma, Siebold and Zuccarini.
Schizostylis, Backhouse and Harvey.
Schukhria, Roth.
Schlimmia, Planchon.
Schlumbergeria, Morren.
Schmidelia, Linnaeus.
Schœnia, Steetz.
Schœnorchis, Blume.
Schœnus, Linnaeus.
Schœpfia, Schreber.
Schomburgkia, Lindley.
Schotia, Jacquin.
Schouwia, De Candolle.
Schradera, Vahl.
Schranckia, Willdenow

Genera and their Authors—continued.

- Schwannia, Endlicher.
 Schweiggeria, Sprengel.
 Schwenkia, Linnæus.
 Sciadophyllum, P. Browne.
 Sciadopityx, Siebold and Zuccarini.
 Scilla, Linnæus.
 Scindapsus, Schott.
 Scirpus, Linnæus.
 Scleranthus, Linnæus.
 Scleria, Bergius.
 Sclerotheramnus, R. Brown.
 Scolopendrium, Smith.
 Scolymus, Linnæus.
 Scoparia, Linnæus.
 Scopolia, Jacquin.
 Scorpium, Linnæus.
 Scorzonera, Linnæus.
 Scottea, R. Brown.
 Scrophularia, Linnæus.
 Scutellaria, Linnæus.
 Scuticaria, Lindley.
 Sebæa, R. Brown.
 Secale, Linnæus.
 Secamone, R. Brown.
 Secchium, P. Browne.
 Securidaca, Linnæus.
 Securigera, De Candolle.
 Securinoga, Jussieu.
 Sedum, Linnæus.
 Seemannia, Regel.
 Selaginella, Sprengel.
 Selago, Linnæus.
 Selenia, Nuttall.
 Selenipedium, Reichenbach, jun.
 Selinum, Linnæus, jun.
 Semeiandra, Hooker and Arnott.
 Semele, Kunth.
 Sempervivum, Linnæus.
 Senecio, Linnæus.
 Sequoia, Endlicher.
 Seraphyta, Fischer and Meyer.
 Serapias, Linnæus.
 Serenoa, J. D. Hooker.
 Sericocarpus, Nees.
 Seringia, J. Gay.
 Serissa, Commerson.
 Serjania, Plumier.
 Serpioula, Linnæus.
 Serratula, Linnæus.
 Serruria, Salisbury.
 Sertifera, Lindley.
 Sesamum, Linnæus.
 Sesbania, Persoon.
 Seseli, Linnæus.
 Sesia, Fabricius.
 Sesleria, Scopoli.
 Sesuvium, Linnæus.
 Setaria, Palisot de Beauvois.
 Severinia, Tenore.
 Sewerzowia, Regel and Schmalhauschen.
 Seymeria, Pursh.
 Shepherdia, Nuttall.
 Sibthorpia, Linnæus.
 Sicyos,
 Sida, Linnæus.
 Sidalcea, Asa Gray.
 Sideritis, Linnæus.
 Sideroxylon, Linnæus.
 Siebera, Reichenbach.
 Siegesbeckia,
 Sigmatostalix, Reichenbach, jun.
 Silaus, Besser.
 Silene, Linnæus.
 Silpha, Linnæus.
 Silphium, Linnæus.
 Silybum, Gartner.
 Simaba, Aublet.
 Simarouba, Aublet.
 Simethis, Kunth.
 Simmondsia, Nuttall.
 Sinapis, Linnæus.
 Sinningia, Nees.
 Siphocampylos, Pohl.
 Siphonophora, Koch.
 Sirex, Linnæus.
 Sisymbrium, Linnæus.
 Sisyrrinchium, Linnæus.
 Sitona, Germar.
 Sium, Linnæus.
 Skimmia, Thunberg.
 Sloanea, Linnæus.
 Smeathmannia, Solander.
 Smilacina, Desfontaines.
 Smilax, Linnæus.
 Smithia, Aiton.
 Smyrnum, Linnæus.
 Solralia, Ruiz and Pavon.
 Socratea, Karsten.
 Solandra, Swartz.
 Solanum, Linnæus.
 Solaria, Philippi.
 Soldanella, Linnæus.
 Solenanthus, Ledebour.
 Solenidium, Lindley.
 Solenomelus, Miers.
 Solenophora, Bentham.
 Solidago, Linnæus.
 Sollya, Lindley.
 Sonchus, Linnæus.
 Sonerila, Roxburgh.
 Sonneratia, Linnæus, jun.
 Sophora, Linnæus.
 Sophronitis, Lindley.
 Sopuba, Hamilton.
 Sorghum, Persoon.
 Sorindeia, Thouars.
 Sorocephalus, R. Brown.
 Sowerbaa, Smith.
 Sparaxis, Ker.
 Sparganium, Linnæus.
 Sparmannia, Linnæus, jun.
 Spartina, Schreber.
 Spartium, Linnæus.
 Spartothamnus, Allan Cunningham.
 Spatalla, Salisbury.
 Spathanthemum, Schott.
 Spathagaster, Hartig.
 Spathelia, Linnæus.
 Spathicarpa, Hooker.
 Spathiphyllum, Schott.
 Spathodea, Palisot de Beauvois.
 Spathoglottis, Blume.
 Specularia, Heister.
 Speirantha, Baker.
 Spermacoe, Linnæus.
 Sphaele, Bentham.
 Sphæralcea, St. Hilaire.
 Sphærolobium, Smith.
 Sphærophysa, De Candolle.
 Sphæropteris, Wallich.
 Sphagnum, Dillenius.
 Sphenandra, Bentham.
 Sphenodesma, Jaok.
 Spigelia, Linnæus.
 Spilanthus, Linnæus.
 Spilosoma, Stephens.
 Spinacia, Linnæus.
 Spiraea, Linnæus.
 Spiranthera, St. Hilaire.
 Spiranthes, L. C. Richard.
 Spironema, Lindley.
 Spondias, Linnæus.
 Sporobolus, R. Brown.
 Spraguea, Torrey.
 Sprekolia, Heister.
 Sprongelia, Smith.
 Spyridium, Feuzl.
 Staavia, Thunberg.
 Stachys, Linnæus.
 Stachytarpheta, Vahl.
 Stachyurus, Siebold and Zuccarini.
 Staekhouisia, Smith.
 Stæbelina, Linnæus.
 Stangeria, T. Moore.
 Stanhopea, Frost.
 Stanleya, Nuttall.
 Stapolia, Linnæus.
 Staphylea, Linnæus.
 Statice, Linnæus.
 Stauntonia, De Candolle.
 Stauranthera, Bentham.
 Stauropsis, Reichenbach, jun.
 Staurostigma, Scheidweiler.
 Stelis, Swartz.
 Stellaria, Linnæus.
 Stellera, Linnæus.
 Stenodia, Linnæus.
 Stenoma, Loureiro.
 Stenanthera, R. Brown.
 Stenanthium, Asa Gray.
 Stenia, Lindley.
 Stenocarpus, R. Brown.
 Stenochilus, R. Brown.
 Stenocoryne, Lindley.
 Stenoglossum, Humboldt, Bonpland, and Kunth.
 Stenoglottis, Lindley.
 Stenomesson, Herbert.
 Stenoptera, Presl.
 Stenospermatium, Schott.
 Stenostomum, Gartner.
 Stenotaphrum, Trinius.
 Stephanandra, Siebold and Zuccarini.
 Stephania, Loureiro.
 Stephanocoma, Lessing.
 Stephanomeria, Nuttall.
 Stephanotis, Thouars.
 Steroulia, Linnæus.
 Stereosandra, Blume.
 Sterigma, De Candolle.
 Steriphoma, Sprengel.
 Sternbergia, Waldstein and Kitaibel.
 Steudnera, C. Koch.
 Stevensonia, Duncan.
 Stevia, Cavanilles.
 Stiffia, Mikán.
 Stigmaphyllon, A. Jussieu.
 Stillingia, Linnæus.
 Stipa, Linnæus.
 Stokesia, L'Héritier.
 Stranvæssia, Lindley.
 Stratiotes, Linnæus.

Genera and their Authors—continued.

- Stravadium*, Miquel.
Streblorhiza, Endlicher.
Streblus, Loureiro.
Strelitzia, Aiton.
Streptanthera, Sweet.
Streptanthus, Nuttall.
Streptocarpus, Lindley.
Streptopus, Michaux.
Streptosolen, Miers.
Strobilanthes, Blun o.
Strobilorrhachis, Link, Klotzsch, and Otto.
Stromanthe, Sonder.
Strophanthus, De Candolle.
Stropholirion, Torrey.
Strumaria, Jacquin.
Struthiola, Linnaeus.
Strychnos, Linnaeus.
Stuartia, Linnaeus.
Styloidium, Swartz.
Stylophorum, Nuttall.
Stylosanthes, Swartz.
Stypandra, R. Brown.
Styphelia, Smith.
Styrax, Linnaeus.
Suaeda, Forskahl.
Subularia, Linnaeus.
Suecovia, Medikus.
Sanipia, Lindley.
Sutherlandia, R. Brown.
Sutrina, Lindley.
Suttonia, Achille Richard.
Swainsona, Salisbury.
Swartzia, Schreber.
Swertia, Linnaeus.
Swietenia, Linnaeus.
Syagrus, Martius.
Sycomorus, Gasparri.
Symphoricarpos, Jussieu.
Symphyandra, Alphonse de Candolle.
Symphyostemon, Miers.
Symphytum, Linnaeus.
Sympiezia, Lichtenstein.
Symplocarpus, Salisbury.
Symplocos, Linnaeus.
Synadenium, Boissier.
Synandra, Nuttall.
Synechanthus, H. Wendland.
Syngonium, Schott.
Synnotia, Sweet.
Syringa, Linnaeus.
Syringodea, J. D. Hooker.
Syrphus, Stephens.
Szowitzia, Fischer and Meyer.
- Tabebuia*, Gomez.
Tabernaemontana, Linnaeus.
Tacca, Forster.
Taccarum, Brongniart.
Tachiadenus, Grisebach.
Tachigalia, Aublet.
Tacsonia, Jussieu.
Taniophyllum, Blume.
Tanitis, Swartz.
Tagetes, Linnaeus.
Tainia, Blume.
Talauma, Jussieu.
Taligalea, Aublet.
Talinum, Adanson.
Talisia, Aublet.
Tamarindus, Linnaeus.
- Tamarix*, Linnaeus.
Tamonea, Aublet.
Tamus, Linnaeus.
Tanacetum, Linnaeus.
Tanghinia, Thouars.
Taraxacum, Haller.
Tarchonanthus, Linnaeus.
Tauscheria, Fischer.
Taverniera, De Candolle.
Taxodium, L. C. Richard.
Taxus, Linnaeus.
Tecoma, Jussieu.
Tecophilæa, Bertero.
Tectona, Linnaeus, jun.
Teedia, Rudolphi.
Teesdalia, Brown.
Telephium, Linnaeus.
Telfairia, Hooker.
Telipogon, Humboldt, Bonpland, and Kunth.
Tellima, Brown.
Telopea, R. Brown.
Templetonia, R. Brown.
Tenaris, Ernst Meyer.
Tephrosia, Persoon.
Teramnus, Swartz.
Terminalia, Linnaeus.
Ternstroemia, Linnaeus, jun.
Tessaria, Ruiz and Pavon.
Tetacella, Cuvier.
Tetastudinarium, Salisbury.
Tetracera, Linnaeus.
Tetradium, Loureiro.
Tetragonia, Linnaeus.
Tetragonotheca, Linnaeus.
Tetramiera, Lindley.
Tetranoma, Bentham.
Tetranthus, Swartz.
Tetranychus, Dufour.
Tetrapogon, Desfontaines.
Tetrapterys, Cavanilles.
Tetratea, Smith.
Tetrazygia, L. C. Richard.
Teucrium, Linnaeus.
Toysmannia, Reichenbach, jun.
Thalia, Linnaeus.
Thalictrum, Linnaeus.
Thamnea, Solander.
Thamnochortus, Bergius.
Thapsia, Linnaeus.
Thecostele, Reichenbach, jun.
Thelebolus, Tode.
Thelephora, Ehrhardt.
Thelesperma, Lessing.
Thelygonum, Linnaeus.
Thelymitra, Forster.
Thomistoclesia, Klotzsch.
Thenardia, Humboldt, Bonpland, and Kunth.
Theobroma, Linnaeus.
Theophrasta, Jussieu.
Thera, Stephens.
Thermopsis, R. Brown.
Theropogon, Maximowicz.
Thesium, Linnaeus.
Thespesia, Correa da Serra.
Thevetia, Linnaeus.
Thibaudia, Pavon.
Thladiantha, Bange.
Thlaspi, Linnaeus.
Thomasia, J. Gay.
Thomsonia, Wallich.
- Thoninia*, Poiteau.
Thrinax, Linnaeus, jun.
Thrips, Linnaeus.
Thryallis, Martius.
Thryptomene, Endlicher.
Thunbergia, Linnaeus, jun.
Thuya, Linnaeus.
Thuyopsis, Siebold and Zuccarini.
Thymbra, Linnaeus.
Thymelæa, Endlicher.
Thymus, Linnaeus.
Thyracanthus, Nees.
Thyrsopteris, Kunze.
Thysanotus, R. Brown.
Tiarella, Linnaeus.
Ticorea, Aublet.
Tigridia, Ker.
Tilia, Linnaeus.
Tiliacora, Colebrooke.
Tillæa, Linnaeus.
Tillandsia, Linnaeus.
Tilletia, Tulasne.
Tinantia, Scheidweiler.
Tinnea, Kotsch.
Tipularia, Nuttall.
Tithonia, Desfontaines.
Tococa, Aublet.
Tocoyena, Aublet.
Todaroa, Achille Richard.
Toddalia, Jussieu.
Todea, Willdenow.
Tofieldia, Hudson.
Tolmiea, Torrey and Gray.
Tolpis, Adanson.
Tordylium, Linnaeus.
Torenia, Linnaeus.
Torreyia, Arnott.
Torrubia, Tulasne.
Tortrix, Linnaeus.
Tournfortia, Linnaeus.
Touretia, Jussieu.
Tovomitia, Aublet.
Toxicodendron, Thunberg.
Toxicophlæa, Harvey.
Trachea, Guénié.
Trachelium, Linnaeus.
Trachelospermum, Lemaire.
Trachycarpus, H. Wendland.
Trachymene, Rudgo.
Trachystemon, Don.
Tradescantia, Linnaeus.
Tragia, Linnaeus.
Tragopogon, Linnaeus.
Trametes, Fries.
Trapa, Linnaeus.
Trautvetteria, Fischer and Meyer.
Treculia, Decaisne.
Tremandra, R. Brown.
Tremex, Jurine.
Trevesia, Visiani.
Trevoa, Miers.
Trewia, Linnaeus.
Trianea, Karsten.
Trianthema, Linnaeus.
Trias, Lindley.
Tribulus, Linnaeus.
Trichantha, Hooker.
Trichilia, Linnaeus.
Trichinium, R. Brown.
Trichocaulon, N. E. Brown.
Trichocentrum, Poeppig and Endlicher.

Genera and their Authors—continued.

- Trichoceros*, Humboldt, Bonpland, and Kunth.
Trichodesma, E. Brown.
Trichoglossis, Blume.
Trichomanes, Smith.
Trichopetalum, Lindley.
Trichopilia, Lindley.
Trichosacme, Zuccarini.
Trichosanthes, Linnæus.
Trichosma, Lindley.
Trichostema, Linnæus.
Tricoryne, R. Brown.
Tricuspidaria, Ruiz and Pavon.
Tricyrtis, Wallich.
Tridax, Linnæus.
Tridentaria, Linnæus.
Trifolium, Linnæus.
Trifurcra, Herbert.
Triglochin, Linnæus.
Trigonella, Linnæus.
Trigonia, Aublet.
Trigonotis, Lindley.
Trilisa, Cassini.
Trillium, Linnæus.
Trimezia, Salisbury.
Trinia, Hoffmann.
Triodia, R. Brown.
Triolena, Naudin.
Triopteryx, Linnæus.
Triosteum, Linnæus.
Triphasia, Loureiro.
Triphysaria, Fischer and Meyer.
Triplaris,
Tripsacum, Linnæus.
Tripterygium, J. D. Hooker.
Triptilion, Ruiz and Pavon.
Trisetum, Persoon.
Tristagma, Poeppig and Endlicher.
Tristania, R. Brown.
Triteleia, Lindley.
Trithrinax, Martius.
Triticum, Linnæus.
Trotonia, Ker.
Triumfetta, Linnæus.
Trixis, P. Browne.
Trizeuxis, Lindley.
Trochetia, De Candolle.
Trochiscanthes, Koch.
Trochocarpa, R. Brown.
Trolium, Linnæus.
Tropæolum, Linnæus.
Trophis, Linnæus.
Tropidia, Lindley.
Troximon, Nuttall.
Trymalium, Fenzl.
Tryphæna, Ochseneheimer.
Tsuga, Carrière.
Tulbaghia, Linnæus.
Tulipa, Linnæus.
Tunica, Scopoli.
Tupidanthus, J. D. Hooker and Thomson.
Tupistra, Ker.
Turnera, Linnæus.
Turpinia, Ventenat.
Turræa, Linnæus.
Tussacia, Reichenbach.
Tusilago, Linnæus.
Tychius, Germar.
Tydea, Decaiane.
Tylophora, R. Brown.
Typha, Linnæus.
Typhonium, Schott.
Tytonia, G. Don.
Ulex, Linnæus.
Ullucus, Lozano.
Ulmus, Linnæus.
Umbellularia, Nees.
Uncaria, Schreber.
Uncifera, Lindley.
Ungnadia, Endlicher.
Uniola, Linnæus.
Unona, Linnæus, jun.
Uraria, Desvoux.
Ureolina, Reichenbach.
Urechites, Mueller.
Urena, Linnæus.
Urginea, Steinhil.
Urocystis, Rabenhorst.
Uroskinnera, Lindley.
Urospatha, Schott.
Urospermum, Scopoli.
Ursinia, Gärtner.
Urtica, Linnæus.
Urvillea, Humboldt, Bonpland, and Kunth.
Ustilago, Persoon.
Utricularia,
Uvaria, Linnæus.
Uvularia, Linnæus.
Vaccinium, Linnæus.
Vaillantia, De Candolle.
Valdivia, Remy.
Valeriana, Linnæus.
Valerianella, Mœnch.
Vallaris, Burmann.
Vallesia, Ruiz and Pavon.
Vallisneria, Linnæus.
Vallota, Herbert.
Vanda, R. Brown.
Vandellia, Linnæus.
Vanessa, Ochseneheimer.
Vangneria, Jussieu.
Vanilla, Swartz.
Veitchia, H. Wendland.
Velezia, Linnæus.
Vella, Linnæus.
Velleia, Smith.
Vellozia, Vandelli.
Veltheimia, Gleditsch.
Venidium, Lessing.
Ventilago, Gärtner.
Veratrum, Linnæus.
Verbascum, Linnæus.
Verbena, Linnæus.
Verbesina, Linnæus.
Vernonia, Schreber.
Veronica, Linnæus.
Verschaffeltia, Wendland.
Verticordia, De Candolle.
Vesicaria, La Marck.
Veslingia, Visiani.
Vespuccia, Parlatore.
Vestia, Willdenow.
Viborgia, Thunberg.
Viburnum, Linnæus.
Vicia, Linnæus.
Victoria, Lindley.
Vigna, Savi.
Viguiera, Humboldt, Bonpland, and Kunth.
Villanova, Lagasca.
Villaresia, Ruiz and Pavon.
Villarsia, Ventenat.
Vilmorinia, De Candolle.
Viminaria, Smith.
Vinca, Linnæus.
Vincetoxicum, Mœnch.
Viola, Linnæus.
Virgilia, La Marck.
Viscum, Linnæus.
Vismia, Vellozo.
Visnea, Linnæus, jun.
Vitex, Linnæus.
Vitis, Linnæus.
Vittaria, Smith.
Viviania, Cavanilles.
Voandzeia, Thouars.
Vochysia, Jussieu.
Vouapa, Aublet.
Voyria, Aublet.
Wachendorfia, Linnæus.
Wahlenbergia, Schrader.
Wailesia, Lindley.
Waizina, Wendland.
Waldsteinia, Willdenow.
Wallichia, Roxburgh.
Walsura, Roxburgh.
Waltheria, Linnæus.
Warrea, Lindley.
Washingtonia, H. Wendland.
Watsonia, Miller.
Webera, Schreber.
Wedelia, Jacquin.
Weinmannia, Linnæus.
Welfia, H. Wendland.
Welwitschia, J. D. Hooker.
Wendlandia, Bartling.
Werneria, Humboldt, Bonpland, and Kunth.
Westringia, Smith.
Whiteheadia, Harvey.
Whitfieldia, Hooker.
Widdringtonia, Endlicher.
Wigandia, Humboldt, Bonpland, and Kunth.
Willdenowia, Thunberg.
Willemetia, Brongniart.
Willughbeia, Roxburgh.
Wistaria, Nuttall.
Witheringia, L'Héritier.
Witsenia, Thunberg.
Woodfordia, Salisbury.
Woodsia, Brown.
Woodwardia, Smith.
Wormia, Rottboell.
Wrightia, R. Brown.
Wulfenia, Jacquin.
Wulfia, Necker.
Reichenbach, jun.
Wurmbea, Thunberg.
Wyethia, Nuttall.
Xanthisma, De Candolle.
Xanthium, Linnæus.
Xanthocephalum, Willdenow.
Xanthocera, Bunge.
Xanthochymus, Roxburgh.
Xanthoriza, Marshall.
Xanthorrhœa, Smith.

Genera and their Authors—*continued*.

Xanthosia, Rudge.	Zacintha, Gærtner.	Zieria, Smith.
Xanthosoma, Schott.	Zalacca, Reinwardt.	Zilla, Forskahl.
Xeranthemum, Linnæus.	Zaluzania, Persoon.	Zingiber, Adanson.
Xeronema, Brongniart.	Zaluzianskia, J. W. Schmidt.	Zinnia, Linnæus.
Xerophyllum, Michaux.	Zamia, Linnæus.	Zizania, Linnæus.
Xerotes, R. Brown.	Zamioculcas, Schott.	Ziziphora, Linnæus.
Ximenia, Linnæus.	Zannichellia, Linnæus.	Zizyphus, Jussieu.
Xiphidium, Aublet.	Zanthoxylum, Linnæus.	Zomicarpa, Schott.
Xylobium, Lindley.	Zauschneria, Presl.	Zomicarpella, N. E. Brown.
Xylomelum, Smith.	Zea, Linnæus.	Zornia, Gmelin.
Xylopiia, Linnæus.	Zebrina, Schnitzlein.	Zostera, Linnæus.
Xyris, Linnæus.	Zehneria, Endlicher.	Zosterostylis, Blume.
Xysmalobium, R. Brown.	Zenobia, Doz.	Zygadenus, Michaux.
	Zephyranthes, Herbert.	Zygopetalum, Hooker.
	Zeuxina, Lindley.	Zygophyllum, Linnæus.
	Zeuzera, Latreille.	Zygotates, Lindley.
Yponomeuta, Latreille.	Zexmenia, Llave and Lexarza.	
Yucoa, Linnæus.		



PRONOUNCING DICTIONARY

OF THE

ORDINAL, GENERIC, AND SPECIFIC NAMES GIVEN IN
THIS WORK.

By the Rev. PERCY W. MYLES, B.A., F.L.S.,

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The pronunciation of the scientific names of plants is, at present, in the same chaotic state in which their synonymy was until many specialists (such as Messrs. B. Daydon Jackson, J. Britten, and others) undertook to reduce it to some kind of order. Synonymy has been brought under settled rules; but pronunciation is still quite anarchic; "every man does that which is right in his own eyes." Take, for example, the two common garden genera, *Gladiolus* and *Clematis*; the name of each is pronounced in three quite different ways: in neither case is there any doubt whatever about the true pronunciation, and yet those who adopt it are in a very small minority indeed. The way in which many gardeners make havoc of the names of plants has been a frequent subject of satire with philologists and other writers: Dr. Peile, the new Master of Christ's College, Cambridge, gives some amusing instances of this in his works on Philology. But the gardeners have not been altogether to blame in this matter; they have had no accessible authority to consult, and accordingly have been free to exercise their own individual ingenuity (or eccentricity) in each case.

In the Pronouncing Dictionary now offered to the public an attempt has been made to supply some such standard of reference as is urgently needed. As it is the first "essay" in the English language (and, as far as we know, in any language) to fully examine the whole question on first principles, and afford information on all points

Pronouncing Dictionary *—continued.*

connected with pronunciation, it does not pretend to be more than an *attempt*. Kindly criticisms and corrections are earnestly invited for the purpose of attaining to a more accurate standard of pronunciation in future editions of the "Dictionary of Gardening." At any rate, an honest endeavour has now been made to obtain, from first sources, authoritative decisions on the subject.

For Accentuation and Quantity the works of Theophrastus, Dioscorides, and Pliny, have been re-read, so as to ascertain how far the present pronunciation has been distorted and vulgarised from the original names so often first given by these authors. In the special pronunciation of Latin attention has been paid to all the latest English authorities, such as the Syllabus issued by Messrs. Palmer and Munro in 1872, and, since that date, the works of Mr. A. J. Ellis (the greatest English authority on phonetics), of Dr. Kennedy, and of Mr. Roby, and the "Summary of Latin Pronunciation in the Augustan Period" lately issued by the Cambridge Philological Society. Of course, all the minute details given by these authorities have not been entered into or reproduced, nor have their points of variance been discussed; but an attempt has been made to draw from the consensus of leading scholars a broad general outline of the best information at present attainable on the *vexata questio* of Latin pronunciation.

In addition to the words of classical derivation which have been dealt with there are a number of names which are either derived from various other foreign tongues (*e.g.*, Arabic, Malay, the native languages of America, &c.), or are commemorative, *i.e.*, are derived from the names of eminent botanists, and others who have been intimately connected with botanical studies. To inquire afresh into the accurate pronunciation of all these names has not been found practicable for the present; and, accordingly, when it was impossible to obtain from printed authorities original information as to the foreign and commemorative names, those English botanists who have most fully entered into the subject have been carefully consulted. Among such botanists may be specially mentioned Withering in his "Systematic Arrangement," and Lindley in Loudon's "Encyclopædia of Plants" and in Paxton's "Botanical Dictionary." In recent times, Mr. Randal H. Alcock in his "Botanical Names," Sir J. D. Hooker in the "Student's Flora," Mr. W. B. Hemsley in his "Handbook of Trees, Shrubs, and Herbaceous Plants," and Mr. N. E. Brown in the Index to "English Botany," have bestowed considerable attention on the subject; though they have not had occasion to advance far into this wide field. In this Pronouncing Dictionary names derived from extra-classical languages, or, as they are sometimes called, aboriginal names, are printed altogether in italics; commemorative words and those of geographical origin have in

Pronouncing Dictionary—continued.

italics as much of the name from which they are derived as is reproduced in them—*e.g.*, Abuta (the name given by the natives in Guiana) appears *Ab-u'-ta*; Abatia (commemorative of Peter Abat) is printed *Ab-a'-ti-a*; antwerpensis (from Antwerp) *ant-werp-en'-sis*. Geographical and commemorative names, however, which were used in classical Latin, remain in the common type, *e.g.*, Ad-o'-nis, æth-i-op'-ic-a.

All the words which are printed in ordinary type are presumed to be derived from Greek or Latin; and to enable the tyro to pronounce them with comparative accuracy the following special rules are given with regard to the three most important points.

I. *Accentuation (Stress of Voice)*.—The sign ' marks the syllable on which the accent or stress of voice falls. It has nothing to do with the quantity of the syllable, which may be either long or short: *e.g.*, am-ā'-ra, Al-is'-ma. The secondary accent of polysyllables must be at least two syllables before the primary accent: *e.g.*, Ac'-ti-nol'-ep-is, Ac-ti'-noph-yl'-lum; but as the secondary accent is generally obvious and of comparatively little importance, it is only inserted in cases where doubt might arise.

II. *Quantity (Length or Shortness of Syllables)*.—In this Dictionary, as a general rule, the quantity is shown by the manner in which the words are divided. When a vowel terminates any syllable, except the last, it is to be sounded long. When the syllable terminates with a consonant, the preceding vowel is to be considered short. This manner of dividing the words into syllables has been selected as the clearest way of showing the quantity of each vowel to ordinary readers; it is, of course, quite different from scientific syllabication, such as that of Mr. Ellis, which would be confusing to all except classical scholars: but as it is our primary object to be intelligible, even to the unlearned, we have preferred an approximation to the truth which can be easily understood by everyone. The following words, which are printed at the foot of each page, will exemplify the mode of distinguishing the quantity which has been adopted.

SHORT, as in <i>áp-art</i>	<i>slén-der</i>	<i>thín</i>	<i>rót-ten</i>	<i>pow-er-fúl</i>
LONG, as in <i>psá-lmist</i>	<i>vé-ined</i>	<i>mach-i-nist</i>	<i>vó-ter</i>	<i>rū-ler</i>

Diphthongs are always long. At the end of a word, a is almost always short; e, generally long; i, almost always long. Exceptions to these rules are marked long (—) or short (v).

III. *Pronunciation of Particular Letters*.—Most of the scientific names of plants, and other terms used in Botany, are derived from the Greek and Latin languages, and even the words originally from the Greek have been generally Latinised, *i.e.*, made to conform to Latin rules. The manner in which Latin has been, until lately, pronounced in this country

Pronouncing Dictionary—*continued.*

is thoroughly inaccurate and unscientific, and so entirely insular that in speech it is often quite unintelligible to foreigners, even to those who are good Latin scholars. As one of the chief advantages of the uniform Latin nomenclature of plants is that thus a sort of universal or international language is created, it is evident how much has been lost by our prejudiced adherence to a provincial mode of pronunciation. The modern English system of pronouncing Latin, long familiar in Dublin usage as far as the vowels are concerned, sanctioned by the Professors of Latin at Oxford and Cambridge in 1872, and lately made obligatory for honours at Cambridge, will undoubtedly be universally adopted in the future. It represents the actual pronunciation of the words when Latin was a living language; and it conforms to Continental usage, so that by its use the scientific names of plants are easily understood in conversation by educated men of every nation. After much consideration, and consultation with several eminent botanists, it has been determined to follow this system in the present work. The difference between the method which is now happily becoming obsolete and the accurate method which is taking its place will be understood from the following examples, in which an attempt is made to represent Latin sounds by their nearest English equivalents:

OLD METHOD.

Vowels.

a, short, as in <i>făt.</i>	a, long, as in <i>băther.</i>
e, " " <i>slĕnder.</i>	e, " " <i>ĕvil.</i>
i, " " <i>thĭn.</i>	i, " " <i>ice.</i>
o, " " <i>rĕtten.</i>	o, " " <i>vĕter.</i>
u, " " <i>stĭbborn.</i>	u, " " <i>măle.</i>
y, " " <i>cŷnical.</i>	y, " " <i>cŷpher.</i>

Diphthongs.

æ } as <i>ee</i> in <i>feēd.</i>
œ }
ei as in the word
au as <i>aw</i> in <i>bawl.</i>

Consonants.

c and g hard before a, as in <i>cats, gaping.</i>	o " <i>cows, goring.</i>
	u " <i>cud, gulping.</i>
c and g soft before e " <i>central, gentleman.</i>	
" " " i " <i>circular, gin.</i>	
" " " y " <i>cynical, gymnast.</i>	

CORRECT METHOD.

Vowels.

a, short, as in <i>dpart.</i>	a, long, as in <i>psălmist.</i>
e, " " <i>slĕnder.</i>	e, " " <i>vĕined.</i>
i, " " <i>thĭn.</i>	i, " " <i>machĭnist.</i>
o, " " <i>rĕtten.</i>	o, " " <i>vĕter.</i>
u, " " <i>powerfŭl.</i>	u, " " <i>rŭler.</i>

y is sounded nearly like i, but the exact sound cannot be represented in English.

Diphthongs.

æ } nearly as <i>ai</i> in
œ }
ei
au as <i>ou</i> in <i>house.</i>

Consonants.

g always hard, as in <i>good.</i>
c " " " <i>muscular.</i>
ch " " " <i>Christian.</i>

Pronouncing Dictionary—continued.

N.B.—When a specific name is in the form of an ordinary Latin adjective, only one termination has generally been given; e.g., of those in *us, a, um*, the form *ab-brev-i-a'-tus* is used only when the generic or substantive name is masculine; but every reader can see for himself that *ab-brev-i-a'-ta* (the feminine) and *ab-brev-i-a'-tum* (the neuter) are to be pronounced in similar fashion. The same rule has been adopted with those in *is, e*, as *tris'-tis*, *tris'-tē*; but adjectives in *er, ra, rum*, as *nig'-er*, *nig'-ra*, *nig'-rum*, and those in *er, ris, re*, as *a'-cer*, *a'-cris*, *a'-crē*, have been given in the different forms in which they occur.

At the end of the Pronouncing Dictionary the principal words whose correct pronunciation differs strikingly from that in ordinary use will be discussed.

Ab-a'-ma*	ac-co'-dens	<i>Ack-er-man'</i> -ni
Ab-a'-fi-a	ac-eph'-al-a*	<i>Ac-land'</i> -Y-a
ab-brev-i-a'-tus	Ac'-er*	Ac-mad-o'-ni-a
ab-chas'-io-us	Ac-er-a'-cē-a	Ac-mel'-la
Ab-el'-Y-a*	Ac-or-anth'-us	Ac-me'-na
Ab-o'-na	Ac'-er-as	Ac-o'-kan-the'-ra
Ab'-Y-ēs	Ac-er-at'-Y-um	ac-on-if-ol'-Y-a
Ab'-Y-et-in'-r-æ	ac-erb'-a	Ac-on-Y-op'-ter-is*
Ab'-Y-et-is	ac-er-if-ol'-Y-um	ac-on-i-tif-ol'-Y-us
Ab-o'-bra	Ac-er-in'-r-a	Ac-on-i'-tum
Ab-ol'-bod-a	ac-er'-in-um	Ac-on'-ti-as
ab-or-ti'-vum	Ac-er-it'-Y-um	Ac'-or-us
Ab-rax'-as	ac-er-ō-i'-dēs	Ac-rad-o'-ni-a
Ab-ro'-ma	ac-er-o'-sa	Ac-rid-oe-arp'-us
Ab-ro'-ni-a	Ac-o'-ti	Ac-ri-op'-sis
ab-rot'-an-if-ol'-Y-um*	Ac-o-to'-sa	u'-erū*
ab-rot'-an-ō-i'-dēs*	Ac-o-to-sel'-la	u'-eris
Ab-rot'-an-um	Ach-an'-Y-a	ac-roc'-lud-on*
ab-rup'-tum	Ach-er-ont'-Y-a	Ac-roo-li'-ni-um*
A'-brus	Ach-ill-o'-a	Ac-roo-om'-Y-a
ab-sciss'-us	ach-ill-o'-æ-sol'-Y-a	Ac-ron-yeh'-Y-a
Ab-sin'-thi-um	ach-ill-o'-ō-i'-dēs	Ac-ron-ye'-ta
Ab-u'-ta	Ach-i-me'-nēs	Ac-rop-o'-ra*
ab-u-til-ō-i'-dēs	Ach-i'-ras	Ac-roph'-or-us*
Ab-u'-til-on	Ach'-ras	Ac-roph-yl'-lum
ab-ysa-in'-io-us	Ach-rō-anth'-ōs	Ac-rop'-ter-is
Ac-a'-ci-a	Ach-yr-anth'-ēs	Ac-ros-anth'-ēs
Ac-æ'-na	Ach-yr-on'-Y-a	Ac-ros-por'-i-um
Ac-al'-yph-a	Ach-yr-op-ap'-pus	ac-ros'-tich-ō-i'-dēs
Ac-anth-a'-cē-a	ac-ic'-ol-um	Ac-ros'-tich-um*
ac-anth-if-ol'-Y-a	ac-ic-ul-a'-ris	Ac-rot'-rich-o*
Ac-anth'-Y-um	ac'-id-a	ac-rot'-rich-um
ac-anth-oc'-om-a*	ac-id-is'-sim-a	Ac-ta'-a
ac-anth-o'-dēs*	ac-in-a'-cē-um	Ac-ti-nel'-la
Ac-anth-ol-i'-mōn*	ac-in-a'-cif-ol'-I-a	Ac-ti'-ni-a
Ac-anth-op'-an-ax	Ac-in-e'-ta	Ac-ti-nid'-Y-a
Ac-anth-oph-ipp'-i-um	ac-in-op-et'-al-a	Ac-ti'-ni-op'-ter-is
Ac-anth-oph-oc'-nix	Ac'-in-os	Ac-ti'-noc-ar'-pus
Ac-anth-orph-i'-za*	Ac-in-o'-tu.*	Ac'-ti-nol'-ep-is*
Ac-anth-ost-ach'-y-um*	Ac-I-o'-tis	Ac'-ti-nom'-er-is*
Ac-anth'-us	Ac-iph-yl'-la*	Ac-ti'-non-o'-ma*
Ac-ar'-id-a	A'-cis	Ac-ti'-noph-yl'-lum
ac-au'-lis	Ac-is-an-tho'-ra*	Ac'-ti-nost'-ach-ys

Words derived from Latin and Greek (i.e., all except those in italics) to be pronounced as follows: *ä* as in *äp-art'*; *ä* as in *psä'-lmist*; *ë* as in *slän'-der*; *ö* as in *vö'-ined*; *Y* as in *thyn*; *I* as in *mach-i'-nist*; *ö* as in *röt'-ten*; *ö* as in *vö'-ter*; *ü* as in *pow'-er-fül*; *ü* as in *rü'-ler*; *ÿ* as *I*; *ÿ* as *I*; *æ*, *œ*, *ei*, as *ai* in *pain*; *au* as *ou* in *house*; *g*, *c*, and *ch*, always hard, as, for example, *g* in *good*, *c* in *muscular*, and *ch* in *Christian*. (For the old method, see page 276.)

* This word is discussed at the end of the Pronouncing Dictionary.

Pronouncing Dictionary—continued.

Aó'-ti-nost'-rob-us
 Aó'-ti-no'-tus
 ac-u-lé'-tus
 ac-u-lé'-ol-a'-tus
 Ac-u'-lè-us
 ac-u'-min-a'-ta
 Ac-un'-na
 ac-u'-ta
 ac-u-tang'-ul-a
 ac-u-tif'-id-a
 ac-u'-tif-lo'-ra*
 ac-u'-tif-ol'-y-a
 ac-u-til'-ob-a*
 ac-u'-tj-p-et'-al-a
 Ac-yn'-thu
 A'-da
 Ad-am'-i
 Ad-am'-y-a
 Ad-am'-s'a
 Ad-an-so'-n'a
 Ad-cl'-gès
 Ad-o'-lob-ot'-rys*
 Ad-o-mand'-ra
 Ad-o-nun-the'-ra
 Ad-o-man'-thos
 Ad-e-ni-lo'-ma
 A-den'-y-um*
 Ad-e-noc-al-ym'-na
 Ad-e-noc-ar'-pus
 Ad-e-noph'-or-a
 Ad-e-nop-od'-i-a*
 Ad-e-nost'-om-a*
 Ad-e-nos'-tyl-èa
 Ad-e-not-rich'-y-a
 Ad-er'-m'a
 Ad-hat'-od-a
 ad-y-ant-if-ol'-y-a
 ad-y-ant-è-i'-des
 Ad-i-ant-op'-sis
 Ad-y-ant'-um
 Ad'-ik-è
 Ad'-in-a
 Ad-lu'-m'a
 ad-mi-ra'-bil-is
 ad-nasc'-ens
 ad-na'-tum
 Ad-o'-nid-um
 Ad-o'-nis
 ad-press'-a
 ad-scend'-ens
 ad-spers'-us
 ad-surg'-ens
 ad-ul-ter-i'-nus
 ad-umb-ra'-ta
 ad-un'-ca
 ad'-ven-a
 Aëch'-mè-a
 Aë-id'-i-um
 Aë-ic'-er-a
 Aë-il-èps
 Aë-iph'-il-a*
 Aë-le
 aë'-ra
 aëg-yp'-ti-ac-a
 aëg-yp'-ti-a

aëm'-ul-um
 aën'-è-a
 Aë-ol-anth'-us
 A'-o'-n'um
 aë-quin-ox-y-a'-lis
 aë-quip-et'-al-a
 aë-quit-ril'-ob-a
 A-er-anth'-us
 A-er-i'-dès
 A-or-ob'-y-on
 ar-u-gin-o'-sum
 A's-chyn-anth'-us
 A's-chyn-om'-en-è
 aës-cul-if-ol'-y-a
 A's'-cul-us
 aës-ti-va'-lis
 aës-ti'-vus
 aës'-tù-ans
 A'ith-y-on-e'-ma
 aeth-y-op'-ic-a
 aeth-u-sif-ol'-y-a
 aët-nen'-sia
 af-fi'-nis
 af-ric-a'-na
 a'-frum
 Af-zel'-y-a
 Af-zel'-y-i
 Ag-al'-myl-a
 Ag-an-is'-y-a
 Ag-an-os'-ma
 Ag-ap-anth'-us
 Ag-ap-o'-tès
 Ag-ard'-h'i
 Ag-ar'-ic-us
 Ag-ast'-ach-ys
 Ag'-ath-a
 Ag-ath-w'-a
 Ag'-ath-is
 Ag'-ath-om'-er-is
 Ag'-ath-oph-yl'-lum
 Ag'-ath-os'-ma
 Ag'-ath-o'-tès
 Ag'-ath-yr'-sus
 Ag-a'-ti
 Ag-a'-ve*
 ag-a'-vè-i'-dès
 ag-o'-rat-è-i'-dès
 Ag-e'-rat-um*
 Ag-o'-ri-a
 ag-greg-a'-tum
 Ag-lw'-a
 Ag-lai'-a
 Ag-lä-om-orph'-a
 Ag-lä-on-e'-ma
 ag-ni'-num
 Ag-no'-stus
 Ag'-nus-cas'-tus
 Ag-os'-or-is
 Ag'-raph-is
 ag-rost'-is
 ag-rif-ol'-y-a
 Ag'-ril-us
 Ag-rim-o'-n'i-a
 Ag-ri-o'-tès
 Ag-rop-y'-rum*

Ag-rost-em'-ma
 Ag-ro-stio'-ul-a
 Ag-ro'-stis*
 Ag-ro'-tis
 Ag-yl-oph'-or-a
 Ah-ou'-ai
 ai-lant-if-ol'-y-a
 Ai-lant'-us
 Ains-lw'-a
 Ains-worth'-y-i
 A-i'-phan-ès
 A-i'-pi
 Ai'-ra
 Aitch-is-o'-n'i
 Ai-to'-n'i
 Ai-to'-n'i-a*
 Ai-to-n'i-a'-na
 a-i-zo-y'-dès
 A-i-zo'-on*
 Aj-a'-cis
 aj-an-en'-sis
 A'-jax
 Aj-u'-ga*
 Ak-e'-bi-a
 Al-ang-y-a'-cè-a
 Al-ang'-y-um
 Al-ar-co'-n'i-a
 al-a'-ta
 al-at-av'-ic-us
 Al-at-ern'-us
 Al-at'-ip-ès
 al-a'-tus
 al'-ba
 al-bel'-lus
 Al-ber't-i
 al-besc'-ens
 al-bic-ans
 al-bic-aul'-is
 al'-bid-a
 al-bid'-ul-um
 al-bif-lo'-rum
 al'-bif-rons
 al-bin-a'-tum
 al-bis-pi'-na
 al-biv-o'-n'i-a
 Al-biz'-z'i-a
 al-bo-cinc'-tu
 al-bo-epi'-ca*
 al-bo-sti'-por*
 Al-bu'-ca
 al'-bul-us
 al'-bus
 Al-can'-na
 Al'-cè-a
 Al-chem-il'-la
 al-chem-ill-è-i'-dès
 alc-ic-orn'-è
 alc-è-i'-dès
 Al-coqu-y-a'-na
 Alè'-è-a
 Al-ec-tor-ol'-oph-us*
 Al-e'-gr'a
 al-epp'-ic-um
 Al-èt'-ris
 al-èt-rò-i'-dès

Words derived from Latin and Greek (*i.e.*, all except those in italics) to be pronounced as follows: ä as in äp-art'; ä as in pœu'-lmist; è as in slèh'-der; è as in vè'-ined; y as in thïn; i as in mach-i'-nist; è as in röt'-ten; è as in vò'-ter; ü as in pow'-er-èl; ü as in rá'-ler; ý as i; ý as i; æ, œ, ei, as ai in pain; au as ou in house; g, c, and ch, always hard, as, for example, g in good, c in muscular, and ch in Christian. (For the old method, see page 276.)

* This word is discussed at the end of the Pronouncing Dictionary.

Pronouncing Dictionary—continued.

Al-eu-ri'-tēs
 Al-eu-ri-top'-sis
 Al-ex-an'-drēs
 Al-ey-ro'-dēs
 Al'-ga
 Al'-gēs
 Al-gar-o'-lī-a
 al-gar-ven'-sē
 al-ge'-ri-en'-sis
 al'-gid-a
 Al-ha'-gi
 Al-ib-ēr'-tī-a
 Al-ic-ast'-rum
 Al-ic'-Y-ēs
 al-Y-e'-num
 Al-ip'-sa
 Al-is'-ma
 Al-is-ma'-cō-ēs
 al-is-mā-fol'-Y-um
 Al-kek-eng'-i
 Al-am-an'-du
 All-an-to'-dī-a
 All-arūl'-Y-a
 all-Y-a'-cō-a
 All-Y-a'-rī-a
 All-Y-a'-rī-ēs
 All'-Y-i
 All-Y-o'-nī-i
 All'-Y-um
 All-ob-rog'-Y-a
 All-och'-lam-ya
 all-oph-yll'-a
 All-oph-yll'-us
 All-op-leo'-tus
 All-os-o'-rus*
 Al-mev'-dī-a
 al-nif-ol'-Y-a
 Al'-nus
 Al-oc-as'-Y-a
 Al'-ō-e*
 al-ō-i'-dēs
 al-ō-if-ol'-Y-um
 Al-o'-mī-a
 Al-o'-na
 Al-on-so'-a
 al-o-pec-u-rō-i'-dēs
 al-o'-pec-u-rō-i'-dō-um
 Al-oph'-Y-a
 Al-oy'-st-a
 al-pest'-ris
 al-pī'-na
 Al-pī'-nī-a
 Al-sob'-Y-a
 Al-so-dei'-a
 Al-soph'-il-a
 Al-stō'-nī-a
 Al-strū-mer'-Y-a
 al-tac-le-ren'-re
 Al-tag-a'-na
 al-ta'-io-a
 al-ta'-i-en'-sē
 Al-en-stei'-nī-i
 al-tern'-ans
 Al-tern-anth-e'-ra
 Al-tern-a'-rī-a

Al-tern-a'-rī-ēs
 al-tern-if-ol'-Y-a
 Al-thēs'-a
 al-thēs-if-ol'-Y-a
 al-thēs-ō-i'-dēs
 Al'-tio-a
 al'-tif-rons
 al-tiss'-im-a
 Al-u-cit'-Y-na
 al-ut-a'-cō-um
 al-wart-en'-sis
 Al-y'-pum
 Al-yss'-um
 am-a'-bil-is
 Am-al'-Y-a
 Am-al'-Y-ēs
 Am-al'-Y-ēs
 Am-an'-ca-ēs
 Am-an-i'-ta
 am-a'-ra
 Am-ar-ant-a'-cō-ēs
 Am-ar-ant'-us
 am-a-ric-au'-lis
 am-a-ris'-sim-a
 Am-ar-yl-lid'-ō-ēs
 am-ar-yl'-lid-if-ol'-Y-a
 Am-ar-yl'-lis
 Am-as-o'-nī-a
 am-as-o'-num
 am-big'-ū-el'-la
 am-big'-u-um
 Am-bly-an-the'-ra
 am-bly'-od-on*
 am-boi-nen'-sē
 am-boy-nen'-sis
 Am-bros-i'-nī-a
 am-bros'-Y-ō-i'-dēs
 Am-el-an'-chī-er
 am-el-lō-i'-dēs
 Am-el'-lus
 am-er-ic-a'-na
 Am-er-im'-non
 Am-er-im'-num
 am-oth-ys-ti'-na
 am-eth-ys-tog-lōs'-sa
 Am-hers'-tī-a
 Am-hers'-tī-ēs
 Am-hers'-tī-a'-na
 Am-Y-anth'-em-um
 Am-i'-ct-a
 am-il'-la-ris
 Am-mob'-Y-um*
 Am-moch'-ar-is*
 Am-mod-en'-dron
 Am-mog-e'-tōn*
 Am-mo-nī'-ac-um
 Am-myr'-sin-e
 Am-ō'-bēs
 am-ō'-na
 am-ō'-nul-a
 Am-o'-moph-yl'-lum
 Am-o'-mum
 Am-orph'-a
 am-orph-ō-i'-dēs
 Am-orph-oph-al'-lus

am-pel-oph'-ag-um
 Am-pel-op'-sis
 Am-pel-os-ic'-y-ōs
 am-phil'-Y-um
 Am-phil-lem'-ma
 Am-phil-lo'-stra
 Am-phil-ar-pēs'-a
 am-phil-ar'-pos
 Am-phil'-om-e
 Am-phil-ob'-Y-um*
 Am-phil-oph'-Y-um
 Am-phi'-ōn
 Am-phil'-od-a
 am-phor-a'-ta
 am-phos-te'-mōn*
 am'-pla
 am-plex'-ic-an'-lie
 am-plī-a'-tus
 am-plif-lo'-rum
 am-plis'-sim-um
 am-pul-la'-cō-us
 am-pul-la'-rī-a
 Am-so'-nī-a
 am-ur'-en-sē
 Am-yg'-dal-i
 am-yg'-dal-if-ol'-Y-a
 am-yg'-dal-i'-na
 am-yg'-dal-ō-i'-dēs
 Am-yg'-dal-op'-sis
 Am-yg'-dal-us
 am-yl-ob-ac'-ter
 am-yl-ov'-or-us
 Am-yr-id-a'-cō-ēs
 Am'-yr-is
 An-ac-amp'-sor-ōs
 An-ac-amp'-tis
 an-ac-anth'-a
 An-ac-ar-dī-a'-cō-ēs
 An-ac-ar'-dī-um
 An-ad-o'-nī-a
 An-ag-al'-lis
 An-ag'-yr-is
 An-a'-nas
 An-a-nas'-sa
 An-anth'-er-ix
 An-ap-el'-tis
 An-ar-rhi'-num
 An-ar'-st-a
 An-as-tat'-ic-a
 an'-ceps
 An-chi-e'-tō-a
 Anch-is'-tī-a
 Anch-om'-an-ēs
 anch-or-if'-er-a
 An-chu'-sa
 an-chu'-sēs-fol'-Y-a
 an-chu-sō-i'-dēs
 An-chu-sop'-sis
 an-cil'-la
 An-cyc-loc'-lad-us
 An-cyc-log'-yn-e*
 An-der-so'-nī
 An-der-so'-nī-a
 An-der-so-nī-a'-num
 An-der-so'-nī-i

Words derived from Latin and Greek (i.e., all except those in italics) to be pronounced as follows: ā as in āp-art'; ã as in psã-lmist; ē as in slēn'-der; ē as in vē-ined; I as in thīn; I as in mach-i'-nist; ō as in rōt'-ten; ō as in vō'-ter; ū as in pow'-er-fūl; ū as in rŭ'-ler; ŷ as Y; ŷ as I; œ, œ, ei, as ai in pain; au as ou in house; g, c, and ch, always hard, as, for example, g in good, c in muscular, and ch in Christian. (For the old method, see page 276.)

* This word is discussed at the end of the Pronouncing Dictionary.

Pronouncing Dictionary—*continued.*

and-ic'-ol-a
and-ig'-en-um
and'-in-um
An'-d-i-ra
 An-drach'-us
 an-drach'-nō-ī'-dēs
An'-dre-æ
An-dre-a'-num
An-dreu'-si-a
An-drew'-st-i
An-drew-si-a'-na
An-drew'-st-i
An'-drio-us
An-dri-eus'-Y-i
 An-droc-ym'-bl-um
 an-drog'-yn-us
 An-drol'-op-is
 An-drom-ach'-Y-a
 An-drom'-ed-a
 an-drom'-ed-æ-flo'-ra
 an-drom'-ed-æ-fol'-Y-a
 An-drop-o'-gōn*
 An-dros'-ac-o*
 an-dros-ac'-ō-ā
 an-dros-æ'-mif-ol'-Y-um
 An-dros-æ'-mum
 An-dros-teph'-Y-um*
 An-dry'-al-a
 An-ec-och'-i'-lus
 An-ei-lō'-ma
an-ei-ten'-sē
 An-o'-mī-a*
 An-o'-mid-ic'-tŷ-on
 An-o'-mī-op'-sis
 an-em-o'-mō-flo'-rus
 an-em-o'-mō-fol'-Y-um
 An-em-o'-nō*
 An-em-o'-nēs
 an-em-o'-nif-ol'-Y-us
 an-em-o'-nō-ī'-dēs
 An-em-o-nop'-sis
 An-em-op-ag'-ma
 an-o'-thif-ol'-Y-a
 An-o'-thum
 an-frao-tū-o'-sum
 An-gel'-ic-a
An-gel-o'-nī-a
 An-gi-anth'-us
 An-gi-op'-ter-is
an-go'-lon-sē
 An-goph'-or-a
An-græ'-cum
 an-guic'-id-a
 an-guif'-ng-a
 An-guil-lul'-id-æ
 ang-ū'-na
 an-guin'-ō-ā
An-gui'-vi
 ang-ul-a'-ris
 ang-ul-a'-ta
 ang-ul'-ig-er
Ang-ul-o'-a
 ang-ul-o'-s-a
 An-gu'-rī-a
 an-gus'-ta

an-gus-ta'-tus
 an-gus-tif-ol'-Y-a
 an-gus'-tī-or
 an-gus'-tī-or-a'-na
 an-gus-tip-in'-nul-a
 An-hal-o'-nī-um
 A'-nī-a
 An-ig-oz-anth'-us
An'-il
 An-is-anth'-us*
 an-i-sa'-ta
 An-is-och'-i'-lus
 An-is'-od-us
 An-is-og-o'-nī-um*
 an-is-ol'-ob-a
 An-is-ol'-ob-us
 An-is-om'-el-ēs
 An-is-op-et'-al-um
 an-is-oph-yl'-luq
 An-i'-sum*
An-næ'-i
An-nēs-le'-i
 an-no'-sus
 an-no'-tin-um
 an'-nū-a
 an-nul-a'-rē
 an-nul-a'-tum
 an-nul'-ip-ēs
 An-œo'-toch-i'-lus*
 An'-om-a
 an-o'-mul-a
 An-om-ath-o'-en*
 An-om-orb-eg'-mī-a
An-o'-na
 An-o-na'-cō-æ
 An-o'-nym-os
 an-op-et'-al-um
 An-op-lunth'-us
 An-op-loph'-yt-um*
 An-op'-ter-us
 an-os'-mum
An-sel'-lī-a
 An-ser-i'-na
 an-ser-i'-mō-fol'-Y-a
 ant-aro'-tic-a
 An-ton-na'-rī-a
 An-ton-nī'-er-a
 Ant-œu-phorb'-Y-um
 ant-hol'-mī-a
 Anth'-em-is*
 an-them-ō-ī'-dēs
 an-thē'-ra-rum
 anth-or-ic'-lis
 Anth-er'-ic-um
 an-th-æ-ro'-s-a
 an-th-æ-ro'-tēs
 Anth-id'-Y-um
 Anth-oc-or'-ci-
 Anth-od'-on
 Anth-ol-o'-ma*
 Anth-ol-y'-za
 Anth-om-y'-l-a
 Anth-on'-om-us
 Anth-op-o'-gōn
 An'-thor-a

Anth-os-per'-mum
 Anth-ot-ax'-is
 Anth-ot-ax'-um
 Anth-ox-anth'-um
 an-thris'-cif-ol'-Y-a
 An-thris'-cus
 an-thro'-poph-ag-o'-rum
 an-thro-poph'-or-a
 An-thu'-rī-um
 An-thyl'-lis
 an-ti-ac-anth'-a
An-ti-a'-ris
 An-tic-le'-a
 an-tid-ys'-en-ter'-ic-a
 An-tig-o'-non*
 An-tig-ram'-me
an-til-la'-na
 An'-tl-op-a
an-ti-og-ū-en-sis
 an-tip'-od-a
 an-ti'-qua
 an-ti-quo'-rum
 An-tir-rhi'-nō-æ
 an-tir-rhi'-nō-ī'-dēs
 An-tir-rhi'-num
 An-tis'-pil-a
 An-to'-nī-a
 An-troph'-y-um
ant-werp-en'-sis
anz-an'-tic-a
 A-o'-tus
 Ap-at-u'-rī-a
Ap-e'-i-ba
 ap-en-nī'-na
 Ap-en'-ul-a
 ap-er'-ta
 ap-er'-tif-lo'-ra
 ap-et'-al-a
 Aph-el-an'-dra
 aph-el-an'-drae-flo'-ra
 Aph-el-ex'-is
 Aph'id-ēs
 Aph-il-oth'-rix
 Aph'-is
 Aph-rod-i'-te
 Aph-roph'-or-a
 aph-yl'-la
 Aph-yl-lunth'-ēs
 ap-ic'-a-ta
 ap-ic'-id-ens
 Ap-ic'-ra
 ap-ic-ul-a'-tum
 ap-if'-er-a
 ap-if-or'-mis
 ap'-Y-i
 ap'-Y-if-ol'-Y-um
Ap-in-a'-ga
 ap-Y-oph'-il-a
 Ap'-Y-os
 Ap-Y-os-per'-mum
 Ap'-is
 Ap'-Y-um*
 Ap-lec'-trum
 Ap-lop-ap'-pus
 Ap-loph-yl'-lum

Words derived from Latin and Greek (*i.e.*, all except those in italics) to be pronounced as follows : ð as in *þp-art'*; ð as in *psa'-lmist*; ð as in *slēn'-der*; ē as in *vē'-med*; Y as in *thin*; i as in *mach-i'-nist*; ō as in *rōt'-ten*; ō as in *ro'-ter*; ū as in *pow'-er-fūl*; ū as in *rū'-ler*; ŷ as Y; ŷ as I; æ, œ, ei, as *ai* in *pain*; au as *ou* in *house*; g, c, and ch, always hard, as, for example, g in *good*, c in *muscular*, and ch in *Christian*. (For the old method, see page 276.)

word is discussed at the end of the Pronouncing Dictionary.

Pronouncing Dictionary—continued.

Ap-lot-ax'-is
 Ap-oc-yn-a'-cū-æ
 Ap-oc-yn-um*
 ap'-od-a
 ap-od-anth'-us
 Ap-on-og-e'-ton
 Ap-or-e'-tic-a
 Ap-or'-y-a
 ap-pen-dic-ul-a'-tum
 ap-plan-a'-ta
 Appl'-by-a'-na
 ap-plic-a'-ta
 ap'-ter-a
 Ap-ter-anth'-is
 Ap-to-sim'-i-æ
 Ap-to'-sim-um
 ap-ur-en'-sis
 a'-pus
 Aq-uār'-tī-a
 aq-nat'-ic-us
 aq-nat'-il-is
 aq'-uū-um
 Aq-uif-ol'-i-a'-cū-æ
 Aq-uif-ol'-i-um
 Aq-nil-e'-gī-a
 aq-uil-e'-gīf-ol'-i-um
 aq-uil'-i-na
 aq-uo'-sus
 ar-ab'-ic-a
 ar-ab'-id-if-lo'-rum
 ar-ab'id'-i-ō-i'-dēs
 Ar'-ab-is*
 Ar-a'-cū-æ
 Ar'-ach-is
 Ar-ach-nan', the
 Ar-ach-nim-orph'-a
 Ar-ach-ni'-tēs
 ar-ach-ni'-tis
 ar-ach-nō-i'-dēs
 ar-ach-nō-i'-dē-um
 Ar-a'-lī-a
 Ar-a'-lī-a'-cū-æ
 ar-a-nif'-er-a*
 Ar-ar'-tī
 Ar-au-ca'-rī-a
 Ar-au-ca'-rī-ō-i'-dēs
 Ar-au'-gā
 ar-bor'-e-a
 ar-bor-es'-cens
 Ar-bus'-cul-a
 ar-but-if-ol'-i-a
 ar-but-ō-i'-dēs
 Ar-but-us*
 Ar'-ce-i
 Arch-an-gel'-ic-a
 Arch'-er-i
 Arch-er'-y-a'-na
 Arch-on'-toph-æ'-nix
 ar-col-a'-ta
 Arc'-tī-a
 arc'-tic-a
 Arc-toa-taph'-yl-os*
 Arc-toth-e'-ca
 Arc-to'-tis

Ar-cu'-rus
 ar-eh-a'-ta
 ar'-dens
 Ar-dis'-y-a
 Ar-do-i'-ni
 Ard-ū-en-nen'-sō
 Ard-ū-i'-na
 Ar-e'-ca
 Ar-e-nā'-rī-a
 Ar-e-nā'-rī-æ
 Ar-en-berg'-y-a
 Ar-en-berg'-y-a'-na
 Ar-en'-gā
 ar-e-no'-sa
 ar-ē-ol-a'-tum
 Ar-eth-u'-sa
 Ar-e'-tī-a
 ar-e'-tī-ō-i'-dēs
 Ar'-gan
 Ar-gan'-y-a
 Ar-gem-o'-ne*
 ar-gen-tū-flo'-ra
 ar-gen-tū'-ta
 ar-gen'-tū-us
 Ar-gol-as'-y-a
 ar-goph-yl'-us
 ar-gos'-path-a*
 ar-gu-nen'-se
 Ar'-gus
 ar-gū'-ta
 ar-gyr-n'-a
 Ar-gyr-ei'-a
 ar-gyr-i'-tes
 Ar-gyr-och-æ'-ta
 ar-gyr-on-eu'-rus
 ar-gyr-oph-yl'-la
 Ar-gyr-oph'-yt-on
 ar-gyr-os-tig'-ma
 Ar-gyr-ox-yph'-y-um
 A'-rī-a
 ar'-id-us
 ar-y-et-i'-na
 a-rif-ol'-i-a
 Ar'-i-ōn
 A-ris-æ'-ma
 Ar-is'-ar-um
 ar-is-tā'-ta
 Ar-is'-tū-a
 Ar-is'-tol-och'-y-a*
 Ar-is'-tol-och'-y-a'-cū-æ
 Ar-is'-tom-en'-y-a
 ar-ist-o'-sa
 Ar-ist-ot'-el-a*
 Ar-ist-ot-el'-i-æ
 Ar-ist-ot-el'-y-a
 Ar'-i'-za
 Ar-ju'-na
 Ar-mad-il'-lo
 ar-ma'-tus
 Ar'-men-a
 Ar-men'-y-a-c-a
 Ar-me'-rī-a
 ar-mil-la'-ris
 ar-mil-la'-ta
 Ar-min'-y-i

Ar-mil-ag-e-a'-nus
 Ar-mor-a'-ei-a
 Ar-nō'-bi-a
 Ar'-nic-a
 Ar-nop-o'-gōn
 Ar-nol'-y-i
 Ar-not-tī-a'-na
 A-roī'-dē-æ
 ar-o-mat'-ic-um
 Ar-o'-mī-a
 Ar-o'-nī-a
 Ar-o-ni'-eum*
 Ar-poph-yl'-lum
 Ar-rac-a'-cha
 ar-rag-on-en'-sis
 ar-rec'-ta
 Ar-rhos-tox'-yl-um
 Art-ab-ot'-rys
 Art-an-e'-ma
 Art-anth'-e
 Art-em-is'-y-a
 Arth-op'-ter-is
 Arth-roph-yl'-lum
 Arth-rop-od'-y-um*
 Arth-rop'-ter-is
 Arth-ros-tem'-ma
 Arth-rot-ax'-is
 Arth-ur'-y-a'-num
 ar-tic-ul-a'-ta
 Ar-toe-ar'-pē-æ
 ar-toe-ar'-pif-ol'-y-a
 Ar-toe-ar'-pus
 A'-rum
 A-run'-cus
 ar-un-din-a'-cū-æ
 Ar-un-din-a'-rī-a
 Ar-un'-do
 ar-va'-lis
 ar-ven'-sis
 ar-ver-non'-se
 Ar-vic'-ol-a*
 ar-vi'-na
 Ar-yl-e'-ra
 Arz'-æ
 As-n'-cot'-id-a
 A-sag-ræ'-a
 As'-aph-ōs
 as-ar-if-ol'-y-um
 As-ar-i'-na
 as'-ar-ō-i'-dēs
 As'-ar-um
 as-cal-o'-nic-um
 As-car-ic'-id-a*
 as-oen'-dens
 As'-cf-um
 As-cle'-pi-ad-a'-cū-æ
 as-cle'-pi-ad'-i-æ
 As-cle'-pi-ad'-i-æ
 As-cle'-pi-æ
 As-coch-y'-ta
 As-com-ye-e'-tēs*
 as-col-en'-sis
 As'-cyr-um
 As'-cyr-on
 as-el'-lif-or'-mis

Words derived from Latin and Greek (i.e., all except those in italics) to be pronounced as follows: Æ as in Æp-art'; Å as in psā-lmist; ð as in slēn'-der; ð as in vē'-lined; Y as in thīn; I as in mach-ī'-nist; ō as in rōt'-ten; ō as in vō'-ter; ū as in pow'-er-fūl; ū as in rā'-ler; ŷ as I; ŷ as i; æ, œ, ei, as ai in pain; au as ou in house; g, c, and ch, always hard, as, for example, g in good, c in muscular, and ch in Christian. (For the old method, see page 276.)

* This word is discussed at the end of the Pronouncing Dictionary.

Pronouncing Dictionary—continued.

as-el'-lus
 As-er-i'-na
Ash-bur-to'-ni-sæ
 a-si-a'-tic-a
As-im'-in-a
As-o'-ra
 as-pal'-ath-ð-i'-dēs
 As-pal'-ath-us
 as-par'-ag-if-ol'-Y-a
 as-par-ag-ð-i'-dēs
 As-par'-ag-us
 As-pa'-si-a
As-peg-re'-ni-a
 as'-per-a
 as-per-a'-ta
 as-per-ic-au'-lis
 as-per-if-ol'-Y-i
 as-per'-rim-us
 as-per'-sum
 As-per'-u-la
 As-phod-el-l'-no
 as-phod-el-ð-i'-dēs
 As-phod'-el-us*
 as-pid-Y-ð-i'-dēs
 As-pid-Y-o'-tus
 As-pid-is'-tra
 As-pid'-Y-um
 as-ple'-nif-ol'-Y-n
 as-ple'-ni-ð-i'-dēs
 As-ple'-ni-um
 As-saf-(æ)-tid-u
as-sam'-io-a
 as-sim'-il-o
As-so'-ni-a
 as-sur'-gens
 As-turt'-ri-a
 As-tel'-ma
 As-teph'-nu-us
 As'-tōr*
 As-ter-ac-anth'-a
 As-ter-a'-cō-sæ
 As-ter-anth'-em-um
 As-ter-is'-cus
 As-ter-oc-eph'-al-us
 as-ter-ð-i'-dēs
 As-ter-o'-ma
 As-ter-op'-ter-us
 As-ter-os-tig'-ma
 as-th-mat'-io-a
 As-til'-be
 as-til-bð-i'-dēs
 As-trag'-al'-us
 As-tran'-ti-a
 As-trap-æ'-u
 As-troo-ar'-y-um*
 As-trol-ob'-Y-um*
 As-trol-o'-ma
 As-troph'-yt-um*
 As-ys-ta'-si-a
 At-aó'-ci-a
 At-al-an'-ta
 At-al-anth'-us
 At-al-an'-ti-a
 At-am-as'-co
 a'-ter

Ath-a'-li-a
 Ath-al'-mns
 Ath-am-an'-ta
 ath-am-an'-tic-um
 Ath-an-as'-Y-a
 Ath-er-os-per'-ma
 Ath-er-os-per'-mð-sæ
 Ath-e-ra'-rus*
 Ath-ly-anth'-us
 Ath'-ð-us
 Ath-rix'-Y-a
 Ath-rot-ar'-is
 ath-rox-ð-i'-dēs
 Ath-ruph-yl'-lum
 Ath-yr'-Y-um
At'-kin-si
At-kin'-si-i
At-kin-so'-ni
At-kin-so'-ni-a'-na
 at-lan'-tic-um
 At-oc'-Y-on
 At-om-a'-ri-a
 a'-tra
 At-rag'-en-e
 a-tra'-ta
 At'-rip-lex
 at-rip-lic'-if-ol'-Y-um
 at-rip'-lic-is
 At'-rop-a
 At'-rop-os
 a'-tro-pur-pur'-ri-a
 a'-tro-rub'-ens
 a'-tro-san-guin'-ri-a
 a'-tro-vir'-ens
 At-tal-e'-a
 at-ten-ü-a'-ta
 at-ten-ü-if-ol'-Y-um
 at'-tic-a
 Au-be'-ri
 Au-ble'-ti-a
 Au-ble'-ti-i
 Au-brè'-ti-a
 Au-che'-ri
 Au-che'-ri-a'-na
 Auck-land'-Y-i
 Au'-cub-a*
 au'-cub-sæ-fol'-Y-um
 au'-cub-if-ol'-Y-u
 Au-cup-a'-ri-a
 Au-dib-èr'-ti-a
 Au-dou-in'-Y-a
 Aug'-ð-n
 au'-gus-ta
 au-gus-ta'-ta
 au-gus-tif-ol'-Y-um
 Au-gus-ti'-na
 au-gus-tis'-sim-um
 Au'-lao-oph-yl'-lum
 Au-lao-os-per'-mum
 Au'-lax
 au'-lic-a
 aur-an'-ti-a
 Aur-an-ti-a'-cð-sæ
 aur-an'-ti-ac-um
 aur-ant-Y-a'-ri-a

au-ra'-ri-um
 aur-a'-ta
 au'-rð-a
 Au-re'-ly-a
 Au-re-ly-a'-na
 au'-rð-o-fla'-vum
 au'-rð-ol-a
 aur-ic'-om-us
 Aur-ic'-ul-a
 aur-ic'-ul-sæ-fol'-Y-a
 aur-ic-ul-a'-ri-a
 aur-ic-ul-a'-ta
 aur-if'-lū-a
 aur-if-or'-mis
 au-ri'-ta
 au-ro'-sum
Au-stin-Y-a'-na
 aus-tra-las'-ic-um
 aus-tra'-lð
 aus-tra'-ly-a'-na
 aus-tra'-lis
 aus'-tri-ac-a
 aus'-tro-cal-e-don'-ic-a
 au-tum-na'-le
 Av-el-la'-na
 Av-e'-na
 av-e-na'-cð-um
Av-er-rho'-a
 av'-ic-eps
 av-ic-ul-a'-ro
 av'-Y-um
 Ax-il-la'-ri-a
 ax-il-la'-ris
 ax-il-lif-ol'-ra
 Az-ad-ir-ach'-ta
 Az-al'-ð-a*
 az-ul-ð-ð-i'-dēs
 Az-a'-ru
 Az-a'-rol-us
 Az-ed'-ar-ach
 Az-i'-ma
 Az-ol'-la
 az-or'-ic-a
 az-u'-rð-us

Bab-Y-a'-na
Bab-ing-to'-ni-a
 bab-or-en'-sis
 bab-yl-o'-nic-a
 ba-ca'-ba
 bac'-cans
 bac-ca'-tum
 bac-char-if-ol'-Y-us
 Bac'-char-is
 Bac'-chus
 bac-cif'-er-a
 Bac-cil'-lus
 Bach-em-Y-a'-na
 bac-il-la'-ris
 Back-hous'-ð-i
 Back-hous'-Y-a
 Back-hous'-Y-a'-na
 Bac-o'-ni-a

Words derived from Latin and Greek (i.e., all except those in italics) to be pronounced as follows: ð as in ðp-art'; æ as in pæ'-lmist; ð as in slæn'-der; è as in vè'-ined; Y as in thÿn; I as in mach-i'-nist; ð as in røt'-ten; ð as in vø'-ter; ü as in pow'-er-fül; ü as in rü'-ler; ý as I; ý as I; æ, œ, ei, as æ in pain; au as ow in house; g, o, and oh, always hard, as, for example, g in good, o in muscular, and oh in Christian. (For the old method, see page 276.)

* This word is discussed at the end of the Pronouncing Dictionary.

Pronouncing Dictionary—continued.

Bac-te-ri-um
 Bac'-tris
 Bac-ul-a'-ri-a
 bac-ul-if'-er-a
 Bad-am'-ē-a
 Bæ'-a
 Bæck'-ē-a
 Bæ-ob-ot'-rys
 Bæ-er'-Y-a
 bæt'-ic-a
 Bah-i'-a
 bah-i-en'-sis
 Bah'-ma
 Baik-ic'-i
 Bail-lo'-ni
 Baines'-Y-i
 Bain'-Y-i
 Ba'-ker-i
 Ba-ker-Y-a'-na
 Bal-ang'-has
 Bal-an'-in-us
 Bal-an-i'-tēs
 Bal-an'-Y-us
 Bal-an-op'-ter-is
 Bal-an'-æe
 Bal-an'-ti-um
 Bal-bi'-si-a
 Bal-bi'-si-a-na
 Bal-bi'-si-i
 bal-don'-sis
 Bal-der'-i-am-um
 Bal-der'-ram-um
 Bal-ding-e'-ra
 bal-ē-a'-ric-a
 Bal-four'-Y-a
 Bal-four-Y-a'-num
 Bal-four'-Y-i
 bal-ka'-na
 Bal-lan-ti'-ni-i
 Bal-lo'-ta
 Bal-mor-Y-a'-na
 bal-sam'-ē-a
 bal-sam-if'-er-um
 Bal-sam'-Y-i
 Bal-sam'-in-a
 bal-sam'-in-æ-flo'-ra
 Bal-sam-in'-ē-æ
 Bal-sam'-it-a
 Bal-sam'-od-end'-ron
 Bal'-sam-um
 bal'-tic-a
 Bam-bu'-sa
 bam-bu'-sæ-fol'-Y-a
 bam-bu-sē-i'dēs
 Ban-a'-ra
 ban-at'-ic-us
 Ban-croft'-Y-i
 Ban-dhu'-ca
 Ban-is-te'-ri
 Ban-is-te'-ri-a
 Bank'-si-a
 Bank'-si-æ
 Bank-si-a'-na
 Bank-si-an'-æ
 Bank'-si-i

Baph'-Y-a
 baph-ic-an'-tum
 Bap-tis'-Y-a
 Bap-tis'-Y-i
 Bar-aq-ui-a'-na
 Bar-aq-um'-Y-i
 Bar-bac-e'-ni-a
 bar-bad-en'-sis
 Bar'-bā-Jov'-is
 bar'-bar-a
 Bar-bar-e'-a
 bar-ta'-ta
 bar-ba'-tul-um
 Bar'-ber-æ
 Bar-ber'-Y-æ
 Bar'-ber-Y-a-num
 Bar-bi-e'-ri-a
 bar-big'-er-a
 bar-bul-a'-ta
 bar-cin-o'-nen-sis
 Bar-clay-a'-na
 Bar-id'-Y-us
 Bar-il-le'-ti
 Bar-ker'-i
 Bar-ker'-Y-a
 Bar-ker-Y-a'-na
 Bark-haus'-Y-a
 Bar'-kly-a
 Bar'-kly-i
 Bar'-læ
 Bar-læ-a'-na
 Bar-le'-ri-a
 bar-le'-ri-ē-i'dēs
 Bar'-ly-a
 Bar-nad-e'-si-a
 Bar-nard'-Y-a
 Bar-ne'-si-i
 Bar'-um-etz
 Bar-on'-ma
 Bar-rald-ei'-a
 Bar-rel-li-e'-ri
 Bar-rel'-ly-i
 Barr'-Y-i
 Bar-ring-lo'-ni-a
 Bar-ring-to'-ni-um
 Bar-rot'-Y-a
 Bar'-ter-i
 Bar-the-ri-a'-na
 Bar-tin'-gl-a
 Bar-tol-i'-na
 Bar-to'-ni-a
 bar-to-ny-ē-i'dēs
 Bar'-y-a
 Bar-ÿ-an'-dra
 Bar-ÿ-on'-ma
 bar-ÿat'-sch-ÿs
 Bas-el'-la
 Bas-el-la'-cē-æ
 bas-il-a'-ris
 Bas-il'-ic-um
 Bas'-st-a
 Bas'-st-i
 Bas-so'-vi-a
 Bat-a'-tas
 Bat-au'-a

Bate-man-Y-a'-num
 Bate-man'-ni
 Bate-man'-ni-a
 Bat-o'-nē-us
 Batsch'-Y-a
 Bau-dou-in'-Y-i
 Bau-e'-ra
 Bau-e'-ri
 Bau-e-ri-a'-na
 Bau-hin'-Y-a
 Baus'-ÿ-i
 bav-ar'-ic-a
 Baz-ter'-i
 Bay-field'-Y-i
 Bay'-ÿ-æ
 Bear-ley-a'-na
 Bea-to'-ni-a
 Bea-to'-ni-i
 Beat-so'-ny-a
 Beau-car'-nē-a
 Beau-for'-ÿ-a
 Beau-har-noi'-si-a
 Beau-mon'-ÿ-a
 Beau-mon-ÿ-a'-na
 Beau-mon'-ÿ-i
 Bec-cab-un'-ga
 Bec-ca'-ri-i
 Be'-ol-um
 Bed-do'-mē-i
 Bed-for'-dē-a
 Bed-for-dē-a'-na
 Bed-ing-hau'-si-i
 Bef-a'-ri-a
 Beg-o'-ni-a
 Beg-o'-ni-a'-cē-a
 beg-o'-ni-æ-fol'-Y-a
 Beg-o'-ni-el'-la
 Beÿ-er-inck'-Y-i
 Beÿ-a'-ri-a
 Bel-am-can'-da
 Bel-an'-ger-i
 Bel-e'-ni-a
 belg'-Y-i
 bel'-la
 Bel-lad-on'-na
 Bel-lar-dē-a
 Bel-len-dē'-ni
 Bel-lev-a'-ly-a
 Bel-ley-m'-ē-i
 Bel-lid-Y-as'-trum
 bel-lid-if-lo'-rus
 bel-lid-if-ol'-Y-um
 bel-lid-Y-ē-i'dēs
 Bel-ly'-ni-a
 bel-li'-num
 Bel'-lis
 Bel'-ly-um
 bel'-lul-a
 bel'-lum
 Bel-mo-rē-a'-na
 Bel-on-i'-tēs
 Bel-op-er'-on-e*
 bel-oph'-or-us
 bel-oph-yl'-lum
 Bel-ol'-ti-i

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* This word is discussed at the end of the Pronouncing Dictionary.

Pronouncing Dictionary—*contin. ed.*

Bel-rá'-ta
Bel-rí'-st-a
 bem-be'-cif-or'-mis
Ben-a'-rý-i
Ben-eb'-er-a
 ben-ed-ic'-tus
ben-gha-len'-sis
ben-jam-i'-na
Ben-nel'-i-a
Ben-nel'-ý-i
Ben-so'-num
Ben-so'-ni
Ben-so'-ní-w
Ben'-tham-i
Ben-tham'-i-a
Ben-tham'-i-u'-na
Ben-tiack'-i-a
Ben-zo'-ru
Ber-ar'-di
Ber-ar'-di-a
 Ber-ber-id-a'-cè-a
 Ber-ber-id-is
 Ber-ber-id-op'-sis
 ber-ber-if-ol'-i-a
Ber'-ber-is
Ber-chem'-i-a
Bery-e'-ra
Bery-i'-na
Bery-man-ný-a'-na
Berk-ley'-i
Berk-ley'-a
Berk-ley'-i
Ber-land'-i-e-rí-u'-na
 ber-mu'-di-a'-na
Ber-nar'-di
Ber-nar-di'-u'-na
Ber-nay'-si-i
Bern-hard'-i-a'-num
Ber-ný-e'-stý-a'-na
Ber-ter-o'-u'-na
Ber-thel-o'-fi
Ber-thel-o-fi'-u'-nus
Ber-thal-le'-i-a
Ber-ti'-ni
Ber-tol-o'-ní-a
Ber-tol-o'-ní-i
Ber-ze'-li-a
Bes-chor-ne'-rí-a
Bes-le'-rí-a
bes-sar-ab'-ic-us
Bes-se'-ra
Bes-se'-rí-u'-na
Bes-so'-ni
Bes-so'-ní-a'-na
 Be'-ta
 be-tá'-cè-um
 be'-ta
Be'-ckè-a
Beth-el'-li-i
Beth-u'-nè-a'-num
 Be'-tle
 Bot-on'-ic-a
 bet-on'-ic-w-fol'-i-a
 bot-on-ic-è-i'-des
Bett-zich'-i-a'-na

Be't-ul-a
 bet'-ul-a-fol'-i-a
 Bet-ul-o'-a
 Bet-ul-o'-ti
 bet-ul-if-ol'-i-a
 bet-ul-i'-na
 bet-ul-è-i'-dès
 Be't-ul-us
Beu'-th'i-i
Bey-rich'-i-a'-num
Bey-rich'-i-i
Bhoj-pat'-tra
Bi-an'-cè-a
 bi-ar-tic-ul-a'-tum
 Bi-a'-rum
Bi-as-sol-et-ý-u'-n-i
 bi-au-rí'-ta
 bib-rac-tè-a'-ta
 bio-al-ca-ra'-ta
 bio-al-lo'-sum
 bio-am-er-a'-tum
 bio-ar-i-na'-ta
 bio'-ol-or
 bio-on-tor'-tus
 bio-or'-nis
 bio-or-nu'-tum
 Bio-or-o'-na
 bio-re-na'-tus
Bi-ton-en'-sis
 bio-us'-pis
 Bid'-ons
 bid-en-ta'-tus
 bid-en-tif-ol'-i-a
Bid-w l'-ly-e
Bid-wil'-li
Bie-ber-stei'-ní-a
Bie-ber-stei'-ní-a'-num
Bie-ber-stei'-ní-i
 bí-en'-nis
 bí'-or-um
 bí'-id-a
 bíf-lo'-ra
 bíf-ol'-i-um
 bíf-or'-mè
 Bíf-ro'-na-rí-a
 bíf'-rons
 bíf-ur-ca'-tum
Big-ar-ol'-la
Big-el-o'-rí-a
 big-ib'-bum
 Big-lan-dul-a'-rí-a
 big-lu'-mis
Big-no'-ní-a
Big-no-ni'-a'-cè-a
big-ro-ni-è-i'-dè-a
 Bi'-hai
Bi-hor-el'-la
 bíj'-ug-a
 bil-a'-mel-la'-ta
Bil-ím'-bi
Bil-lär-dí-e'-ra
Bil-lär-dí-e'-ri
Bill-ber'-gý-a
Bill-ber'-gý-w
 bíl'-ob-um

bim-ac-ul-a'-tus
 bin-a'-ta
 bin-er'-vis
 bin-oc-ul-a'-ro
 Bi-oph-ýt'-um
 Bi-orh-i'-za
 Bý-ot-a*
Bi-o'-li-a
 bip-ar-ti'-ta
 bip-ot'-al-a
 bip-in-na'-ta
 bip-in-na-tif'-id-um
 bip-in-na'-tip-ar-ti'-tum
 bip-unc-ta'-ta
Bir'-chè-a
Bir-schel'-ý-i-i
 Bis-cu-tel'-la
 bis-oc'-tum
 bis-er-ra'-ta
 bis-pí'-no-sa
 Bis-tor'-ta
 bit-er-na'-ta
 bi-thý'-nic-a
 bit-u'-min-o'-sa
 biv-al'-vè
 biv-it-ta'-tus
Bir-o'-næ
Bir-o-mó'-a
Bir'-a
Biz-in'-è-a
Black-bur'-ní-a
Black-bur-ný-a'-na
Blá'-rí-a
Blag-ay'-a'-na
Blá'-kè-a
Blan-co'-i
Blau-d-for'-di-a
 bland-for'-di-w-flo'-rum
 blan'-dum
Blan-guar'-li
 Blat'-ta
 Blat-ta'-rí-a
 Ble-chí-a'-na
 blech-nif-ol'-i-a
 blèch-ný-i'-des
 Blèch'-num
 Ble'-chum
Blee-ke'-rí-a
 Blen-noc-am'-ya
 Ble'-o
 bleph-ar-ig-lot'-tis*
 Bleph'-ar-is
 bleph-ar-oph-yl'-la
 Bleph-il'-i-a
Blet'-i-a
Bligh'-i-a
Bloo-mer-i'-a'-num
 Blou-do'-rí-i
 Blox'-am-i
 Blú'-mè-a'-num
 Blú'-mè-i
 Blu-men-a'-vi-a
 Blu-men-bach'-i-a
 Blú'-mý-a
 Blunt'-i-i

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Pronouncing Dictionary—continued.

Bor-a'-ri-a
 Bor-bā'-li-a
 Boc-co'-ni
 Boc-co'-ni-a
 Bō'-ber-a
 Bōh-me'-ri
 Bōh-me'-ri-a
 Bōn'-ning-hau-se'-ni-a
 boer-haav'-y-w-fol'-i-a
 Bo-er-haav'-Y-i
 bog-o'-ton-se
 bo-he'-mic-um
 Bois-si'-e'-ri
 Bois-si'-e'-ri-a'-na
 Bois-sō'-a
 Bot-vi'-ni
 Bot'-je-ri
 Bo-je-ri-a'-na
 Bol-am-de'-ri
 Bol-boph-yl'-lum
 Bol'-dō-a
 Bol'-dus
 Bo-le'-tus
 Bol'-r-um
 bol-iv-ri-a'-na
 bol-iv-ri-en'-sis
 Bol-lan'-di-um
 Bol'-lō-a
 Bol-lō-a'-na
 Bo l-uyll-er-Y-a'-na
 Bol-to'-ni-a
 Bol-u'-si-i
 Bom-a'-ri-a
 Bom-ba'-r-um
 Bom'-bax
 bom-bil-if'-or-a
 Bom'-bus
 Bom-byo'-id-um
 Bom-byo-i'-na
 Bom'-hyx
 bon'-a
 Bon'-a-Nox'
 Bo-nap-ār'-tē-a
 bon-a'-ri-en'-sis
 Bon-ar-o'-tu
 Bo-nar-ot-ri-a'-na
 Bon-a'-rō-a
 Bon-av-e'-ri-a
 Bon-du-el'-li
 Bon-gār'-di-a
 Bon-jean'-Y-a
 Bon-nay'-a
 Bon-ne'-ti-a
 Bon-plan-di-a'-na
 Bon-plan'-di-i
 Bōo-thi-a'-na
 Bōo'-thi-i
 Bor-a-gin-a'-cū-a
 Bor-a-gin'-s-um
 Bor-a'-go
 Bor-as'-sus
 Bor-bo'-ni-a
 bor-bo'-nic-a
 bor-ō-a'-lis
 Bork-hau-se'-ni-a

bor-ne-en'-se
 Bor-o'-ni-a
 Bor-rag-in-ō-i'-dēs
 Bor-rō'-ri-a
 Bor-rō-ri-a'-na
 Bor-ski-a'-na
 Borse-cho'-wi
 Bo-rj-a'-num
 Bo'-rj-i
 Bos'-ch'i-a'-nus
 Bos'-ci-a
 Bos-sel-ar'-i
 Bos-si'-a'-na
 Bos'-trich-us
 bos-trych-o'-dēs
 Bos-wel'-li-a
 Both-wich-Y-a'-num
 bot-ra'-na
 Bot-ry'-anth'-us
 Bot-ry'-ap'-l-um
 Bot-rych'-Y-um
 Bot-ry-od-en'-dron
 bot-ry-ō-i'-dēs
 bot-ry-oph'-or-a
 Bot'-rys
 bot-ry'-tis
 Bot-ter'-Y-i
 Bot-ty'-nō-a
 Bou-cer-o'-si-a
 Bou-che'-a
 Bou-che-a'-num
 Bou-gain-ril'-lō-a
 Bou-gain-ril'-lō-i
 Bou-gue'-ri-a
 Bour-gō'-i
 Bour-ga'-ti
 Bour-si'-e'-ri
 Bous-sin-gaul'-li-a
 Bou-tign-j-a'-num
 Bou-vār'-di-a
 Bo-vē'-a'-na
 Bow-e'-ni-a
 Bow-iē'-a
 Bow-iē-a'-na
 Bow-iē'-i
 Bow-ker'-i
 Bow'-man-i
 Bow-man'-ni
 Bow-ring-Y-a'-na
 Box-al'-li-i
 Boy'-lō-i
 Brab-ei'-num
 brac-am-o-ren'-sis
 Brach-ol-yl'-ra
 brach-y-a'-ta
 Brach-ý-ach-i'-ris
 brach-ý-an'-drum
 brach-ý-an-the'-rum
 brach-ý-arth'-ra
 brach-yb-ot'-ry-a
 brach-yb-ot-rys
 brach-yc-au'-los
 brach-yc'-er-as
 Brach-ych-i'-tōn*
 Brach-yc'-om-e

brach-yc-us'-pis
 Brach-yl-a'-na
 Brach-yl-o'-ma
 brach-yn-o'-ma
 brach'-y-od-on
 Brach-ý-o'-tum
 brach-yp-ot'-al-um
 brach-yph-yl'-la
 brach-yp'-od-a
 brach-yp'-ter-a
 brach'-yp-us
 Brach-yrh-yn'-chos
 Brach-y'-ris
 Brach-ys-o'-ma*
 brach-ys-ep'-al-us
 Brach-ys'-path-a*
 Brach-ys-tel'-na
 brach-ys-to'-mon
 Brack-en-ridg'-ri
 Bra-con'-id-um
 brao-lō-a'-ta
 Brac-lō-a'-tō
 brac-lō-ol-a'-tus
 brac-lō-o'-na
 brac-tōs'-cans
 Brad-bu-ri-a'-na
 Brad-hu'-ri-i
 Brad-lai'-a
 Bra'-hō-a
 Brai'-nō-a
 Bran-de'-gō-i
 bras-il-ri-a'-na
 bras-il-ri-en'-sis
 Bras-sa'-ro-la
 Bras-sa'-vol-um
 Bras'-si-a
 Bras'-sic-a
 Bras-sic-a'-cō-um
 bras'-sic-um
 bras-sic-um-fol'-Y-a
 Bras'-si-i
 Brau'-ni-i
 bra'-va
 Bra-ro'-a
 Bray'-a
 braz-il-ri-a'-na
 braz-il-ri-en'-sis
 Bre'-da
 Bre'-di-a
 Breh'-mī-a
 brev-Y-ar-in-ta'-ta
 brev-ic-an'-lis
 brev-if-ol'-l-a
 brev-if-roms
 brev-il-a'-min-a'-tum
 brev'-ip-ēs
 brev-ir-ost'-ris
 brev-is-ca'-pa*
 brev-is-e'-ta*
 brev-is-o'-rum
 brev-is-path'-a
 Brew-oor'-ti-a
 Brew-er'-Y-i
 Brey-ni-a'-na

Words derived from Latin and Greek (i.e., all except those in italics) to be pronounced as follows: ä as in Äp-art'; ä as in psä'-lmist; ä as in slän'-der; ä as in vō'-ined; Y as in thŷn; i as in mach-i'-nist; ö as in rövl'-ten; ö as in vō'-ter; ü as in pow'-er-fül; ü as in rü'-ler; ý as Y; ý as I; æ, œ, ei, as æ in pain; au as ou in house; g, c, and ch, always hard, as, for example, g in good, c in muscular, and ch in Christian. (For the old method, see page 276.)

* This word is discussed at the end of the Pronouncing Dictionary.

Pronouncing Dictionary—*continued.*

Brex'-i-a
 Brex-i-a'-cē-w
 Bridg-e'-sī-i
 Bridg-man'-ni
 brig-an'-tī-ac-a
 Brigg'-nī-i
 Brig-no'-lī-a
 Brill-an-tat'-sī-a
 bril-lī-an-tis'-sim-um
 Bri'-za
 bri-zō-for'-mis
 Broc'-chī-a
 Brockle-hurst-Y-a'-na
 Bro-dī-w'-a
 Brom-el'-i-a
 Brom-el-Y-a'-cē-w
 brom-el-Y-a'-fol'-i-a
 Brom-head'-Y-a
 Brom'-us*
 bron-chī-a'-lis
 Bronng-nī-ār'-lī
 Bronng-nī-ār'-lī-a
 Broo-k'-a'-num
 Broo-k'-lī-i
 Bro'-sim-um
 Brof'-er-a
 Brough-to'-nī-a
 Broun-son'-vī-a
 Broun-son'-vī-i
 Brown-al'-lī-a
 Brown'-p-a
 Brown'-sī-i
 Brown'-Y-i
 Brown-low'-Y-i
 Bru-an'-tī-i
 Bru'-cē-a
 Bru'-chid-a
 Bru'-chus
 Bruck-mül'-lor-i
 Brug-man'-sī-a
 Bru-ns-man'-Y-a
 bru-ma'-lo
 bru-ma'-ta
 Bru-nel'-la
 Brun-fel'-sī-a
 Brun-fel'-sī-i
 Bru'-nī-a
 Bru-nī-a'-cē-w
 bru-nī'-ad-ēs
 bru-nī-if-ol'-Y-a
 Brun-lee-sī-a'-num
 brun'-nē-a
 Brun-now'-Y-i
 Bru-no'-nī-a
 Bru-no'-nī-a'-na
 Bru-no'-nī-i
 Bru-no'-nī-s
 Bruns-vig'-Y-a
 bru'-tī-a
 Brŷ'-a*
 Brŷ-anth'-us
 Bry-mer-Y-a'-na
 brŷ-ō-i'-dēs
 brŷ-ol-oph'-yt-um
 Brŷ-o'-nī-a

brŷ-o'-nī-ø-fol'-Y-us
 Brŷ-o-nop'-sis
 Brŷ-oph-yl'-lum
 bu-bal-i'-na
 Bu-ba'-nī-a
 Bu-ba'-nī-i
 Bu'-bōn
 Bu-bro'-ma
 buo-cin-a'-tor
 Buc'-co
 buc-co'-sum
 bu-ceph'-al-a
 Bu-ceph'-al-on
 Bu'-cer-as
 Bu-chan-a'-ni
 Bu'-cid-a
 Buck-lan'-dī-a
 Budd-lei'-a
 budd-lei-ō-i'-dēs
 Buer'-ger-i
 Buelt-ne'-rī-a
 Buelt-ne'-rī-ō-w
 Bu'-fo
 bu-fo'-nī-a
 bu-fo'-nī-s
 Bu-glōs'-sum*
 bu-gul-if-ol'-Y-a
 hul-bif'-er-a
 Bul-bi'-ne
 Bul-bi-nel'-la
 bul-boc-o'-dī-ō-i'-dēs
 Bul-boc-o'-dī-um
 Bul-boph-yl'-lum
 bul-bo'-sa
 Bul-bos-per'-mum
 Bul-bos-tyl-is*
 bul-la'-ta
 Bul-len-Y-a'-nns
 Bul-len'-Y-i
 Bul-ler-Y-a'-num
 Bul-lī-ār'-da
 bul-lul-a'-ta
 Bu-low'-lī-a
 Bu-mal'-dī
 Bun-cho'-sī-a
 Bun-gē-a'-na
 Bun'-ge-i
 Bu-ol-i-a'-na
 Bu-o-nap-ār'-lī-a
 Bu'-phan-e
 būph-thal-mō-i'-dēs
 Būph-thal'-mum
 Bu-plen'-rum
 Bur-bid'-gē-a
 Bur-bid'-gē-i
 Bur-char'-dī-a
 Bur-chel'-lī
 Bur-chel'-lī-a
 Bur-chel'-lī-i
 bur-for-dī-en'-sī-s
 Bur-ger-Y-a'-na
 Bur-ges'-sī-w
 Burgs-dorf-Y-a
 Bur'-kē-i
 Bur-ling-to'-nī-a

Bur-man'-ni
 Bur-na'-tī
 Bur-sa'-rī-a
 Bur'-ser-a
 Bur-ser-a'-cē-w
 Bur'-ser-i
 Bur-ser-Y-a'-na
 Bur'-Y-i
 Bur-to'-nī-a
 Bur-to'-nī-i
 Bus-beck'-ō-a
 Bus-chī-a'-num
 Bu'-tē-a
 Bu-tom-a'-cē-w
 Bu'-tom-us*
 but-yr-a'-cē-a
 Bus-bau'-mī-a
 Bus-bau'-mī-i
 Bux'-i
 bux-if-ol'-Y-a
 Bux'-us
 Byr-son'-im-a
 Bys-trop-o'-gōn
 Byt-u'-rus
 byz-an-tī-num

Ca-ap-e'-lu
 Cab-al-le'-rī-a
 Cab-om'-ba
 Cab-om'-bē-w
 Cac-a'-lī-a
 cac-a'-lī-a-fol'-Y-a
 Cac-a'-o
 Cac-a'-ra
 Cac-ou'-cī-a
 Cac'-tē-a
 Cac-to'-rum
 Cac'-tus
 Cad-am'-bu
 Cæn-op'-ter-is
 Ca-en'-wood-Y-a'-na
 Cæ-o'-ma
 cær-ul'-ō-a
 cær-ul-es'-cens
 Cæs-al-pī'-nī-a
 Cæs-al-pī'-nī-ō-w
 cæ'-sī-us
 cæs-pit-o'-sum
 caf'-fra
 caf-fro'-rum
 Cai-nī'-to
 Cai-oph'-or-a
 ca'-ja
 ca-ja'-nif-ol'-Y-a
 Ca-ja'-nus
 Ca-ki'-le
 Cal-a'-ba
 cal-ab'-ric-a
 Cal-ab-u'-ra
 Cal-ad-e'-nī-a
 Cal-a'-dī-um
 Cal'-a-is
 Cal-am-ag-ro'-stis

Words derived from Latin and Greek (*i.e.*, all except those in italics) to be pronounced as follows: ä as in a as in pea'-mist; ê as in sîen'-der; ê as in ve'-ined; i as in thin; i as in mach-i'-nist; ô as in rô't-ten; ô as in vō'-ter; ù as in pow'-er-ful; ù as in ra'-ler; ŷ as I; ŷ as I; æ, œ, ei, as ai in pain; au as ou in house; g, o, and oh, always hard, as, for example, g in good, c in muscular, and oh in Christian. (For the old method, see page 276.)

* This word is discussed at the end of the Pronouncing Dictionary.

Pronouncing Dictionary—continued.

Cal-am'-ē-s
 Cal-am-in'-tha
 cal-am-it-o'-sum
 Cal-am-os-a'-gus
 Cal-am'-pe-lis
 Cal'-am-us
 Cal-an'-chē-e
 Cal-an-dri'-nī-a
 Cal-an'-the
 cal-an'-thum
 Cal-ath-e'-a
 cal-ath-i'-num
 cal-ca-ra'-ta
 Cal-cē-ol-a'-rī-ē-ē
 Cal-cē-ol-a'-rī-a
 Cal-cē-ol-us
 Cal-cit'-ra-pa
 Cal-da'-sī-a
 Cal-da-sī-a'-na
 Cal-d-clu'-vī-a
 Cal'-ē-a*
 Cal-ē-a'-na*
 Cal-ec-ta'-sī-a
 Cal-en'-du-la
 cal-en'-dul-a'-cē-num
 Cal'-ey-i
 cal-ij-or'-nic-us
 Cal-ī'-nē-a
 Cal-iph-ru'-rī-a*
 Cal-is-ay'-a
 Cal'-la
 cal-lē-fol'-i-num
 Cal-le'-rī-i
 Cal-lī-an-as'-sa
 Cal-lī-an'-dru
 cal-lib-ot'-rī-on
 Cal-lic-ar'-pa
 Cal-lich'-rō-a*
 Cal-lic'-om-a
 Cal-lic-or'-nī-a
 Cal-lic-ys'-thns
 Cal-lig-lōs'-sa
 Cal-lig'-on-um
 Cal-lim-or'-pha
 cal-li-op-sid'-ē-a
 Cal-lī-op'-sis
 Cal-lip-ro'-ra*
 Cal-lip-sy'-che*
 Cal-lip'-ter-is
 Cal-lirh'-ē-e
 Cal-lis'-tach-ys
 Cal-lis-tem'-ma*
 Cal-lis-te'-mōn*
 Cal-lis'-teph-us
 cal-lis-tog-lōs'-sa
 Cal-lith-au'-ma
 cal-lit'-rich-a
 Cal-lit'-ris
 Cal-lix'-en-e
 cal-lo'-sum
 Cal-lu'-na
 Cal-ob-ot'-rī-a
 Cal-och-i'-lus
 Cal-och-or'-tus
 cal-oc'-om-a

Cal-od-en'-dron
 cal-od-ic'-tī-on*
 Cal-od'-rac-on*
 cal-og-lōs'-sa
 Cal-og'-yn-e
 cal-om-el'-an-os
 Cal-om-er'-ī-a
 Cal-on-yc'-tī-on
 Cal-oph'-ac-a*
 Cal-oph'-an-ēs
 Cal-oph-yl'-lum
 cal-op-lee'-tron
 Cal-op-o'-gōn
 cal-op-ter'-um
 Cal-os-anth'-ēs
 Cal-os-coor'-dum
 Cal-os-tem'-ma
 Cal-oth'-am-nus
 cal-oth'-rix
 Cal-o'-tis
 Cal-ot'-rop-is
 Cal-pic-ar'-pum
 Cal-pid'-ī-a
 Cal'-tha
 Cal-um'-ha
 cal-n'-ra
 Cal-vert'-ī-a'-na
 cal-ver'-cens
 Cal-vō-a'-na
 Cal-yc-anth-u'-cē-us
 Cal-yc-auth'-us
 Cal-yc-if-lo'-ru
 cal-yc'-in-a
 Cal-yc'-ī-um
 Cal-yc-oph-yl'-lum
 cal-yc-o'-sa
 Cal-yc-os-tem'-ma
 Cal-yc-ot'-om-e*
 cal-yc-ot'-rich-a
 cal-yc-ul-a'-ta
 Cal-yd-er'-mos
 Cal-ym-o'-nī-a
 Cal-ym'-mod-on
 Cal-yp-lee'-tus
 Cal-yp'-so
 Cal-yp-tran'-thēs
 Cal-yp-tra'-rī-a
 cal-yp-tra'-ta
 Cal-yp'-trī-on
 Cal-yp-troc'-al-yx*
 Cal-yp-trog'-yn-e
 Cal-yp-tron'-om-a*
 Cal-ys-ac'-oī-on
 Cal-ys-teg'-ī-a*
 Cal-yth'-rix
 cal-yt'-rich-a
 Cal-yx'-hy-men'-ī-a*
 Cal'-mār-a
 Cam-ar-id'-ī-um
 Cam-ar-o'-tis
 Cam-as'-sī-a
 Cam-bes-se-de'-sī-a
 Cam-bo'-gī-a
 cam'-brī-ca
 Cam-brid-gē-a'-num

Cam-el'-ī-a*
 Cam-el'-ī-a
 cam-el'-ī-a-flo'-rum
 cam-el'-ī-a-fol'-ī-a
 cam-e-lo'-rum*
 Cam-er-o'-ni
 Cam-er-oo-nī-a'-num
 Cam-er-to'-ni
 Cam'-mar-um
 Cam-ē-en'-sī-a
 Cam-ol'-lī-i
 Cam-pa'-nē-a
 cam-pa'-nif-lo'-ra
 Cam-pa'-nul-a
 Cam-pa'-nul-a'-cē-ē
 cam-pa'-nul-a'-rī-a
 cam-pa'-nul-a'-ta
 cam-pa'-nul-if-lū'-ra
 cam-pa'-nul-ē-ī-dēs
 Cam-pa-num-a'-a
 Camp-bel'-lī
 Camp-bel'-lī-a
 Camp-bel'-lī-i
 cam-pe-chī-a'-num
 cam-pes'-tra
 Cam'-phor-a
 Cam-phor-as'-māe
 cam-phor-a'-tus
 Cam-pos'-ī-i
 Camp-sid'-ī-um
 Camp-te'-rī-a
 Camp-to'-dī-um
 camp-top-ot'-al-a
 Camp'-top-us
 Camp-tos-o'-rus
 camp-yl-ac-an'-tha
 Camp-yl-an-the'-ra
 Camp-yl'-ī-a
 Camp-yl-ob'-ot-rys
 camp-yl-oc-ar'-pum
 Camp-yl-oc-en'-tron
 camp-yl-og-lōs'-sa
 Camp-yl-on-our'-on
 ca'-na
 can-ad-en'-sē
 Can-a'-la
 can-a-lic-ul-a'-ta
 can-a'-rī-en'-sis
 Can-a-rī'-na
 can-a-rī-nō-ī-dēs
 Can-a'-rī-um
 Can-av-a'-lī-a
 Can'-bī-a
 Can'-hī-i
 can-cel-la'-ta
 can-dam-ar'-cen-sis
 can-de-la'-brif-or'-mis
 Can-de-la'-brum
 can'-dens
 can-ar-o'-tis
 can'-did-a
 can-did-a'-tum
 can-did-in'-sim-a
 can-did'-ul-um
 Can-dol'-lī-a

Words derived from Latin and Greek (i.e., all except those in italics) to be pronounced as follows: k as in kē-art'; ā as in pā-rlī-mist; ē as in slēn'-der; ē as in vē-ined; I as in thīn; I as in mach-ī-nist; ō as in rōl'-ten; ō as in vō'-ter; ū as in pow'-er-fūl; ū as in rā'-ler; y as I; y as i; æ, œ, ei, as ai in pain; au as ou in house; g, c, and oh, always hard, as, for example, g in good, c in muscular, and ch in Christian. (For the old method, see page 276.)

* This word is discussed at the end of the Pronouncing Dictionary.

Pronouncing Dictionary—continued.

Can-dol'-lě-a'-na
Can-dol'-lě-i
 Can-ol'-la
 Can-el-la'-cě-æ
 can-es'-cens
 Can-ic-id'-y-a
 can-i'-cul-a'-rie
 can-i'-na
 Can-i'-næ
 Can-is'-trum
 Can'-na
 can-nab'-in-a
 Can-nab-in-a'-cě-æ
 Can-nab-in'-ř-a
 Can'-nab-is
 can-nab'-y-um
 can-næ-fol'-y-um
 can-næ-for'-mě
Can-na'-ř-i
 Can'-nă-a
 Can-no'-ni
 Can-sco'-ra
 can-tab'-ric-us
Can-ter-bur'-j-a'-na
 Can-thar-el'-lus
Can'-thi-um
 can-ton-i-en'-sis
Can'-tă-a
 can'-tul-a
 ca'-num
 ca-pen'-să
 Ca'-pi-a
 cap-il-la'-cě-a
 cap-il-la'-re
 cap-il'-lif-ol'-y-a
 Cap-il'-lus-Ven'-er-is
 cap-is-tra'-tum
 cap-it-el-la'-tum
 Cap-no'-dŷ-um
 Cap-nor'-chis
 Cap-par-id'-ř-a
 Cap'-par-is
 Cap'-rě-a
 cap-re-a'-rum
 cap-rě-ol-a'-ta
 Cap-rif-ol'-y-a'-cě-æ
 Cap-rif-ol'-y-um
 cap-ri'-na
 cap-ř-ol-a'-ta
 Cap-ro-nŷ-a'-na
 Cap-rox'-yl-on*
 Cap'-sic-as'-trum
 Cap'-sio-um
 cap-sul-a'-ris
 cap'-ut-gal'-li
 Cap'-ut-Med-u'-sæ
 Car'-ab-us
 Car-ac-al'-la
 car-ac'-as-a'-num
 car-ac'-as-en'-sis
 Car-ag-a'-na
 Car-ag-u-a'-ta
 Car-al'-ř-a
 Car-al-lu'-ma
 car-am-an'-ic-um

Car-am-bo'-la
 Car-an'-das
 Car-a'-pa
 Car-av-a'-ta
 Car-be'-nŷ-a
 car-char'-y-as
 Car-dam-i'-ne
 car-dam-i'-ne-fol'-y-a
 Car-dam-i'-nes
 Car-dam-o'-mum
 Car-dar'-i
 Car-dŷ-an'-dra
 car-din-a'-lis
 car-dŷ-och-lŷe'-na
 car-di-op-et'-al-um
 car-di-oph-yl'-lus
 car-du-a'-cě-a
 car-du-if-ol'-y-us
 Car-dun-cel'-lus
 Car-dun'-cul-us
 car-dŷ-ř-i'-dēs
 Car'-dŷ-us
 Ca'-rox
 Ca'-řy-a
 Ca'-řy-a'-num
 Ca-rib-a'-um
 car-ib-e'-a
 Ca'-ri-ca
 ca-ric-if-ol'-y-a
 ca'-ric-in-um
 ca'-ric-is
 ca-ric-o'-sus
 Car'-ř-or
 car-ř-na'-lis
 car-ř-na'-tus
 car-ř-nif'-or-um
 car-in'-thŷ-ac-a
 Car-ř-o'-ni
 Car-ř-op'-sis
 car-ř-en'-sis
 Car-ř'-sa
 ca-riř-sim-a
 Car-li-e'-ri
 Car-li'-na
 Car-lu-dov'-ic-a
 Car-mi-cha'-ř-i-a
 Car-mi-cha'-ř-i-a
 Car-mŷ-o'-li
 car'-nă-a
 car-nŷ-ol'-ic-a
 car-no'-sul-a
 car-no'-sum
 Car-ol-i'-na
 Car-ol-i'-nă
 Car-ol-i'-nă-a
 car-ol-i'-nă-fol'-y-a
 car-ol-i-nen'-sis
 car-ol-i-nŷ-a'-na
 car-ol-i'-nus
 Car-o'-ta
 car-path'-ic-a
 Car-pen-te'-řŷ-a
 car-pŷ-nif-ol'-y-a
 Car-pŷ-nus*
 Car-poc-ap'-sa

Car-pod-i'-nus
 Car-pod-on'-tos
 Car-pol-y'-sa
 Car-pop-o'-gŷon
 Car-ře'-ři-a
 car-tha-gin-en'-se
 Car'-tham-us
 Car-thu-řŷ-a-no'-rur
 car-til-a-gin'-ě-um
 Car-to'-ni
 Carl-wright'-y-a'-nus
 car-ř-if-ol'-i-um
 Ca'-rum
 Ca-rum'-bŷ-um
 Car-un-cul-a'-řŷ-a
 Car-u'-to
 Car'-vi
 Car'-ř-a
 Car'-ř-oc-ar
 car-ř-oph-yl-lŷe'-a
 car-ř-oph-yl-la'-ta
 Car-ř-oph-yl'-ř-a
 Car-ř-oph-yl'-lu
 Car-ř-op'-ter-is
 Car-ř-o'-ta
 car-ř-o'-tæ-fol'-y-a
 Car-ř-ot-ax'-us
 car-ř-o-tid'-ř-um
 car-ř-o'-tŷ-i'-dēs
 Cas-ab-o'-na
 Cas-ca'-ri-a
 Cas-car-il'-la
 Cas-ř-a'-řŷ-a
 cash-m'-ri-a'-na
 Cas-im-ir-o'-a
 Cas-par'-ř-a
 Cas-par'-ř-a
 cas'-pi-a
 cas'-pic-a
 Cas-san'-dra
 Cas-seb-er'-ra
 Cas-seł'-i-a
 Cas'-řŷ-a
 cas-sŷ-ar-ab'-ic-us
 Cas'-sid-a
 Cas-sŷ-ine
 Cas-sŷ-nŷ-a
 Cas-sŷ-nŷ-a'-na
 cas-sŷ-nŷ-i'-dēs
 Cas'-řŷ-op-e
 cas-sŷ-bic-us
 Cas-sum-u'-nar
 Cas-řy'-tha
 Cas-řy'-thŷ-a
 cas'-ta
 Cas-tog'-nă-i
 Cas-tal'-y-a
 Cas-tan'-ř-a*
 Cas-tan-os-per'-mum
 Cas-til-lŷe'-ju
 Cas-til-lŷe'-a
 Cas'-tra
 Cas'-trum
 Cas-u-ar-i'-na
 Cas-u-ar-i'-nă-æ

Words derived from Latin and Greek (i.e., all except those in italics) to be pronounced as follows: *k* as in *řp-art'*; *ä* as in *psä-lmist*; *ř* as in *slřn'-der*; *ě* as in *ve'-ined*; *ŷ* as in *thŷn*; *ř* as in *mačh-ř-nist*; *š* as in *rřř-ten*; *š* as in *vo'-ter*; *ŷ* as in *pow'-er-fŷl*; *ŷ* as in *rŷ-ler*; *ř* as *ř*; *ř* as *ř*; *æ*, *œ*, *ei*, as *ai* in *pain*; *au* as *ou* in *house*; *g*, *c*, and *ch*, always hard, as, for example, *g* in *good*, *c* in *muscular*, and *ch* in *Christian*. (For the old method, see page 276.)

* This word is discussed at the end of the Pronouncing Dictionary.

Pronouncing Dictionary—continued.

Cat-ak-id-oz-a'-ml-a
 Cat-al'-pa
 cat-al-pæ-fol'-i-a
 Cat-an-anch'-o
 Cat-ap'-pa
 cat-ar-ac'-tæ
 Ca-ta'-ri-a
 Cat-as-e'-tum
 cat-aw-bi-on'-s
 Cat'-ech-u
 Cat-e-na'-ri-a
 Cates-bæ'-a
 Cates-bæ'-i
 Cath'-a
 ('ath-ar-anth'-us
 Cath-ar-i'-næ
 cath-ar'-tic-a
 ('ath-car'-ti
 Cath-car'-fl-a
 Cath-car'-fl-i
 Cat'-i-ang
 Cat'-il-lus
 Cat-ob-las'-tus
 Cat-op'-sis
 cat-op'-ter-on
 Cat-ra'-ri-a
 Catt-ley'-a
 Catt-ley-a'-num
 cau-caas'-ic-us
 cau-da'-tum
 cau-dic-ul-a'-tum
 cau-dif-or'-mis
 caul-es'-cens
 cau-ly-a-la'-ta
 cau-lif-lo'-ra
 Cau-loph-yl'-lum
 Cau-lo-ra'-pa
 cau-lor-rhi'-zus
 cav'-a
 Cav-an-til-le'-si-i
 Cav-en-dish'-i-a
 Cav'-en-dish-i'-a-num
 Cav-en-dish'-i-i
 cav-e'-ni-a
 cay-en-nen'-sè
 cè-an-o'-thif-ol'-i-a
 Cè-an-o'-thus
 cè-en-nen'-sis
 Cèb-ol-le'-ta
 Cè'-cid-om-y'-i-a
 Cè'-cid-om-y'-id-æ
 Cè'-cid-op'-tès
 Cè-oil'-i-a
 Cè-crop'-i-a
 Cèd'-re-la
 Cèd-re'-lè-æ
 Cèd'-ron
 Cèd-ron-el'-la
 Cèd'-rus*
 Cè-i'-ba
 Cè-laa-trin'-i-a
 Cè-las'-trus*
 cè-la-too-au'-lis
 Cè-lo'-si-a*
 Cèl'-si-a

Cèl-si-a'-na
 Cèl'-si-i
 Cèl-tid'-d-æ
 cel-tid-if-ol'-i-a
 Cèl'-tis
 Cèm'-bra
 cen-chrò-i'-dès
 cen-i'-si-a
 Cen-tau'-rè-a
 Cen-tau'-ri-um
 cen-tan-rò-i'-dès
 Cèn'-ter-æ
 cen-tet-e'-ri-us
 cen-tif-ol'-i-a
 Cen-tif-ol'-i-æ
 Cen-toth-e'-en
 Cen-trad-e'-ni-a
 Cen-tran-the'-ra
 cen-tran'-thif-ol'-i-us
 Cen-tran'-thus
 Cen-troc-ar'-phu
 Cen-tro'-ni-a
 Cen-trop-ot'-a-lum
 Cen-trop-o'-gôn
 Cen-tros-ol-e'-ni-a
 Cen-tros-to'-ma
 Cè-o'-dès
 Cè'-pa
 cè-pæ-vo'-rum
 cè-pa'-rum
 Ceph-a-o'-lis
 Ceph-al-an-the'-ra*
 Ceph-al-anth'-us
 Ceph-al-a'-ri-a
 Ceph-al-i'-na
 Ceph-al-on'-i-on
 cephal-o'-nic-a
 Ceph-al-ot-ax'-us
 cephal-o'-tès
 Ceph-al-o'-tus
 cè-pul-a
 cè-ram-flo'-ra
 cè-ram-en'-sis
 Cèr-an-the'-ra
 Cèr-as-ei'-dos
 cèr'-as-i
 cèr-as-if-er-a
 cèr-us-if-or'-mis
 cèr-us-ti-ò-i'-dès
 Cèr-as'-ti-um
 Cèr'-as-us
 Cèr-at'-i-ol-a*
 Cèr-at-oc-au'-la
 cèr-at-oc-au'-lis
 Cèr-at-oc-eph'-al-us
 Cèr-at-och-i'-lus
 Cèr-at-od-ac'-tyl-is*
 Cèr-at-og'-yn-um
 Cèr-at-ol'-ob-us
 Cèr-at-on'-g-on
 Cèr-at-o'-ni-a
 Cèr-at-op-et'-al-um
 cèr-at-oph-yl'-la
 Cèr-at-op'-ter-is
 Cèr-at-os-te'-ma

Cèr-at-os-tig'-ma
 Cèr-at-oz-a'-ml-a
 Cèr'-ber-a
 Cèr'-cis
 Cèr-oc-oar'-pus
 Cèr-oc-os'-por-a*
 cè'-ref-ol'-i-um
 cè-rè-if-or'-mis
 Cè'-rè-us*
 cè-rif'-er-a
 cè'-rin-a
 Cè-rin'-the
 cè-rin-thò-i'-dès
 Cèr-is'-cus
 cèr'-nù-a
 Cè-rop-o'-gi-a
 Cè-rop-las'-tès
 Cè-rox'-yl-on
 Cèr'-ris
 Cèr-ran-te'-si-i
 Cèr-vi-ca'-ri-a
 cèr-vi-ca-rò-i'-dès
 Cèr-vic-i'-na
 cèr-vi'-na
 cèr'-vus
 Cèr-ped-e'-si-a
 cèr-trò-i'-dès
 Cèr'-trum
 Cè'-ter-ach
 Cè-to'-ni-a
 Cen-torh-yn'-chus
 cey-lau'-ic-um
 Chab-ri'-e'-ri-i
 Chad'-a-ru
 Chæ-næ'-tès
 Chæ-næ'-thès
 Chæ-nos'-tom-a
 Chæ-roc-am'-pu
 chæ-roph-yl'-lò-i'-dès
 Chæ-roph-yl'-lum
 Chæ-tan-the'-ra
 Chæ-toe'-al-yx
 Chæ-toch-i'-lus
 Chæ-tog-as'-tra
 Chæ-tom'-i-um
 Chæ-tos'-por-a
 Chail-lu-a'-num
 Cha-i'-i-a
 Cha-i'-i-i
 Chak'-i-at-el'-la
 Chal'-cas
 chal-ce-don'-ic-um
 chal-cog'-raph-us
 cha-lep-en'-mis
 Cham-æ-bat'-i-a*-ri-a
 Cham-æ-buz'-us
 Cham-æ-cer'-as-us
 Cham-æ-cis'-tus
 Cham-æ-cyp'-ar-is
 Cham-æ-cyp-ar-is'-sus
 Cham-æ-dò'-rè-a
 Cham-æ-dò'-rè-a
 Cham-æ-drif-ol'-i-a
 Cham-æ-drif-ò-i'-dès

Words derived from Latin and Greek (i.e., all except those in italics) to be pronounced as follows: ð as in ðp-art'; à as in pæ'-lmist; è as in slèn'-der; è as in vè'-ined; i as in thîn; i as in mach-i'-nist; ò as in ròt'-ten; ò as in vò'-ter; ù as in pow'-er-fùl; ù as in rù'-ler; ý as i; ý as i; æ, o, ei, as ai in pain; au as ou in house; g, c, and ch, always hard, as, for example, g in good, c in muscular, and ch in Christian. (For the old method, see page 276.)

* This word is discussed at the end of the Pronouncing Dictionary.

Pronouncing Dictionary—continued.

Cham-w'-dry-on
 Cham-w'-drys
 Cham-w'-y-ris
 Cham-w'-jus-me
 Cham-w'-lau-ci-a'-c'-æ
 Cham-w'-lau'-ci'-æ
 Cham-w'-lau'-ci'-um
 Cham-w'-le'-don
 Cham-w'-mes'-pil-us
 Cham-w'-mo'-rus
 Cham-w'-pen'-ce
 Cham-w'-pit-ys
 Cham-w'-anth'-em-um
 Cham-w'-rhod-os
 Cham-w'-röps
 Cham-w'-steph-an'-y-um
 Cham-ber-lay'-ni-i
 Cham-is-so'-a
 Cham-is-so'-i
 Cham-is-so'-nis
 Cham-lu'-gu
 Cham-om-il'-la
 Cham-pa'-cu
 Cham-py'-o'-ni
 Chamul'-lar-i
 Cham-te'-ri-a
 Cham-li'-ni-i
 Cham-tré'-ri
 Cham-ro'-ni-i
 Cham-tal'-ya
 Cham-w'-y-as
 Cham-an'-y-a
 Cham'-y-ais
 Cham-wood'-y-a
 Cham-me'-li-i
 Cham'-can-um
 Cham-man'-thi-um
 Cham-lam'-ie-u
 Cham-ry'-ri
 Cham'-cu
 Cham-o'-ta
 Cham-bul-a
 Cham-anth'-e-s*
 Cham-anth'-um
 Cham-op-lec'-ton
 Cham-os-an'-dra
 Cham-at-ob'-y-a
 Cham-anth-if-ol'-y-a
 Cham-anth'-us*
 Cham'-ri
 Cham-if-ol'-y-um
 Cham-og-lös'-su*
 Cham-oph'-or-um
 Cham-os-te'-mön
 Cham-os'-tyl-is
 Cham'-ken
 Cham-i-don'-y-i
 Cham-i-don'-y-i'-dös
 Cham-i-don'-y-um*
 Cham-o'-nan-the'-ra
 Cham-o'-ne*
 Cham-o'-në-æ
 Cham-o-ni'-i'-dös
 Cham-so'-ni
 Cham-nop-od'-y-a'-c'-æ

Cham-nop-od'-y-um*
 Cham-e'-re
 Cham-im-o'-li-a
 Cham'-mes
 Cham-hunt-en'-sis
 Cham-ter-to'-ni-i
 Cham-al-li-e'-ra
 Cham'-a
 Cham-az'-os-per'-mum
 Cham'-ca
 Cham'-gua
 Cham-hu-ah-u-a'-na
 Cham-en'-sü*
 Cham-I-an'-dra*
 Cham'-y-oph-yl'-lum
 Cham-o'-di-a
 Cham-log-nath'-a*
 Cham-lop'-od-a
 Cham-lop'-sis
 Cham-los-tig'-ma
 Cham-w'-ra*
 Cham-maph'-il-a*
 Cham-bor-ac-en'-sis
 Cham-mon-anth'-us
 Cham-nen'-se
 Cham-oc-oc'-ca
 Cham-o-nanth'-us*
 Cham-o-nas'-pis
 Cham-on-en'-se
 Cham-o'-nod-ox'-a
 Cham-o-nog'-raph-is
 Cham-x'-ta
 Cham-rom'-yc-ës*
 Cham-ro'-ni-a
 Cham-o'-ni-a
 Cham'-ri-a
 Cham-yl'-y-a*
 Cham-yd-os'-tyl-is
 Cham-ys'-por-um
 Cham-id-anth'-us
 Cham-anth'-e-s*
 Cham-op'-sis
 Cham'-ra*
 Cham-ra'-c'-a
 Cham-ræ-fol'-y-a
 Cham-ranth'-a
 Cham-ranth-a'-c'-æ
 Cham'-ris
 Cham-ri'-ta
 Cham-roch-i'-lum
 Cham-rog'-al-um
 Cham-rö-i'-dös
 Cham-rol-eu'-cum
 Cham-ron-e'-ma
 Cham-ron-eur'-um
 Cham-roph'-rys
 Cham-roph'-yt-um
 Cham'-röps
 Cham-ros'-path-a
 Cham-ros-tic'-ta
 Cham-rox'-yl-on
 Cham-co-en'-sis
 Cham-rom'-yc-ës
 Cham'-sü-a
 Cham-ÿ-a'-na

Cham-el'-y-a
 Cham-drod-en'-dron
 Cham-dro-rhyn'-cha
 Cham-tal-en'-sis
 Cham-if-ol'-y-a
 Cham-re'-tis
 Cham-ris'-por-a
 Cham-ris'-tës
 Cham-iz'-em-a
 Cham-iz'-em-if-ol'-y-a
 Cham'-ti
 Cham-ti-a'-na
 Cham-tÿ-a'-num
 Cham-mat-el'-la*
 Cham-sac-anth'-us
 Cham-sal-id-oc-ar'-pus
 Cham-santh'-a
 Cham-santh'-em-if-ol'-y-a
 Cham-santh'-em-ö-y'-dös
 Cham-santh'-em-um*
 Cham-santh'-us
 Cham-sé-i'-dös
 Cham-se'-is
 Cham-siph'-y-al-a
 Cham-sob-æc'-tron
 Cham-sob-al-an'-i'-æ
 Cham-sob-al'-an-us*
 Cham-sob-ot'-ry-a
 Cham-soc-ar'-pa
 Cham-soc'-om-a
 Cham-so'-di-um
 Cham-sog'-on-um*
 Cham-sol-eu'-cum
 Cham-sol'-ob-um
 Cham-som'-el-as*
 Cham-som-el'-id-a
 Cham-so'-pa
 Cham-sop-et'-al-a
 Cham-soph-yl'-lum
 Cham'-sops
 Cham-sop'-sis
 Cham-sor'-nis
 Cham-sor'-rhë-a
 Cham-sos'-ci-as
 Cham-sos-ple'-ni-um
 Cham-sos'-tach-ys
 Cham-sos-tem'-ma
 Cham-sos-teph'-an-a*
 Cham-sos'-tom-a
 Cham-soth-am'-nus
 Cham-soth'-em-is
 Cham-soth-yr'-sus
 Cham-so'-tis
 Cham-sot-ox'-um
 Cham-sot'-rich-a
 Cham-sox'-yl-on
 Cham-su'-rus
 Cham-al'-y-a
 Cham-qui-ten'-sis
 Cham-lo'-di-a
 Cham-moc-ar'-pus
 Cham'-is
 Cham-trac-u'-li-a
 Cham-a'-ri-us
 Cham-o'-rö-i'-dös

Words derived from Latin and Greek (i.e., all except those in italics) to be pronounced as follows: ã as in a as in pã'-lmiet; ð as in slðn'-der; ë as in vë'-ined; Ý as in thÿn; ï as in mach-i'-nist; ö as in röt'-ten; ö as in vö'-ter; ü as in pow'-er-fül; û as in rü'-ler; ý as Ý; ý as Ý; æ, œ, ei, as æ in pain; au as ow in house; g, c, and ch, always hard, as, for example, g in good, c in muscular, and ch in Christian. (For the old method, see page 276.)

* This word is discussed at the end of the Pronouncing Dictionary.

Pronouncing Dictionary—continued.

Co'le'i
Cole-man'-'i-i
Col-en'-'sü-i
col-ë-ë-i'-'dës
Col-ë-on-e'-ma
Col-ë-oph'-or-a
Col-ë-op'-ter-a
Col-ë-or-por'-i-um
Col-er-o'-a
*Col'-ë-us**
Col-la'-nĭ-a
Col-le'-lĭ-a
Col-ley'-i
Col-lin'-nĭ-a
Col-lin-so'-nĭ-a
col-lĭ'-nus
Col-lod-o'-nĭ-a
Col-lo'-mĭ-a
Col-lyh'-ĭ-a
Col-oc-a'-sĭ-a
col-oc-a'-sĭ-æ-fol'-ĭ-a
Col-oo-yn'-this
Col-og-an'-ĭ-a
col-o'-num
col-o'-rans
col-o-ra'-ta
col-or'-ans
col-po'-dës
*Colqn'-houm'-ĭ-a**
Col-ub-ri'-na
Col-um'-ba
Col-um-ba'-rĭ-a
Col-um-ba'-rĭ-æ
col-umb-ĭ-a'-num
Col-um-ol'-la
col-um-ol-la'-ris
Col-um-ol'-lĭ-a
Col-um-ol-lĭ-a'-cĕ-a
Col-um'-mĭ
col-um-na'-rĭ
Col-um'-nĕ-a
Col-u'-rĭ-a
Col-ur'-na
Col-u'-tĕ-a
Col'-vil-le'-i
Co-ly'-sis
Com'-ĭ-au'-rĕ-a
Com-uc-li'-nĭ-um
com'-ans
Com-ar-op'-sis
Com-ar-os-taph'-yl-is
Com'-ar-um
Com-a-tog-lōs'-sum
com-a'-tus
Com-bre-ta'-cĕ-æ
Com-bre'-tum
Com-c-spor'-ma
Com-mel'-i'-na
Com-mel-i-na'-cĕ'-a
Com-mel-y'-ni
Com-mer-so'-ni
Com-mer-son'-ĭ-a
Com-mer-so'-nĭ-a'-na
Com-mer-so'-nĭ-i
Com-mĭ-anth'-us

com-mu'-nis
com-mu-ta'-tum
Com-oc-lad'-ĭ-a
com-o'-na
com-pac'-ta
Com-par-el'-lĭ-a
com-pla-na'-tus
com-plex'-a
com-plex'-a
com-plex'-a
com-plic-a'-ta
Com-pos'-it-æ
com-pos'-it-um
com-pres'-sum
Comp-san'-thus
Comp'-sĕ-a
comp'-ta
Comp-to'-nĭ-a
Comp-to-nĭ-a'-na
*Co-nan'-dron**
Co-nan'-the-ra
con-cav-æ-fol'-i-a
con'-cav-um
conch-æ-fol'-ĭ-a
conch-if'-er-um
conch-if-lo'-ra
conch-if-ol'-ĭ-a
conch-if-or'-mis
Con'-chĭ-um
con-cin'-na
con'-col-or
con-con'-dĭ-a
Con-dam-i'-nĕ-a
con-den-sa'-tus
con-fer'-ta
con-fer-tif-lo'-ra
con-fer-væ
con'-flū-ens
con-for'-mĕ
con-fu'-sa
con-ges'-ta
con-glom-er-a'-ta
co'-nic-um
Co-nif'-er-æ
co-nif-er-a'-ta
co-nĭ-if-ol'-ĭ-um
*Co-nĭ'-um**
con-jug-a'-tum
Con-nar-a'-cĕ-æ
Con'-nar-us
Co-noc-ar'-pus
Co-noc-eph-äl'-ĕ-æ
Co-noc-li'-nĭ-um
co-nĕ-i'-dĕ-us
Co-noph-ar-yn'-gĭ-a
co-nöp'-sĕ-a
Co-nos-per'-mum
Co-nos'-tach-ys
Co-nos-teg'-ĭ-a
Co-nos-teph'-ĭ-um
Co-not-rach-e'-lus
Co-not-rich'-ĭ-a
Con-rad'-ĭ-a
Con-rad'-ĭ-i
Con-sid-er-an'-ti
con-so-bri'-na
con-sol'-id-a

con-spic'-ĭ-a
con-strict'-um
con-ta-min-a'-ta
con-tig'-ĭ-um
con-tor'-ta
con-trac'-ta
con-tra-yer'-ba
Con-val-la'-rĭ-a
con-val-la'-rĭ-ë-i'-dës
Con-vol-vul-a'-cĕ-æ
con-vol-vul-a'-cĕ-um
Con-vol'-vul-us
Con-y'-za
con-y-zĕ-i'-dës
Coo'-kĭ-a
Coo-kĭ-a'-num
Coo'-kĭ-i
Coo-ling'-ĭ-i
Coo'-per-i
Coo-per'-ĭ-a
Coo-per-ĭ-a'-num
Cop-ai'-fer-a
Co-pal-li'-na
Cop-er-nic'-ĭ-a
Cop-ri'-nus
Cop'-ris
Cop-ros'-ma
Cop'-tis
Cor-ad-i'-nĕ-i
cor-al-lif-lo'-rum
cor-al'-lin-a
cor-al'-lip-es
Cor-al-lod-en'-dron
Co-ran'-ic-a
Cor-bar-ĭ-en'-sis
Cor-bul-a'-rĭ-a
Cor'-chor-us
Cor-co'-na-den'-sis
cor-da'-ta
Cor-der-oy'-i
Cor'-dĭ-a
Cor-dĭ-a'-cĕ-æ
cor-dif-lo'-ra
cor-dif-ol'-ĭ-us
cor-dig'-er-a
Cor-do-ben'-sis
Cor'-dyc-eps
Cor-dyl'-ĭ-ne
cor-dyl-i'-nĕ-i'-dës
Cor-o'-ma
Cor-e-op'-sis
Cor-e-θros'-tyl-is
Cor-go'-nen-sis
cor-ĭ-a'-cĕ-um
Cor-ĭ-an'-drum
Cor-ĭ-a'-rĭ-a
Cor-ĭ-a'-rĭ-ë-æ
cor-id-if-ol'-ĭ-um
Cor-id'-ĭ-on
cor-ĭ-if-ol'-ĭ-a
cor-ĭ-oph-yl'-la
Cor'-is
Cor-na'-cĕ-æ
Cor-ney-a'-na
cor-nic-ul-a'-tus

Words derived from Latin and Greek (i.e., all except those in italics) to be pronounced as follows: ã as in ãp-art'; ä as in psã-lmist; ë as in slën'-der; ë as in vë-ined; ĭ as in thĭn; ĭ as in mach-ĭ-nist; ö as in röt'-ten; õ as in vö'-ter; ù as in pow'-er-fäl; ũ as in rŭ'-ler; ŷ as ĭ; ŷ as ĭ; æ, œ, ei, as ai in pain; au as ou in house; g, c, and ch, always hard, as, for example, g in good, c in muscular, and ch in Christian. (For the old method, see page 276.)

* This word is discussed at the end of the Pronouncing Dictionary.

Pronouncing Dictionary—*continued.*

cor-nif-ol'-i-um
 cor-nig-er'-um
Cor-ning-i-a'-na
Cor-ning'-i-i
 cor-nu-bi-en'-se
 Cor-nu-coo'-pi-æ
 Cor'-nus
Cor-nu'-ti
Cor-nu'-ti-a
 cor-nu'-tum
Cor-o'-k'k'a
 Cor-ol'-lif-lo'-ræ
cor-om-an-del-i-a'-na
 cor-o'-nans
 cor-o-na'-ri-a
 cor-o-na'-ta
 Cor-o-nil'-la
 cor-o-nil-læ-fol'-i-a
 cor-o-nil-lô-i'-dês
 cor-o'-nop-if-ol'-i-a
 Cor-o'-nop-us
Cor-re'-a
 cor-ro'-æ-fol'-i-a
 cor-ru-ga'-ta
 cor-sic-a'-na
 cor'-sio-um
 cor-tic-ie'-ol-or
 cor-tic-o'-sni
 Cor-ti-na'-ri-us
Cor-tu'-sæ
cor-tu'-sæ-fol'-i-a
cor-tu'-sô-i'-dês
 cor-us'-ca
 cor-us'-cans
 cor'-vi
 Cor-ÿ-anth'-e-æ
 Cor-yd'-al-is
 Cor-yl-a'-cô-æ
 cor-yl-if-ol'-i-a
 Cor-yl-op'-sis
 Cor'-yl-us
 cor-ymb-if'-er-um
 cor-ymb-if-lo'-ra
 cor-ymb-o'-sum
 Cor-yn-e'-um
 Cor-yn-oc-ar'-pus*
 cor-yn-o'-dês
 Cor-yn-oph-al'-lus
 Cor-yn-os'-ty-lês
 Cor'-yph-a
 Cor-ys-an-the'-ra
 Cor-ys-an'-thês
 Cos-cin'-i-um
 Cos-man'-thus
 Cos-me'-li-a
Cos-mi-hu-e'-na
 Cos-mid'-i-um
 Cos'-mos
Cos-sig'-ni-a
 Cos'-sus
 Cos-tæ'-a
 cos-ta-ri-ca'-na
 cos-ta-ri-cen'-se
 cos-ta'-ta
 Cor'-tus

cot-in-if-ol'-i-um
 Cot'-in-us
 Cot-o'-nô-as'-ter
Cot-ty-a'-na
 Cot'-ul-a
 Cot-yl-e'-don
Cou-blan'-di-a
Coul'-ter'-i
Conl-ter'-i-a
Coul-ter'-i-a'-na
 Co'-um
Cour'-bar-il
Cour-cel'-li
Cour'-ger-o
Cou-rou-pi'-tu
Cour-sê'-ti-a
Cour'-tli-i
Cou-si'-ni-a
Cou-tu'-rê-a
Cou-tou'-bê-a
 Cow'-a
Cow-an'-i-a
 Cra'-bro
 Crac'-ca
 cra-co'-vi-a
 Cram'-be
 Cras-pod-a'-ri-a*
 Cras-ped'-i-a
 Cras-ped-ol'-op-is
 cras-sic-au-da'-ta
 cras-sic-au'-lis
 cras-sif-ol'-i-um
 Crass'-i-na
 cras-sin-er'-vi-um
 cras-sin-o'-de
 cras'-sip-ês
 Cras'-sul-a
 Cras-sul-a'-cô-æ
 crat-æg-if-ol'-i-a
 crat-æg-in-a
 crat-æg-ô-i'-dês
 Crat-æ'-gus
 Crat-æ'-va
 Cra-te-rel'-lus
 cra-te-rô-i'-dês
Craw-fur'-di-a
Cree-a'-na
 cre-na'-ta
 cre-na-tif-lo'-rum
 cre-na-tif-ol'-i-um
 cre-nu-la'-ta
 Cre-pid-a'-ri-a
 cre-pid-a'-tum
 Cre-pid-i-um
 Cre'-pis*
 crep'-it-ans
Cres-cent'-i-a
Cres-cent'-i-a'-cô-æ
 cre-ta'-cô-um
 cre-ten'-sis
 cre'-tic-us
 cri-nif'-er-a*
 cri-nif-lo'-rum
 cri-ni'-ta
 Crin-od-en'-dron*

Crin-o'-ni-a
 Crin'-um
 Cri-oo'-er-is
 cris'-pa
 cris-pa'-tum
 cris-pil-ab'-i-a
 cris'-pul-um
 Cris'-tâ-gal'-li
 Cris-ta'-ri-a
 cris-ta'-ta
 cris-ta-tol'-lum
 crith-mif-ol'-i-a
 Crith'-mum
 croc-a'-ta
 croc'-s-us
 croc-il-ip'-ter-nm
 croc-if-ol'-i-us
 Croc-os'-ni-a
 Croc-os-mif-lo'-ra
 Croc'-us*
 Cro'-sî-a
 Crœ'-sus
 Cro'-mi-a
 Crox-san'-dra
 Cross'-i-i
 Crof-al-a'-ri-a
 Crof'-ôn*
Crou'-cher-i
Crow'-z-a
Crow-z'-a'-na
 Cruc-i-an-ol'-la*
 cruc-i-a'-tum
 Cruc-if'-er-æ
 Cruc-if'-er-a'-ri-um
 cruc'-is
 crû-en'-ta
Cruik-shank'-i-a
Cruik-shank'-i-i
 Crus-gal'-li
 Crus-ta'-cô-æ
 Crux-And'-re-æ
 Cryp-tan'-thus
 Cryp-toc-am'-pus
 Cryp-toch-i'-lus
 cryp-too'-op-is*
 Cryp-toc-or'-yn-o
 Cryp-tog-am'-i-a
 Cryp-tog-ram'-me
 Cryp-tol'-ob-us
 Cryp-tom-er'-i-a
 Cryp-toph-rag'-mî-a
 Cryp-tos-ac'-cus
 Cryp-tos-o'-rus
 Cryp-tos'-tach-ys
 Cryp-tos-teg'-i-a
 Cryp-tos-tom'-ma
 Cryp-tow'-tyl-is
 crys-tal'-lin-um
 Cub-æ'-a
Cu-be'-ba
 cub-en'-sî
 cuc-u'-li
 cuc-ul-la'-ri-a
 cuc-ul-la'-tum
 cuc-um-er-if-ol'-i-us

Words derived from Latin and Greek (i.e., all except those in italics) to be pronounced as follows: ð as in ðp-art'; æ as in psæ-lmist; ê as in slên-der; ê as in vê-ined; ÿ as in thîn; ÿ as in mach-i'-nist; ô as in rôl'ten; ô as in vô-ter; û as in pow-er-fûl; û as in rû-ler; ÿ as ÿ; ÿ as ÿ; æ, œ, ei, as æi in pæin; æu as œu in house; g, o, and oh, always hard, as, for example, g in good, o in muscular, and oh in Christian. (For the old method, see page 276.)

* This word is discussed at the end of the Pronouncing Dictionary.

Pronouncing Dictionary—continued.

Cuc-um-is
 Cuc-ur-bit-a
 Cuc-ur-bit-a'-cō-æ
 Cuc-ur-bit-a'-rī-a
 cuc-ur-bit-i'-na
 Cud-ra'-nī-a
 Cu-jē'-le
 Cul-ca'-sī-a
 Cul'-cit-a
 Cul-ū-aw'-an
 cul-tra'-ta
 cul-trif-ol'-ī-um
 cul-trif-or'-mis
 Cum-ing'-ī-a
 Cum-ing-ī-a'-na
 Cum-ing'-ī-i
 Cum-ming'-ī-i
 Cui-rē-a
 cui-di'-nam-ar-con'-sis
 Cui-du-ram'-go
 eun-ē-a'-tus
 eun-ē-if-ol'-ī-um
 eun-ē-if-or'-mis
 Cun-i'-la
 Cu-nī'-na
 Cun-ning-ham'-ī-a
 Cun-ning-ham-ī-a'-na
 Cun-ning-ham'-ī-i
 Cu-no'-nī-a
 Cu-no'-nī-æ
 Cu-pa'-nī
 Cu-pa'-nī-a
 Cu-pa-nī-a'-nus
 Cu'-phē-a
 Cu'-pī-a
 cup-rē-a
 cup-rē-a'-ta
 cup-res-pin-mū'-ta
 Cup-res-sin'-ē-æ
 cup-res-sin-um
 cup-res-ō-i'-dēs
 Cup-res'-sus
 Cu-pul-if'-er-æ
 cu-ras-sav'-ic-um
 Cu-ra-tel'-la
 Cur-oul'-ig-o
 cur-oul'-ig-ō-i'-dēs
 Cur-oul'-ī-o
 Cur-oul-ī-o'-nid-æ
 Cur'-cum-a
 ('ur-mer'-ī-a
 Cur-nov-ī-n'-na
 Cur-ror'-i
 Cur-tis'-ī-a
 Cur-tis'-ī-i
 cur'-tum
 cur-va'-tor
 cur-va'-tum
 cur-vid-en-ta'-tum
 cur-vif-ol'-rus
 cur-vif-ol'-ī-um
 Cus-cu'-ta*
 Cus-cu-ta'-cō-æ
 cus-cu-tæ-form'-is
 Cus-pid-a'-rī-a

cus-pid-a'-ta
 Cus-so'-nī-a
 eu-tis-pon'-gī-a
 Cŷ'-am-us*
 Cŷ-an-anth'-us
 cy-an'-ē-a
 Cy-an-el'-la
 cŷ-an-oc-ar'-pus
 cŷ-an-oc-oc'-ca
 Cŷ-an-oph-yl'-lum
 cŷ-an-os-per'-ma
 Cŷ-an-o'-tis
 Cŷ-an'-us*
 Cŷ-ath'-ē-a*
 cŷ-ath-ē-æ-fol'-ī-um
 cŷ-ath-ē-ō-i'-dēs
 Cŷ-ath-o'-dēs
 Cy-ath-oph'-or-a
 Cyb'-el-o
 Cy-bel'-ī-on
 Cyb'-is-ter
 Cyc-ad-a'-cō-æ
 cyc-ad-ō-i'-dēs
 Cy'-cas
 Cy'-clam-on*
 Cy-clan'-dra
 Cy-clob-oth'-ra
 Cy-clo'-dī-um
 Cy-clog'-yn-æ
 Cy-clon-e'-ma
 Cy-clop-el'-tis
 Cy-clo'-pī-a
 Cy-clop-o'-gōn
 Cy-clos-te'-mon
 Cyc-no'-ches
 Cyd-o'-nī-a
 eyd-o'-nī-æ-fol'-ī-a
 Cyl-ic-ad-e'-nī-a
 eyl-in-dra'-cō-a
 eyl-in'-dric-um
 eyl-in'-drus
 Cyl-is'-ta
 Cy-mat'-ī-on
 Cym-bal-a'-rī-a
 Cym-bid'-ī-um
 cym-bif-or'-mis
 Cym-bū'-rus
 cy-mō'-sa
 cym-anch'-ic-a*
 cym-anch-if-ol'-ī-a
 cym-anch-ō-i'-dēs
 Cym-anch'-um
 Cyn'-ar-a
 cym-ar-ō-i'-dēs
 Cyn-ip'-id-æ
 Cyn'-ips
 Cyn-oc-ram'-be
 Cyn-oc-ton-um*
 Cyn'-od-on
 Cyn-og-lōs'-sum
 Cyn-om-e'-tra
 cym-oph-al-loph'-or-a
 Cyn-os'-bat-i
 Cyp-ar-is'-sī-as
 Cyp-el'-la

Cyp-e-ra'-cō-æ
 Cyp-e'-rus*
 Cy'-phī-a*
 Cy-phok-en'-fī-a
 Cy-phom-an'-dra
 Cy-phos-per'-ma
 Cyp'-ri
 Cyp-rip-ed'-ī-ē-æ
 Cyp-rip-ed'-ī-um*
 cyp'-rī-us
 Cy-ril'-la
 Cy-ril'-lō-æ
 Cyr'-ta
 Cyr-tan-dra'-cō-æ
 Cyr-tan-the'-ra
 Cyr-tan-thif-lo'-rum
 Cyr-tan'-thus
 Cyr-toe'-er-as
 Cyr-toch-ī'-lum
 Cyr-tod-ei'-ra
 Cyr-tom-iph-leb'-ī-um
 Cyr-tom'-ī-um
 Cyr-top-e'-ra
 Cyr-top-yl'-lum
 Cyr-top-od'-ī-um
 Cyr-tos'-tach-us
 Cys-tac-anth'-us
 Cys-tan'-the
 Cys-tid-ī-anth'-us
 Cys-top'-ter-is
 Cys'-top-us
 cyt-is-ō-i'-dēs
 Cyt'-is-us
 Cyt-oph-yl'-lum
 Cŷ-cū'-kī-a

Dab-o'-cī-a
 dac-ryd-ī-ō-i'-dēs
 Dac-ryd'-ī-um
 Dac'-tyl-ic-ap'-no.*
 dac'-tyl-if'-er-a
 dac'-tyl-if-ol'-ī-um
 Dac'-tyl-is
 Dac'-tyl-oc-ten'-ī-um
 dac-tyl-ō-i'-dēs
 dac'-tyl-on
 Dac-tyl-op'-ī-us
 dac-tyl-op'-ter-um
 Dac-tyl-os'-tyl-ēs
 dæ-dal'-ē-a
 Dæ'-mī-a
 Dæ-mo'-nor-ōps
 dag-u-en'-sē
 Dah'-hī-a*
 Da'-hoon
 da-hu'-ric-a
 Dā'-is
 Dal-ber'-gī-a
 dal-ber-gī-ō-i'-dēs
 Da'-lō-a*
 dal-ec-ar'-lic-a
 Dal-ech-am'-pī-a
 Dal-ech-am'-pī-i

Words derived from Latin and Greek (i.e., all except those in italics) to be pronounced as follows: ð as in *þp-art'*; å as in *pså'-lmist*; ð as in *slðn'-der*; ð as in *vð'-ined*; Y as in *thin*; I as in *mach-i'-nist*; ð as in *rðt'-ten*; ð as in *vo'-ter*; ð as in *pow'-er-fål*; ð as in *rð'-ler*; ŷ as I; ŷ as I; æ, œ, ei, as ai in *pain*; au as ou in *house*; g, o, and ch, always hard, as, for example, g in *good*, o in *muscular*, and ch in *Christian*. (For the old method, see page 276.)

* This word is discussed at the end of the Pronouncing Dictionary.

Pronouncing Dictionary—continued.

Dal-gairn'-sī-æ
Dal-hou'-sī-æ
Dal-ib-ār'-da
Dal-mai-sī-a'-na
dal-mat'-io-a
Dal-rymp'-lĕ-a
dam-as-ce'-na
Dam-as-o'-nī-nm
Dam-mar'-a
Dam-nao-anth'-us
Dam-pĕ-e'-ra
Dam-pi-e'-ri
*Da' nū-a**
Dan'-a-e
Da'-næ-a
Dau-ĭ-el'-ĭ-i
Daph'-ne
daph-ni'-tēs
daph-nō-i'-dēs
Da'rĕ-a
Da'r-ling-to'-nĭ-a
Dar'-win-i
Dar-win'-ĭ-a
Dar-win'-ĭ-i
das-ĭ-anth'-a
das-yc-ar'-pum
das-yc-eph'-al-um
Das-ych-i'-ra
das-yg-lōt'-tis
das-yl-i'-rĭ-tō-i'-dēs
Das-yl-i'-rĭ-on
das-yph-yl'-lu
das-yp-o'-gōn
das-ys-per'-ma
das-ys'-tyl-a
Dat-is'-ca
Dat-is'-cĕ-æ
Dat-u'-ra
Dau-ben-to'-nĭ-a
Dau-be'-nĭ-a
dau-cel'-lu
dau-eif-ol'-ĭ-um
Dau'-cus
da'u-ric'-a
Daut-wit'-zĭ-i
Dav-al'-lĭ-a
Dav-al-lĭ-a'-na
dav-al-lĭ-tō-i'-dēs
Dav-ĕ-au-a'-na
Dav-ĕ-au-ĭ-a'-na
Da-vid-ĭ-a'-na
Da-vid-so'-nĭ
Da-vid-so'-nĭ-a
Da-vie'-sĭ-a
Da-via'-ĭ-i
da-vu'-ric-um
Da'-vŭ-a
Daw-so'-nĭ
Daw-so-nĭ-a'-na
Day-a'-na
dĕ-al-ba'-ta
de Bar-y-a'-num
de-bil-e
Dec-ab-el'-on-e*
Dec-aisn'-ĕ-a

Dec-aisn-ĕ-a'-na
Dec-aisn'-ĕ-i
Dec-an-doll'-ĭ-i
dec-an'-dra
dec-ap-et'-al-a
Dec-as-per'-mum
Dec-as'-po-ra
dec-em-li-nĕ-a'-ta
dec-id'-ū-a
de-cip'-ĭ-ens
De k-er'-ĭ-a
Deck-er-ĭ-a'-num
de-cli-na'-tum
de-col-o'-rans
de-com-pos'-it-a
dec-o'-ra
dec'-or-ans
Dec-os-ter-ĭ-a'-na
dec-um-a'-na
Dec-um-a'-rĭ-a
de-cum'-bens
de-cur'-rens
de-cur-si'-va
dec-us-sa'-ta*
de-fic'-ĭ-ens
de-fix'-um
de-flex'-a
de-fol-ĭ-a'-rĭ-a
de-for-mans
de-for-mis
De-her-ain'-ĭ-a
Deil-iph'-il-a
Del-ab-e'-chĕ-a
Del-ar'-brĕ-a
Del-au-a'-na
de-lee'-ta
de-lĭo-a'-ta
de-lĭo-a-tis'-sim-a
de-lĭo-ĭ-o'-sa
De-li'-ma
De-los'-tom-a
del-phi-nen'-sis
del-phi-nif-ol'-ĭ-um
Del-phi'-nĭ-um*
del-tog-lōs'-um
del-toid'-ĕ-a
Del-to-ĭ'-des
Dem-ĭd-o'-rĭ-a
de-mis'-sum
De-moc-rit-e'-a
den-dri'-tic-um
Den'-dri-um
Den-drob'-ĭ-um
Den-droch-ĭ'-lum
Den-droc-ol'-la
den-drō-ĭ'-dĕ-um
Den-drol-ob'-ĭ-um
Den-drom-e'-con*
Den-drop'-an-ax
Den-dros'-er-is
Den-is-o-ni-a'-num
Den-is-o'-nĭ-i
Den-nis-o'-nĭ-i
Den-ni-stad'-lĭ-a
den'-sa

den-sa'-ta
dens'-can-is
den-sif-lo'-rum
Den-ta'-rĭ-a
den-ta'-ta
den-tic-ul-a'-tum
Den-tid'-ĭ-a
den-to'-sus
de-nu-da'-ta
De-oid-a'-ra
Dĕp-ar'-ĭ-a
de-pau'-per-ans
de-pau-per-a'-ta
de-pen'-dens
Dep'-pĕ-a
Dep-pa-a'-na
Dep'-pĕ-i
de-pres'-sa
De-pres-sa'-rĭ-a
de-pres-sel'-la
Der-maj'-ter-a
Der-mat-oph'-or-a
Der-wen'-ĭ-a
Dos-cant-a'-rĭ-a
Des-champ-sĭ-a'-na
de-scis'-cons
Des-er'-ĭ-i
Des-fon-tai'-nĕ-a
Des-manth'-us
Des-mel-ĭ-a'-na
Des-moch-a'-ta
Des-mō-dĭ-um
des-mon-tō-ĭ'-dēs
Des-mon'-cus
de-struc'-tor
dĕ-us'-tus
Denl'-zĭ-a
Dev-an-say-n'-na
de-vas-ta'-trix
Dev-e-au-a'-na
Dev-o-ĭ-ĭ-a'-num
Dev-o-ĭ-ĭ-on'-sis
Dev-o-sĭ-a'-na
Dĭ-ac-al'-pō
dĭ-no-an'-tha
Di-ae'-rĭ-um
dĭ-ad-e'-ma
dĭ-ad-o-mn'-tus
Dĭ-a'-næ
dĭ-an'-dra
Dĭ-a-nel'-la
Dĭ-an-tho'-ra
dĭ-anth-ō-ĭ'-dĕ-a
di-anth-ō-ĭ'-dĕ-a
Dĭ-anth'-us
Dĭ-ap-en'-sĭ-a
Dĭ-ap-en-sĭ-a'-cĕ-æ
dĭ-ap-en-sō-ĭ'-dēs
dĭ-aph'-an-um
Dĭ-aph'-or-a
Dĭ-aph-or-anth'-em-a
Dĭ-as'-ĭ-a
Dĭ-as'-ĭ-a
Dĭ-as-pĭ'-næ
Dĭ-as'-pis

Words derived from Latin and Greek (i.e., all except those in italics) to be pronounced as follows: k as in *ĕp-art'*; ð as in *psĕ-lmĭst*; ð as in *slĕn'-der*; ð as in *vĕ'-ined*; ĭ as in *thin*; ĭ as in *mach-ĭ'-nist*; ō as in *rōl'-ten*; ō as in *vō'-ter*; ū as in *pow'-er-fūl*; ū as in *rū'-ler*; ŷ as ĭ; ŷ as ĭ; æ, œ, ei, as ai in *pain*; au as ou in *house*; g, c, and ch, always hard, as, for example, g in *good*, o in *muscular*, and ch in *Christian*. (For the old method, see page 276.)

* This word is discussed at the end of the Pronouncing Dictionary.

Pronouncing Dictionary—continued.

Di-as-tel'-la
 Di-as-te-man'-the
 Di-as'-troph-us
 Dib-blem'-ma
 Dic-on'-tra
 Dic-er'-ma
 Dich-a'-a*
 Dich-op'-sis
 Dich-o'-ris-an'-dra
 Dich-os-e'-ma
 Dich-os'-ma
 dich-ot'-om-a
 dich'-rō-a
 Dich-ro'-ma
 Dich-ros'-tach-yx
 Dich-rot'-rich-um
 Dick-ie-a'-na
 Dick-so'-ni
 Dick-so'-nī-a
 Dick-so-nī-a'-na
 Dic-lip'-ter-a
 Dic-lyt'-ra*
 dic-oc'-cum
 dic-ra-nan-the'-rum
 Dic-ra-nu'-ra
 Dic-tam'-nus
 Dic-ty'-anth-us
 Dic-tym'-i-a
 dic-ty-oc-ul'-lis
 Dic-ty-og-ram'-mō*
 Dic-ty-op'-ter-is
 Dic-ty-op'-ter-yx
 Dic-ty-os-per'-mu
 Dic-ty-ox-iph'-y-um
 Dic-yr'-ta
 Did-ī-e'-ri
 Did-is'-eus
 did-is'-tich-a
 did'-ym-a
 Did-ym-oc-ar'-pus*
 Did-ym-och-lu'-na
 Did-ym-os-per'-ma
 Di-ef-fen-bach'-i-a
 Di-el'-i-a
 Di-el-yt'-ra*
 Di-er-a'-ma
 Di-er-vil'-lu
 Di-et'-es
 dif-for'-me
 dif-fu'-sus
 Dig-by-a'-na
 Dig-it-a'-lē-æ
 dig-it-a-lif-lo'-rum
 Dig-it-a'-lis*
 Dig-it-a'-ri-a
 dig-it-a'-ta
 Dig'-raph-is
 Digs-wel-lī-a'-na
 di-la-ta'-tum
 Dil-a'-tris
 di-la'-tum
 Dil-le'-nī-a
 Dil-le-nī-a'-cē-a
 Dil-le'-nī-i
 Dill-wyn'-i-a

di-mid-y-a'-tum
 Dim-oc-ar'-pus
 Dim-orph-anth'-us
 Dim-orph-oth-e'-ca
 dim-orph'-um
 Di-nē'-tus
 Din-eu'-ra
 di-od'-on
 di-oi'-ca
 Di-o-nē'-a
 Di-o'-on
 Di-o-po'-gōn
 Di-os-cor'-s-a
 Di-os-cor'-s-a'-cē-æ
 Di-os-cor'-s-æ
 Di-os-cor'-id-is
 Di-os'-ma
 di-os-mæ-fol'-i-a
 di-os-mif-ol'-i-a
 di-os-nū-i'-dēs
 Di-os'-pyr-os*
 Di-o'-tis
 Dip-ca'-di
 dip-ot'-al-a
 Diph-ac-a
 diph-yl'-la
 Diph-yl-lei'-a
 Diph-y'-sa*
 dip-lac-anth'-a
 Dip'-la-eus
 Dip-la-dō-nī-a
 dip-laz-y-ō-i'-dēs
 Dip-laz'-y-um
 Dip-loc'-thrum
 Dip-loc'-al-yx
 Dip-loch-i'-ta
 Dip-loc'-om-a
 Dip-lo'-dī-um
 Dip-log-as'-tra
 Dip-lol-a'-na
 Dip-lon-e'-ma
 Dip'-lon-yx
 Dip-lop-ap'-pus
 Dip-loph-yl'-lum
 Dip-lo'-sis
 Dip-loth-e'-mī-um
 Dip-od'-y-um
 Dip-sac'-s-æ
 dip-sac'-s-us
 Dip'-sac-us
 Dip'-ter-a
 Dip-ter-ac-anth'-us
 Dip-ter-oc-ar'-pē-æ
 Dip-ter-oc-ar'-pus
 Dip'-ter-yx
 dip-yr-e'-na
 Dir'-ea
 dirh'-od-a
 Di'-sa
 Dis-an'-dra
 Dis-ar'-ren-num*
 Dis-ca'-ri-a
 Dis-chid'-i-a
 dis-coi'-da-lis
 d's'-col-or

Dis-com-yc-e'-tēs
 Dis-el'-ma
 Dis-em'-ma
 Dis-oc-ac'-tus
 Dis-oc-ap'-nos
 dis'-par
 Dis'-por-um
 dis-sec'-tum
 dis-sim'-il-e
 Dis-sit-if-lo'-ra
 dis-tach'-y-a
 dis-tach'-y-on
 dis'-tans
 Dis-teg-anth'-us
 dis-tich-anth'-a
 dis'-tich-on
 dis'-tich-um
 dis-til-la-to'-ri-a
 Dis-trep'-ta
 dis'-tyl-a
 Dis-tyl'-y-um
 Dit'-ul-a
 Dy-a'-ris
 dī-ur'-na
 Dy-n-rog-lōs'-sum
 di-va-ric-a'-tus
 di-ver'-gens
 di-ver-sif-lo'-ra
 di-ver-sif-ol'-i-a
 di'-ves
 di-vi'-sa
 dix-anth'-um
 Dix-i-a'-na
 Do-be'-ra
 Dodd'-sī-i
 do-dec-an'-dra*
 Do-dec-ath'-i-on
 Dodg-so'-ni
 Dodg-so'-nī-i
 Dod-on-æ'-a
 Dod-on-æ'-æ
 Dod-on-æ'-i
 Do-el-lī-a'-num
 dol-a'-brif-or'-me
 dol-ich-oc-en'-tra*
 dol-ich-orb-i'-za
 Dol'-ich-os
 Dol-y-oc-ar'-pus
 Dol-lin-e'-ra
 dol-o'-sum
 Dom-bey'-a
 dom-vey-a'-num
 Dom-bey'-s-a
 dom-es-tic-a
 dom-in-gev'-sis
 Dom-in-y-a'-na
 Dom-in'-y-i
 Dom-in'-ul-a
 Dom-in-ÿ-a'-num
 Don'-ax
 Donck-el-aar'-y-i
 Don'-dī-a
 Don-dī'-s-a
 Don-er-avil-en'-sis
 Don'-y-a

Words derived from Latin and Greek (i.e., all except those in italics) to be pronounced as follows: ð as in ðp-art'; ð as in psæ'-lmist; ē as in slēn'-der; ē as in vē'-ined; f as in thīn; f as in mach-i'-nist; ō as in rōt'-ten; ō as in vō'-ter; ū as in pow'-er-fūl; ū as in rā'-ler; ŷ as Y; ŷ as I; æ, œ, ei, as ai in pain; au as ou in house; g, c, and ch, always hard, as, for example, g in good, c in muscular, and ch in Christian. (For the old method, see page 276.)

* This word is discussed at the end of the Pronouncing Dictionary.

Pronouncing Dictionary—continued.

Don'-y-a'-na
 Don'-y-i
 Don-ing-ton-en'-sis
 Donk-el-aar-y-a'-na
 Doo'-dī-a
 Dor-coo'-er-as
 Dor'-ous
 Do-re'-ma
 Do'-ri-a
 Dor-man-y-a'-na
 Do-ro-ni'-cum*
 Dor-ste'-ni-a
 Dor-ŷ-anth'-ē-s*
 Dor-yc'-ni-um
 Dor-ŷ-op'-ter-is
 Dor-yph'-or-a
 Dos-si'-ni-a
 Do'-su-a
 Doth-id-y-a'-cē-w
 Doug-las'-y-n
 Doug-las-y-a'-na
 Doug-las'-y-i
 Dov-as-to'-ni
 Dow-ŷ-a'-na
 Dow-ing'-y-a
 Down-ing'-y-a
 Dra'-ba
 dra-bif-ol'-i-a
 Drac-æ'-a
 Drac-æ'-na
 Drac-æ-nop'-sis
 Drac'-o*
 Drac-oc-eph'-al-um
 Drac-o'-nis
 Drac-on'-ti-um
 Drac-oph-yl'-lum
 Drac-o'-pis
 drac-un'-cul-ō-i'-dēs
 Drac-un'-cul-us
 Dra-kæ'-a
 Dra-kē'-a-na
 Dre-gē'-a-na
 Dre'-gē-i
 Dre-gī'-a-na
 Dre'-gī-i
 Drop-an-oc-ar'-pus*
 drep'-an-um
 Dri'-lus
 Dri'-mī-a*
 Drī'-mī-op'-sia
 Dri-moph-yl'-lum
 Dri'-mys
 Dri'-mys-per'-mum
 Dros'-er-a
 Dros-er-a'-cē-w
 dros-er-ō-i'-dēs
 Dros-oph-yl'-lum
 Dru'-dī-i
 Drum-mon'-dī-a
 Drum-mon'-dī-a'-na
 Drum-mon'-dī-i
 dru-pa'-cē-a*
 Dru-pa'-cē-w
 dru-pa'-rum
 dru-pif'-er-a

Dru'-ry-i
 dry'-ad-ēs
 dry'-ad'-ē-us
 Dry-an'-dra
 dry-an-drō-i'-dēs
 Dry'-as
 Dry'-mo-da
 Dry-mog-lōs'-sum
 Dry-mo'-ni-a
 Dry-moph-lōs'-us
 Dryn-a'-ri-a
 Dry-ob-al'-an-ōps*
 dry-og'-raph-us
 Dry-oph-an'-ta
 Dry-op'-ter-is
 Dry-os-tach'-ŷ-um
 Dry-ob'-er-as
 Dry'-pet-ēs
 Dry'-pis
 dub'-y-a
 Du-boi'-si-a
 Du-breu-il'-y-a
 Du-char'-trē-i
 Du-chek'-y-a
 Du'-chol-a
 Duf'-ŷy-i
 Dul-cam-a'-ra
 Dul'-cis
 Du'-ll-a
 Du-ma'-si-a
 Du-mor-il'-y-a
 du-me-to'-rum
 Du-mor-ti-e'-ri
 du-mo'-sum
 Dun'-ny-i
 Du-per'-ry-a
 du-pla'-na
 du'-plex
 du'-plic-a'-ta
 du'-ra
 du-rac'-in-a
 Du-ran'-ta
 Du-ra'-ti-i
 Du-rim-in'-y-um
 Du'-ry-o
 du-ri-us'-cul-a
 Du'-tra
 Du-val'-y-a
 Du-val-y-a'-na
 Du-vau'-a
 Dyck'-y-a
 Dyp'-sis
 Dys-o'-da
 Dys-o'-dī-a
 Dys-soch-ro'-ma

 Ē-ar'-in-a
 Earl'-y-a
 Earl'-y-i
 Eal'-on-i
 Eb-en-a'-cē-w
 eb-en-a'-cē-um
 Eb'-en-us

Eb-er-mas'-er-a
 o-brac-tē-a'-tus
 Eb'-ul-us
 eb-ur'-nē-a
 Ec'-w
 Ec-bal'-ll-um
 Ec-crem-oc-ar'-pus
 Ech-ar'-dī-a
 Ech-er-e'-ri-a
 Ech-id'-ni-um
 Ech-id-nop'-sis
 eoh-y-if-lo'-ra
 Ech-i-na'-cē-a
 Ech-i-nanth'-ua
 Ech-i-na'-ta
 eoh-i-nif-or'-mis
 Ech-i'-noc-oc'-tus
 eoh-y'-noc-ar'-pa
 Ech-y'-noc-e'-rē-us
 Ech-i-nooh'-lo-a
 Ech-i'-noc-ys'-tis
 Ech-i'-nōps
 Ech-i-nop'-sis
 eoh-i-nos-ep'-al-a
 Ech-i-nos-per'-mum
 Ech-i-nos-tach-ys
 Ech-y-o-glōs'-sum
 Ech'-y-ō-i'-dēs
 Ech-y-op'-sis
 Ech-i'-tēs
 Ech'-y-um
 Eck-hard'-ti
 Eck-lou-y-a'-na
 Ec'-lop-ēs
 e-cor-nu'-tum
 e-den'-tul-a
 Edge-worth'-y-a
 Edge-worth'-y-i
 Edg-worth'-y-i
 Ed-rai-anth'-us
 Ed-u-ar'-dī
 ed-u'-llē
 Ed-war'-dī
 Ed-ward'-si-a
 ef-fa'-sus
 Eg-en-olf'-y-a
 Eg-er-to-nī'-a-num
 Eg-lan-to'-ri-a
 Eg-lan-to'-ri-w
 Eh-ren-bar-gi-u'-na
 Eh-re'-ll-a
 Eh-re'-ll-ē-w
 Eich-hor'-nī-a
 Eich-be'-ri
 Ek-ob-er'-gī-a
 El-w-ag-nī'-cē-w
 el-w-ag-nif-ol'-i-us
 ol-w-ag-nō-i'-dēs
 El-w-ag'-nus
 El-m'-is
 El-w-oc-ar'-pus
 El-w-od-en'-dron
 El-aph-og-lōs'-sum
 El-aph-rox'-yl-on
 el-as'-tic-a

Words derived from Latin and Greek (i.e., all except those in italics) to be pronounced as follows: ä as in äp-art'; ä as in psä-lmist; ð as in alēn'-der; ē as in vē'-ined; Y as in thēn; I as in mach-i'-nist; ð as in rōt'-ten; ö as in vō'-ter; ū as in pow'-er-fäl; ū as in rā'-ler; ŷ as Y; ŷ as I; w, œ, ei, as ai in pain; au as ou in house; g, o, and ch, always hard, as, for example, g in good, o in muscular, and ch in Christian. (For the old method, see page 276.)

* This word is discussed at the end of the Pronouncing Dictionary.

Pronouncing Dictionary—continued.

El'-at-e
 El-at-e'-rij-dæ
 El-at-e'-rij-um
 El-at-i'-næs*
 el-at-i'-num
 e-la'-tj-or*
 e-la'-tum
 El-dor-a'-do
 E-lec'-tra
 e-lec'-tric-us
 e'-leg-ans
 e-leg-an-tis'-sim-a
 El-em-re-tj-a'-na
 El-eng'-i
 el-eph-an'-tip-ës
 el-eph-an'-tum
 El-eph-an-tu'-ti-a
 El-et-ta'-rj-a
 El-ou-si'-ne
 El-ich-ry'-sum
 E-li'-sen-a
 El-iz-ab-e'-thw
 El-la-com'b'-i
 El-lë-anth'-us
 El-lem-ee'-ti
 El-liol'-ti-a
 El-liol-ly-a'-num
 el-lip'-tic-a
 El-lis'-ti
 El-lob-oc-ar'-pus
 El-o'-düs-a
 el-o'-düs
 e-long-a'-tus
 El-po'-nör
 El-u-ter'-i-a
 el-us'-ton-en'-sis
 El-wang-er-y-a'-na
 El-wes'-ti
 El-wor'-thi-i
 El-ym-us
 e-mar-gin-a'-ta
 Em-be'-ly-a
 Em-both'-rij-um
 Em-brj-op'-ter-is
 E-mor-ic'-i-a
 Em-er-so'-ni
 E'-mer-us
 em-ot'-ic-a
 e'-min-ons
 Em-o'-di
 Em-me'-nan-the
 Em-pet-ra'-cö-m
 em-pet-rif-ol'-i-a
 em-pet-rif-or'-mis
 Em-pet'-rum
 Em'-phyt-us
 Em-pleu'-rum
 Em-pu'-sa
 Em-ar'-gö-a
 en-cel-ly-ë-i'-dös
 En-ceph-al-ar'-tos
 En-cy'-oll-a
 En'-der-a
 En-dj'-vrl-a
 End-lich-e-ri-a'-na

en-doch'-ar-is
 En-dop-i'-ssa
 En-dre'-vi-i
 En'-dros-is
 en-e-mid-oph'-or-um
 En-e'-mY-on
 En-gel-man'-ni
 Enk-i-anth'-us
 en-nö-aph-yl'-la
 e-no'-dis
 E-no'-dij-um
 en'-sa-ta
 En-so'-to
 en-sif-ol'-i-a
 en-sif-or'-mis
 En-ta'-da
 En-tel-e'-a
 en-tom-or-rhi'-za
 E-o-mö'-cön
 E-o-pep'-ön
 ep-ac-rid'-ö-a
 Ep-ac-rid'-ö-m
 ep-ac-ry-ë-i'-dës
 Ep'-ac-ris
 Ep-oi'-ra
 E-ph-od'-ra
 eph-ed-rö-i'-dës
 E-ph-e'-mer-um
 E-ph-ip'-pl-um
 Ep-ic-ar-pu'-rus
 Ep-id-en'-drö-m
 Ep-id-en-drö-i'-dës
 Ep-id-en'-drum
 Ep-ig-m'-a
 Ep-ig-yn'-i-um
 Ep-il'-i-num
 Ep-il-ob'-y-um
 Ep-im-e'-dij-um
 Ep-ip-ac'-tis
 Ep-iph'-or-a
 op-ip'-ter-a
 Ep-iph-yl'-lum
 Ep-ip-rem'-num
 Ep-is'-ol-a
 Ep-is-teph'-y-um
 Ep-ith'-ym-um
 Ep-rem-ë'-nil-y-a'-num
 eq-ues'-tris
 eq-ui'-na
 Eq-uis-e-ta'-cö-m
 Eq-uis-e'-ti
 eq-uis-e'-tif-ol'-i-a
 Eq-uis-e-tin'-ö-m
 Eq-uis-e'-tum
 Er-ag-ro'-stis
 E-ran'-thom-um
 Er-an'-this
 Erb-li'-cht-a
 Er-cil'-la
 Er-de'-ly-i
 er-e-cif-ol'-i-a
 e-rec'-ta
 Er-em-baul'-ti
 Er-e'-ml-a*
 er-e-mic'-ol-a

er-e-mi'-ta
 Er-e-moph'-il-a
 Er-e-mos-tach'-ys
 Er-e-mu'-rus
 Er'-i-a*
 er-Y-anth'-a
 er-Y-an-the'-ra
 Er-Y-anth'-us
 Er-i'-ca*
 Er-i-ca'-cö-m
 er-i'-cö-fo'l'-i-a
 er-i'-cif-ol'-i-a
 Er-i'-cin-el'-la
 er-ic'-ö-i'-dës
 E-rig'-er-ön*
 E-rin-a'-cö-a*
 Er-i'-nö-um*
 er-i'-nö-i'-dës
 Er-i-nos'-ma
 Er-i'-nus
 Er-Y-ob-ot'-rj-a
 Er-Y-ob-ul'-bæ
 Er-Y-oc-al'-ly-a
 Er-Y-oc-am'-pa
 or-Y-oc-ar'-pa
 Er-Y-oc-ar'-pha
 er-Y-oc-ar'-pon
 Er-Y-oc-an'-lon
 Er-Y-oc-an-lo'-nö-m
 er-Y-oc-eph'-al-a
 Er-Y-och-i'-lus
 Er-Y-oc-ne'-ma
 Er-Y-oc'-om-a
 Er-Y-od-en'-dron
 Er-Y-og'-on-um
 Er-Y-og-yn'-i-a
 Er-Y-ol-w'-nö-m
 Er-Y-op-ap'-pus
 Er-Y-oph'-or-um
 Er-Y-oph-yl'-lum
 Er-Y-op'-sis
 Er-Y-os-e'-ma
 Er-Y-os-per'-mum
 Er-Y-os-te'-mön
 Er-Y-os'-tom-um
 Er-iph-i'-a
 Er-is-y'-phe
 Er-is-y'-phö-m
 Er-ith'-al-is
 Er-it-rich'-y-um
 er-min-i'-num
 Er-no'-dö-a
 Er-od-en'-dron
 Er-o'-dij-um
 e-ro'-sa
 Er-o'-tö-um
 Er-pöt'-y-on
 er-ra'-tic-a
 e-rub-es'-cens
 Er'-vum
 E-ryng'-y-um
 Er-ys'-im-um
 Er-ys-i'-phe*
 Er-ys-i'-phe-m
 Er-yth-e'-a

Words derived from Latin and Greek (i.e., all except those in italics) to be pronounced as follows: ä as in äp-art'; a as in psä-lmist; ä as in släu-der; ö as in vö-ined; Y as in thjn; i as in mach-i'-nist; ö as in rö't-ten; ö as in vö'-ter; ü as in pow'-er-ül; ä as in rä'-ler; j as i; y as i; æ, œ, ei, as ai in pain; au as ou in house; g, c, and ch, always hard, as, for example, g in good, c in muscular, and ch in Christian. (For the old method, see page 276.)

* This word is discussed at the end of the Pronouncing Dictionary.

Pronouncing Dictionary—continued.

Er-yth-ræ'-a
 Er-yth-ri'-na
 er-yth-roc-ar'-pum
 er-yth-roc-eph'-al-us
 Er-yth-roch-a'-te
 Er-yth-roch-i'-ton
 Er-yth-rod'-an-um
 Er-yth-ro'-dēs
 Er-yth-rol-s'-na
 er-yth-ron-e'-ma
 Er-yth-ro'-ni-um
 er-yth-roph-s'-a
 Er-yth-roph-læ'-um
 er-yth-rop'-od-a
 er-yth-rop'-ter-us
 er-yth'-rop-us
 er-yth-ror'-ach-is*
 Er-yth-ror'-chis
 Er-yth-rorh-i'-za
 er-yth-ros-o'-rum
 er-yth-ros-tic'-tum
 Er-yth-ro'-tis
 er-yth-rox-anth'-um
 Er-yth-rox-yl'-i-æ
 Er-yth-rox'-yl-on
Es-cal-lô'-ni-a
Es-cal-lô'-ni-æ
Es-che'-ri-a
Esch-scholtz'-i-a
 es-cul-en'-ta
 E'-scul-us
Es-mer-ul'-da
Es-pel-e'-i-a
Es-tri'-da
 e-strî'-lus
Eth-an'-i-um
 Et-rus'-ca
 e-tu-ber-o'-sum
 Eu-ad-e'-ni-a
 Eu-cal-yp'-tus
 Eu-che'-tis
 Eu-char-id'-i-um
 Eu'-char-is
 Eu-chi'-lus
 Eu-chlæ'-na
 Eu-chro'-ma*
 Eu-cle'-a
 Eu-cni'-de*
 Eu-co-do'-ni-a
 Eu'-com-is
 Eu-cros'-i-a
 eu-cros-ÿ-ð-i'-dēs
 Euc-ryph'-i-a
 Eu-des'-mi-a
 Eu'-dol-on
Eu-ge'-ni-a
Eu-ge'-nis
 eu-ge-ni-ð-i'-dēs
 eu-glôs'-sa
 Eu-lal'-i-a
 Eu-loph'-i-a
 eu'-loph-um
 Eu-nar-cis'-sus
 Eu-nom'-i-a
 Eu-o'-nym-i

Eu-o'-nym-us*
 Eu-os'-ma
 Eu-pæ-cil'-i-a
 eu-pat-or'-ÿ-ð-i'-dēs
 Eu-pat-or'-ÿ-um
 eu-phleb'-i-a*
 Eu-phor'-bi-a
 Eu-phor-bi-a'-cæ-a
 Eu-phras'-i-a
 Eu-phras'-ÿ-æ
 Eu-plex-op'-ter-a
 Eu-pod'-i-um
 Eu-pæ-cil'-i-a
 Eu-po-ma'-ti-a
 Eup'-ter-yx
 eu-ro-pæ'-a
 Eu-rÿ'-a
 Eu'-rÿ-âl-e
 Eu-rÿ-an'-dra
 Eu-ryb'-i-a
 Eu-ryc'-lēs
 Eu-ryc-li'-ne
 Eu-ryg-an'-i-a
 eu-rÿ-ð-i'-dēs
 Eu'-rÿ-ðs
 Eu'-scaph-is*
 Eu-sel-a'-gin-el'-la
 eu-so'-rum
 Eu-steg'-i-a
 Eu-steph'-i-a
 Eu'-stom-a
 Eu'-stroph-us
 Eu'-styl-is
 Eu-tax'-i-a
 Eu-ter'-pe
 Eu'-thal-ôs
 Eu'-toc-a
 Eu-u'-ra
 eux-an'-thin-um
 Eu-xen'-i-a
 E-val-la'-ri-a
Ev-ans'-i-a
Ev-ans-i-a'-nus
 e-vec'-tum
Ev-el-y'-na
 E-vol'-vul-us
Ev-er-i-a'-na
Ev-ers'-i-i
 Ex'-ac-um
 ex-al-ta'-ta
 ex-as-per-a'-tum
 Ex-cæ-ca'-ri-a
 ex-cav-a'-tum
 ex-cel'-lens
 ex-cel'-sa
 ex-ci'-sa
 ex-cla-ma'-ti-o'-nis
 ex-coul'-ta
 ex-ig'-i-a
 ex-im'-i-a
 Ex-it-e'-ly-a
 ex-it-y-o'-sum
 Ex-o'-as-cus
 Ex-o'-car-pus
 Ex-o'-chor-da

Ex-o-gon'-i-um*
 ex-ol-o'-ta
 ex-on-ÿ-en'-sis
 ex-o-rhi'-za
 ex-or-na'-ta
 Ex-o-stem'-ma
 Ex-o-thos-te'-ni-ô
 ex-o'-tic-a
 ex-pan'-sum
 ex-sca'-pa
 ex-sculp'-ta
 ex-sec'-tum
 ex-ser'-ta
 ex-sur'-gens
 ex-ten'-sum
 ex-ting-to'-ri-a
 ex-u'-dans
 ex-uv-i-a'-a
Ey-rē-n
Ey-rē-i
Ey-rie'-si-i
Ey-sen-hardt'-ÿ-i

Fab'-a
 fab-a'-cæ-a
 Fab-a'-cæ-w
 Fab-a'-go
Fab-i-a'-na
Fab-ric'-i-a
 fac-o'-tum
Fad-ÿen'-i-a
Fad-ÿen'-i-i
Fa-gu'-ra
Fa-gel'-i-a
 Fa'-gi
 fa-gif-ol'-i-a
 fa-gin'-i-a
 Fa-gop-y'-rum
Fag-ra'-a
 Fa'-gus
Fair-ic-a'-na
 fal-ca'-ta
 fal-cif-ol'-i-a
 fal-cif-or'-mo
 fal-cin-el'-lum
Fal-con-e'-ra
Fal-con-e'-ri
Fal-ken-ber'-ÿ-i
Fal'-ki-a
falk-lanul'-ic-um
 fal'-lax
Fal-lu'-ÿ-a
Far-a'-mæ-a
Far'-far-u
Far-fu'-ÿi-um
 far-i-na'-cæ-a
 far-i-nif'-er-a
 far-i-no'-sa
Far-ley-en'-i-æ
Far'-mer-i
Far-ne-si-a'-na
Far'-rer-æ
Far-ne'-ÿ-a

Words derived from Latin and Greek (i.e., all except those in italics) to be pronounced as follows: æ as in *æp-art'*; ä as in *psä-lmist*; ð as in *slæn'-der*; ð as in *vð'-ined*; ÿ as in *thÿn*; ÿ as in *mach-i'-nist*; ð as in *rðl'-ton*; ð as in *vð'-ter*; ð as in *pow'-er-fäl*; ð as in *rü'-ler*; ÿ as ÿ; ÿ as ÿ; æ, œ, ei, as at in *pain*; au as *ou* in *house*; g, c, and ch, always hard, as, for example, g in *good*, c in *mnscular*, and ch in *Christian*. (For the old method, see page 276.)

This word is discussed at the end of the Pronouncing Dictionary.

Pronouncing Dictionary—*continued.*

fas-cel-i'-na
 fas-cia'-ta
 fas-cic-ul-n'-ris
 fas-cic-ul-a'-ta
 fas-cin-a'-tor
 fas-ti-gi-a'-ta
 fas-tu-o'-sa
 Fat-ra'-a
 Fat'-at-a
 Fau-con-ne'-ti
 fav'-id-um
 fav-o'-sa
 feb-rif'-ug-um
 Fe'-dya*
 Feil-schen'-kö-i
 Fe'-ä-a
 Fe'-ä-i
 fe-je-en'-sö
 Fe-lie'-i-a
 fe-li'-na
 fel-os'-ma
 Fend'-ler-i
 fen-es-tra'-lis
 fen-es-trel'-lum
 fen-es-trel'-la
 fen'-nic-a
 Fon-u'-sa
 Fenz'-li-a
 Fenz'-li-a'-na
 Fenz'-li-i
 Fer-din-an'-da
 Fer-e'-ri-a
 Fer-gus-so'-ni
 Fer-nan'-dw
 Fer-nand-e-si-a'-num
 Fer-nan-de'-zi-a
 Fer-né'-li-a
 fer-o-cis'-sim-us
 Fe-ro'-ni-a
 fer'-ox
 Fer-ra'-ri-a
 Fer-ra'-ri-ol-a
 fer'-rö-a
 Fer'-rö-ol-a
 fer-ré'-ren-sö
 fer-ru-gin'-ä-a
 Fer'-ni-a
 fer-ul-a-fol'-i-a
 Fer-ul-a'-go
 fes-ti'-va
 Fes-tu'-ca
 Feu-il-lu'-a
 Feu-ül'-li-i
 Fer-il'-lä-a
 Fi-bril-la'-ri-a
 fi-bro'-sa
 Fi-ca'-ri-a
 fi-cif-ol'-i-a
 fi-cö-i'-dä-a
 Fi-cö-i'-dä-w
 Fi'-cus
 Fi-do'-ni-a
 Field'-i-a
 Field'-i-w
 Field-ing'-i-i

fi-jen'-sis
 fi-lam-en-to'-sa
 fi-la'-rö
 Fildes'-i
 fi-lia'-lis
 Fil'-io-ös*
 fil-ic-if-ol'-i-a
 fil-ic-i'-na
 fil-ic-ö-i'-des
 Fil-ic'-ul-a
 fi-lif'-er-a
 fi-lif-ol'-i-um*
 fi-lif-or'-mis
 Fi-lip-en'-dul-a
 fi-lip-en'-dul-if-ol'-i-um
 Fi'-lip-ös
 Fil'-ix-fa'-min-a
 Fil'-ix-ma-s'
 fim'-brä-a
 Fim-brä-a'-ri-a
 fim-brä-a'-ta
 Fünd-ley-a'-num
 Fünd-on-en'-sis
 fir'-na
 fir-ma'-ta
 Fis-che'-ra
 Fis-che'-ri
 Fis-che'-ri-a
 Fis-che'-ri-a'-na
 Fis-ae'-ni-a
 fis-sif-ol'-i-a
 Fis-sil'-i-a
 fis'-sum
 Fis-tul'-i-na
 fis-tul-o'-sa
 Fit-to'-ni-a
 Fitz-ger-al'-di
 Fitz-roy'-a
 fla-bel-la'-ta*
 fla-bel-lif-ol'-i-um
 fla-bel-lif-or'-mis
 fla-bel-lul-a'-ta
 flac'-cid-a
 Flac-our'-li-a
 Flac-our'-li-ö-w
 flag-el-lu'-ri-*
 flag-el-la'-ta
 flag-el-lif-er-um
 flag-el-lif-or'-mis
 flag-el'-lum
 flam'-mä-a
 Flam'-mul-a
 flu'-va*
 flu'-vens
 flu'-völ-um
 Fla-ve'-ri-a
 fla-ves'-cens
 fla-vic'-om-a
 flu'-vid-us
 fla-vis-pi'-na
 fla-vis'-sim-um
 fla-vo'-sum
 flu'-vus
 Flem-ing'-i
 flex'-il-is

flex'-um
 flex-ü-o'-sa
 Flin-der'-si-a
 flocc-co'-sa
 flo-ra'-lis
 flo'-re-al'-bo
 flo-ren-ti'-na
 flo'-re-ple'-no
 flo-ri'-un'-da
 flo-ric'-ol-a
 flo'-rid-a*
 flor-id-a'-num*
 flor-id-en'-sis
 Flörk-i-a'-na
 flo-ral-en'-ta
 Flos-cuc-u'-li
 flos-cul-o'-rum
 Flueg'-gä-a
 Flüg'-gä-a
 flü'-lt-ans
 fluy-i-a'-til-is
 fœ-min-a
 fœ-min'-ä-a
 fœ-nic-ul-a'-cö-um
 Fœ-nic'-ul-um
 fœ-nis-cc'-i-i
 Fœ-num-Grav'-cum
 Fœt-at-ax'-us
 fœt'-id-a
 Fœt-id'-i-a
 fœt-id-is'-sim-a
 fol'-i-i*
 fol'-i-is-an'-rö-is
 fol-l-ol-o'-sa
 fol-l-o'-sa
 fol-lie-ul-a'-ris
 Fon-tan-e'-si-a
 Fon-tan-e'-si-a'-na
 Fon-tan-e'-si-i
 fon-ta'-num
 Fon-tin-a'-lis
 Fool'-i
 Forbes-i-a'-num
 Forbes'-i-i
 Ford'-i-i
 for-fic-a'-lis
 For-fic-ul-a
 for-mi'-cus-for'-mis
 For-mi'-cid-w
 for-mo'-sa
 for-mo-sa'-na
 for-mo-sis'-sim-a
 For-res'-ti-a
 Fors-kol'-ö-i
 Fors'-ter-a
 Fors'-ter-i
 Fors-ter-i-a'-num
 For-sy'-thi-a
 For-tu'-nä-a
 For-tu-nä-a'-na
 For-tu-nä-i
 fos-sul-a'-tus
 Foth-er-gil'-la
 Foth-er-gil'-li-a
 Foth-er-gil'-li-i

Words derived from Latin and Greek (i.e., all except those in italics) to be pronounced as follows: ä as in äp-art'; ä as in psö-luist; ö as in slän-der; ö as in vö-ined; Y as in thén; i as in mach-i'-nist; ö as in röb'-ten; ö as in vö'-ter; ü as in pow'-er-fäl; ü as in rü'-ler; ý as i; æ, œ, ei, as ai in pain; au as ou in house; g, c, and ch, always hard, as, for example, g in good, c in muscular, and ch in Christian. (For the old method, see page 276.)

* This word is discussed at the end of the Pronouncing Dictionary.

Pronouncing Dictionary—continued.

foth-er-gil-lë-i'-dës
Fou-qui-e'-ra
Fou-qui-e'-rë-më
Four-croy'-a
Four-ni-e'-ri
fov-ë-a'-rum
fov-ë-a'-tum
Fov-ë-ol-a'-rë-a
Foz'-Y-i
frac-tif-lex'-a
*Fra-ga'-ri-a**
fra-ga'-ri-ë-i'-dës
fra-gif'-er-a
frag-il-if-ol'-Y-a
frag'-il-is
fra-grans
fra-gran-tis'-sim-a
Fran-cis'-cë-a
Fran-co'-a
Fran-co'-ë-më
Fran-co'-nis
Frang'-ul-a
Frank-en'-Y-a
Frank-en-Y-a'-cë-më
frank-en-Y-ë-i'-dës
Frank-lin'-Y-i
Fran-so-ni-a'-na
Fra'-ser-a
Fra'-ser-i
frax-in'-ë-a
Frax-in'-ë-më
Frax-in-ol'-la
frax-in-if-ol'-i-um
frax-in-i-if-ol'-i-um
Frax'-in-us
Fred-er-i'-ci
Freo-man'-Y-i
Frees'-Y-a
Fre-mon'-ti
Fre-mon'-ti-a
Fre-mon-ti-a'-na
Fre-mon'-ti-i
Fre-nel'-a
Frey-cin-e'-ll-a
Frez-ë-e'-ra
Fri-der-i'-ci-Au-gus'-ti
Fried-riehs-thal'-i-a
Fries'-Y-a
fri'-gid-a
Fris'-ch'i-i
Fris-el'-lë-më
Frit-il-la'-ri-a
Priv-al'-di-a
Fru'-hel-i
Fru-hel'-li-i
Fru-lieh'-Y-a
Frol-o'-ri-a
Fro-lo'-vë-a
fron'-dë-a
fron-dë'-sa
fruc-tig'-en-um
fruc-tip-en'-dul-a
fruc'-tu-lu'-të-a
*Frut-es'-ca**
frut-es'-cens

frut-e-to'-rum
frut'-ex
frut-ic-o'-sum
frut-ic-ul-o'-sum
fu-ca'-tum
*Fuch'-st-a**
fuch-st-ë-fol'-Y-a
fuch-st-ë-i'-dës
fu-cif-or'-mis
Fuck-el-Y-a'-na
fug'-ax
Fu-go'-st-a
Ful-ohir-o'-ni-a
ful'-gens
ful'-gid-a
ful-ham-en'-sis
fu-li-gin-o'-sa
Ful-lo'-num
ful-va'-ta
ful-ves'-cens
ful'-vus
Fu-ma'-go
Fu-ma'-na
Fu-ma'-ri-a
Fu-ma-ri-a'-cë-a
fu-ma-ri-a-fol'-i-i
Fu-ma'-ri-ë-më
fu-ma-ri-ë-i'-dës
fu-mip-en'-nis
fu-na'-lis
Funk'-Y-i
fu-nëb-ra'-na
fu-në'-bris
fu-nes'-tum
Fun'-gi
fung-o'-sa
fu-nic-ul-a'-ta
Fu-nic'-ul-us
fu-nif'-er-a
Funk'-i-a
Funk-Y-a'-num
fur'-cans
fur-ca'-tus
Fur-cræ'-a
fur'-cul-a
fur'-ens
fur-fur-a'-cë-a
Fur-sten-ber'-gi
Fu-sa'-ri-um
fus'-ca
fus-ca'-ta
fus-cen'-cens
fus'-cif-rons
fus'-co-vir'-id-is
fus'-cum
Fu-sic-lad'-Y-um
*fu-sif-or'-mis**
Fu-sis-por'-Y-um
Fu-tok-ad-sn'-ra
Fytch-Y-a'-num

Gærl'-ner-a
Gærl-ner-Y-a'-num

Ga'-gë-a
Gagn-eb-i'-na
Gail-lar'-dë-a
Gair-Y-a'-num
*Gal-ac'-ti-a**
Gal-ac-ti'-tës
Gal-ac-tod-en'-dron
Gal-ang'-a
gal-anth-if-ol'-Y-us
Gal-auth'-ns
Gal-at-el'-la
Gal'-ax
Gal-ax'-Y-a
ga'-ban-if'-lë-a
Gal'-ban-um
Ga'-le
Gal-ë-an'-dra
Gal-ë-a'-ta
Gal-ë'-dup-a
Gal-ë'-ga
gal-ë'-gif-ol'-Y-a
gal-ë'-gif-or'-mis
gal-o'-gë-i'-dës
Gal-ë-ob'-dol-on
Gal-e-og-lës'-sum
Gal'-ë-ol-a
Gal-ë-op'-sia
Gal-ë-ol'-të-i
Gal-ë-ol'-të
Gal-ë-ol'-të-a
Gal-ë-ot-të-a'-na
gal-ë'-ric-ul-a'-ta
Gal-Y-a'-cë-më
Gal-tin-so'-gë-a
gal-Y-ë-i'-dës
Gal-yp-e'-a
Gal'-Y-um
gal-lu'-rum
gal'-li
gal'-lic-a
gal-lic'-ol-a
gal-lic-ë-i'-dës
Gal'-li-i
*Gal-phë'-më-a**
Gal-to'-në-a
Gal-va'-në-a
Gam'-bë-er
gam-bo'-sus
Gam'-na
Gam-mie-a'-na
Gam-och'-lam-ys
gan-dav-en'-sis
gan-dë-en'-sis
gan-gil-o'-nif-or'-mis
Gan-ym-e'-dës
gan-ym-e'-dë-i'-dës
Gar-ci-a'-na
Gar-ci'-në-a
Gar-dë'-në
Gar-de'-në-a
gar-de-ni-ë-Y'-dës
Gard'-ner-i
Gard-ner-Y-a'-na
Gard-ner'-Y-i
Gard-do'-qui-a

Words derived from Latin and Greek (i.e., all except tho-e in italics) to be pronounced as follows: ä as in *äp-art'*; ä as in *psä-lmist*; ë as in *slän'-der*; ë as in *vë'-ined*; Y as in *thÿn*; i as in *mach-ë'-nist*; ð as in *röb'-ten*; ö as in *vö'-ter*; ü as in *pow'-er-fül*; û as in *rü'-ler*; ý as Y; ý as i; æ, æ, ei, as ai in *pain*; au as ou in *house*; g, c, and ch, always hard, as, for example, g in *good*, c in *muscular*, and ch in *Christian*. (For the old method, see page 276.)

* This word is discussed at the end of the Pronouncing Dictionary.

Pronouncing Dictionary—continued.

gar-gan'-ic-a
 Gar-gan'-tū-a
 Gar-id-el'-la
 gar-ī-ep'-in-um
 Gar-nī-e'-ri-a'-na
 Gar-re-s-ī-a'-na
 Gar'-rjā
 Gar-rjā-a'-cē-æ
 Gar-u'-ga
 Ga-sip'-ū-ōs
 Gas-ke-l-ī-a'-na
 Gas-be'-ri-a
 Gas-lo'-ni
 Gas-to'-nī-a
 Gas-troc-ar'-pha
 Gas-tro'-dī-a
 Gas-trol-ob'-ī-um
 Gas-trom-or'-ī-a
 Gas-tron-e'-ma
 Gau-dich-au'-dī-a
 Gau-dich-au'-dī-a'-num
 Gau-dich-au'-dī-i
 Gau-thē'-ri-a
 Gau'-ra
 Gau'-sī-a
 Gau-ly-e'-ri
 Gay'-a
 Gay-u'-num
 Gay-lus-sā'-cī-u
 Ga-za'-nī-a
 Ge-as'-tor
 Geb-au'-ga
 geb-el'-ī-a
 Geb-le'-ru
 Ge-er'-ī-a
 ge-if-ol'-ī-a
 Geis-so'-is
 Geis-som-er'-ī-a
 Geis-sō-rhi'-za
 Gel-as-i'-ne
 gel'-id-a
 Gel-o'-nī-um
 Gel-som'-ī-ē-æ
 Gel-sem'-ī-um
 gem-in-a'-tū*
 gem-in-if-lo'-ra
 gem'-ma
 gem'-mæ
 gem-ma'-ta
 gem-mif'-er-a
 gem-mip'-ar-a
 gem-on-en'-sē
 Gen-dar-us'-sa
 Gen-et-yl'-lis
 gen-e-ven'-sis
 gen-ic-ul-a'-ta
 Gen-i'-pa
 Gen-is'-ta
 gen-is-tæ-fol'-ī-a
 gen-is-tif-ol'-ī-a
 gen-is-tū-ī'-dēs
 Genk'-wa
 Gen-os-i'-ris
 Gen-tī-a'-na
 Gen-tī-a'-næ

Gen-tī-a-nel'-la
 gen-tī-a-nō-ī'-dēs
 gen-tī'-lis
 Ge-od-o'-rum
 Geof-frā'-a
 Geof-froy'-a
 Geof-froy'-i
 ge-ō-ī'-dēs
 gē-o-met'-ric-a
 Gē-o-met'-rin-a
 Gē-o'-nom-a
 gē-o-nom-if-or'-mis
 Gē-oph'-il-us
 Gē-or'-ch-is
 geor-gī-a'-na
 Geor-gī'-na
 Ge-ot-ru'-pēs
 Ger-an-ī-a'-cē-æ
 ger-an-ī-a-fol'-ī-a
 ger-an-if-ol'-ī-a
 ger-an-ī-ē-ī'-dēs
 Ger-an'-ī-um*
 Ger-ar'-dī-a
 Ger-ar-dī-a'-na
 Ger-ar'-dī-ē-æ
 Ger-as-can'-thus
 Ger-be'-ri-a
 Ger-dā'-ri-a
 Ger-mai'-nī-i
 Ger-mā'-nī-a
 ger-mā'-nic-a
 Ger-ol-ī-a'-na
 Ger-op-o'-gōn*
 Ger-rar'-dī
 Ges-nē'-ra*
 Ges-ne-ra'-cē-æ
 ges-ne'-ra-flo'-ra
 Ges-ne'-ri-a
 Ges-nē'-ri-a'-na
 Ges-nē'-ri-a'-næ
 ges-ne-rū-ī'-dēs
 Ge-thyl'-lis
 Ge-thyl'-ra
 Ge'-um
 Gheis-bach'-ī-i
 Ghe-linck'-ī-i
 Ghies-breght-ī-a'-na
 Ghies-br gh'-ī-i
 Ghī'-nī-a
 gib'-ba
 gib-ber-o'-sa
 gib-bif-lo'-ra
 gib-bo'-sum
 Gibbs-ī-a'-na
 gib-ral-tar'-ic-a
 Gib-son'-ī-i
 Gig-ant-ab'-ī-ēs
 gig-ant-o'-um
 gīg-ant'-ic-a
 gig'-as
 Gil-berl'-ī-a
 Gil-berl'-ī-i
 Gil'-bey-i
 Gil'-ī-a
 Gil-lo'-nī-a

Gil-les'-ī-i
 Gil-lies'-ī-a
 Gil-lies'-ī-i
 Gil'-lī-i
 Gin-gin'-sī-a
 Gink'-go
 Gin-nal'-la
 Gi-re-ou-dī-a'-na
 Gith-a'-go
 glab-el'-la*
 glab'-er
 glab-er'-rim-a
 glab'-ra
 glab-ra'-ta
 glab-res'-cens
 glab-ri-o'-ol-lis
 glab-ri-us'-cul-us
 glac-ī-a'-lis
 glad-ī-a'-ta
 glad'-ī-ol-if-lo'-ra
 Glad'-ī-ol-us*
 glan'-dī-um
 glan-dul-if'-er-a
 glan-dul-ig'-er-a
 glan-dul-o'-sa
 Glas-ī-o'-vī-i
 glast-if-ol'-ī-a
 glau'-ca
 glau'-ces-cens
 glau-cif-ol'-ī-a
 glau-cy-if-ol'-ī-um
 glau'-cin-um
 Glau'-cī-um
 glau-coph-yl'-la
 Glau-x
 Glaz-ī-o'-na
 Glo-cho'-ma
 Gled-it's-ck'-ī-a
 Gled-it'-ī-a
 Ghehn'-ī-i
 Glei-che-nī-a
 Glei-che-nī-a'-cē-æ
 Glob'-ba
 glob-if'-er-um
 glob-if-lo'-rum
 glob-o'-sa
 Glob-ul-a'-ri-a
 glob-ul-a-ri-a-fol'-ī-um
 Glob-ul-a'-ri-ē-æ
 glob-ul-a'-ris
 Glob-ul-e'-a
 glob'-ul-i
 glob-ul-if'-er-a
 glob-ul-o'-sa
 Glo-os-por'-ī-um
 glom-er-a'-ta
 Glon-er'-ī-a
 glo'-ri-a
 Glo-ri-o'-sa
 glo-ri-o-ē-ī'-dēs
 glo-ri-o'-sum
 Glōs-san'-thus*
 Glōs-sar-rhēn
 Glōs-sas'-pis
 Glōs-soc-om'-ī-a

Words derived from Latin and Greek (i.e., all except those in italics) to be pronounced as follows: ā as in āp-art'; a as in psā-lmist; ē as in slēn'-der; ē as in vū'-ined; ī as in thīn; ī as in mach-ī'-nist; ō as in rōt'-ten; ō as in vō'-ter; ū as in pow'-er-fāl; ū as in rū'-ler; ŷ as ī; ŷ as ī; æ, œ, ei, as ai in pain; au as ou in house; g, c, and ch, always hard, as, for example, g in good, c in muscular, and ch in Christian. (For the old method, see page 276.)

* This word is discussed at the end of the Pronouncing Dictionary.

Pronouncing Dictionary—continued.

Glös-so'-di-a
 glös-som-ys'-tax
 Glös'-sul-a
 Glöt-tid'-y-um
 Gloz-in'-y-a
 gloz-in-y-æ-flo'-ra
 gloz-in-if-ol'-y-us
 glu-ma'-cè-a
 glu-tin-o'-sa
 Gly-er'-y-a
 Glyc'-in-e
 glyo-in-if-ol'-y-a
 Glyc-os'-mis
 glyo-yph-yl'-los
 Glyc-yr-rhi'-za*
 Glym'-y-i
 Glyph-ø'-a
 Glyph-os-per'-ma
 Glyp-tos'-trol-us
 Gmel-i'-na
 Gmel-i'-ni
 gnaph-al-y-ð-i'-dès
 Gnaph-al'-y-um
 Gne-ta'-cè-æ
 Gni'-dl-a
 God-e'-ll-a
 God'-oy-a
 God-win'-y-a
 God-bel'-y-i
 Gð-er'-y-us
 Goe'-th-æ
 gog-o-en'-sis
 Gold-fus'-si-a
 Gol-die-a'-na
 Gol'-die-i
 Gom'-ph-y-a
 Gom-phol-ob'-y-um
 Gom-phos'-tyl-is
 Gom-phrø'-na
 gon-at-anth'-us
 gon-at-o'-dès
 Gon-at'-op-us
 gon'-gon-ha
 Gong-o'-ra
 gong-yl-o'-dès
 Go-nl-oph-leb'-y-um
 Go-nl-op'-ter-is
 Go-noc'-al-yx
 Go-nol'-ob-us
 Go-nos-te'-môn
 Good-en-o'-vl-ð-æ
 Good'-y-a
 Good'-yer-a
 Gor-do'-nl-a
 Gor-do'-nl-a'-nus
 Gor-tu'-gl-a'-num
 Gos-syp'-y-um
 Golt-af-re'-da
 Golt-schal'-ckð-i
 Gou-a'-ni
 Gou-a'-nl-a
 Gou-do'-ll-i
 Gov-o'-nl-a
 Gov-e'-nl-a'-na
 Gov-in-d'-vl-a

Gow'-er-æ
 Gow-er'-y-i
 Grab-ow'-skr-a
 Grao-ll-a'-ri-a
 grac'-il-ð
 grac-il-en'-ta
 grac-il-jo-or'-nis
 Grao-ll'-im-a
 grac-il-li'-na
 græ'-ou
 Græf'-fè-i
 Græf'-fær-i
 Græll'-st-i
 Gra'-ham-i
 Gra-ham-y-a'-na
 Gra-min'-ð-æ
 gra-min'-ð-us
 gra-min-if-ol'-y-a
 gra'-min-is
 Gram-man'-gis
 Gram-man'-thès
 Gram-mat-oc-ar'-pus
 Gram-mat-oph-yl'-lum
 Gram-mi'-tis
 gram-un'-ll-a
 gran-a-den'-sis
 Gra-na'-ri-us
 gran-a-ton'-sð
 Gra-na'-tum*
 gran'-dè
 gran'-dic-ops
 gran-dic-us'-pis
 gran-did-en-ta'-ta
 gran-dif-lo'-ra
 gran-dif-ol'-y-a
 gran-dif-or'-mia
 gran-din-o'-sa
 gran-dip-le'-nna
 gran-dip-unc-ta'-ta
 gran'-dis
 Gran'-læ
 Gran'-ll-i
 gra-nul-a'-ta
 gra-nul-o'-sa
 Gra'-num
 Graph-ol'-ith-a
 Grap-toph-yl'-lum
 gra'-ta
 Gra'-tl-ol-a
 Gra-ty-ol'-ð-æ
 gra-ty-o'-sa
 gra-ty-o-sis'-sim-um
 gra-tis'-sim-a
 grav'-ð-ol-ons
 Graves'-y-a
 Gray'-i
 Green-y-a'-na
 Green'-y-i
 Green-o'-vl-a
 Greg'-gl-i
 Greg-or'-y-a
 Greg-or'-y-i
 Greig'-i
 Greig'-y-a
 Grøig'-y-i

Grøn-vil'-lè-a
 Grøn-vil'-lè-æ
 Grev-il'-lè-a
 Grev-il-lè-a'-na
 Grev-il'-lè-i
 Grew'-y-a
 grew-y-æ-flo'-ra
 grew-y-ð-y'-dès
 Grey-a'-na
 Grey'-y-a
 Gri'-as
 Grie'-vè-i
 Grif-fin'-y-a
 Grif-fin'-y-i
 Grif-fith-y-a'-na
 Grif-fith'-y-i
 Grim-de'-ll-a
 Grise-hach'-y-a
 Grise-hach-y-a'-na
 Gri-ael'-v'-nl-a
 Gris'-le-a
 Gro'-bÿ-a
 Gro'-bÿ-i
 Gron-o'-vi-a
 gros-sil-ab'-ris
 Gros-sul-a'-ri-a
 Gros-sul-a'-ri-a'-oð-æ
 Gros-sul-a'-ri-a
 gros-sul-a'-ri-æ-fol'-i-a
 gros-sul-a-ri-a'-ta
 Grnb'-bi-a
 Gryl'-lid-æ
 Gryl-lo-tal'-pa
 Gryl'-lus
 Gu-a'-co
 quad-al-u-pen'-sis
 Guag-nel-v'-na
 Gua'-y-ac-um
 Gual-tho'-ri-a
 Gua-pu'-ba
 Gua'-re-a
 gua-rð-y'-dès
 gua-tem-a-len'-sð
 Gual-te'-ri-a
 Gua'-na
 Gui-zu'-ma
 Guet-lær'-da
 Gue-vi'-na
 gui-a-nen'-sis
 Gui-chen-o'-ll-a
 Guil-an-di'-na
 Guil-foy'-lè-i
 Guil-y-el'-ma
 Guil-y-el'-ml
 guin-ð-en'-sis
 Gui-zo'-ll-a
 Gul-den-stad-ty-a'-na
 gum-mif-er
 gum-mif-er-um
 Gum-del'-y-a
 Gun-del-sheim-cr'-y-a
 Gun-ne'-ra*
 Gun-ne-ra'-cè-w
 Gun'-nl-a
 Gun-nl-a'-na

Words derived from Latin and Greek (i.e., all except those in italics) to be pronounced as follows: ð as in ðp-art'; æ as in pæ'-lmist; è as in slèn'-der; é as in vè'-ined; í as in thÿn; ï as in mach-i'-nist; ð as in rðv'-ten; ò as in vò'-ter; ù as in pow'-er-ful; ù as in rù'-ler; ý as í; æ, œ, ei, as ai in pain; au as au in house; g, c, and ch, always hard, as, for example, g in good, c in muscular, and ch in Christian. (For the old method, see page 276.)

* This word is discussed at the end of the Pronouncing Dictionary.

Pronouncing Dictionary—continued.

Gum'-nŷ-i
Gum-nis-o'-ni
gur-wal'-ic-um
Gus-so-nŷ-a'-na
Gus-ta'-vi
Gus-la'-vŷ-a
Guth-rie-a'-na
Gut-ŷ-er-ry'-zŷ-a
gut'-ta
gut-ta'-ta
gut-tif'-er-w
gut-tul-a'-tum
guy-a-nen'-sis
Guz-man'-ni-a
Gym-nad-e'-nŷ-a
gym-nan'-tha
Gym-ne'-ma
gym-noc-ar'-pa
Gym-noc'-lad-us
Gym-nog-ram'-mŷ
Gym-nol-o'-mŷ-a
Gym-nop'-sis
Gym-nop'-ter-is
gym-nos-per-mŷ-i'-dŷ
Gym-nos-por-ang'-ŷ-um
Gym-nos-tach'-ŷ-um
Gym-nos'-tach-ys
Gym-noth-e'-oa
Gym'-noth-rix
Gyn-an-dri'-ris
*Gyn-an-drop'-sis**
Gyn-er'-ŷ-um
Gyn-ho-te'-ri-a
Gyn-oc-eph'-ul-a
Gyn-oph'-or-a
Gyn-op-leu'-ra
Gyn-ox'-ys
Gyn-u'-ra
Gyp-soph'-il-a
*Gy-ran'-dra**
gy'-rans
gy-rob-ul'-bon
Gy-roo-ar'-pŷ-w
Gy-ro'-mŷ-a
Gy-ros'-tach-ys
Gy-roth-e'-oa

Haa-gŷ-a'-num
Haas'-ŷ-i
Hab-e-na'-ri-a
Hab-er'-lŷ-a
Hab-litz'-ŷ-a
Hab-litz-ŷ-a'-na
Hab-ran'-thus
Hab-roth-am'-nus
Hack-el-ŷ-a'-na
Hac-quet'-ŷ-a
Had-e'-na
Had-wen'-ŷ-i
Hack-er'-ŷ-a
Hæm-ad-ic'-tŷ-on
Hæm-an'-thus
Hæm-a'-ri-a

hæm-at-och-i'-lum
hæm-at-och'-rŷ-um
Hæm-at-ox'-ŷl-on
Hæm-och'-ar-is
Hæm-od-o-ra'-cŷ-æ
Hæm-od-o'-rum
hæm-or-rho-id'-al-is
Hæn'-kŷ-a
Hæn'-ster-a
Hag-æ'-a
Ha'-ger-i
Hahn'-i
Ha'-kŷ-a
ha'-kŷ-æ-fol'-ŷ-a
hal-ep-on'-sŷ
hal-ep'-pic-a
Hales'-ŷ-a
Hal-ford'-i
Hal'-ŷ-a
hal-im-if-ol'-ŷ-a
Hal-im'-ŷ-um
Hal-im-od-en'-dron
hal-ŷ-o'-tid-ŷ-a
Hal-lŷ-a'-na
Hal-le'-ri
Hal-le'-ŷ-a
Hal'-li-a
Hal'-ŷ-i
hal-oph'-il-a
Hal-or-a'-gŷ-w
Hal'-tic-a
Ham-a-lŷ-a'-na
Ham-am-ŷ-lid'-ŷ-w
Ham-am-ŷ'-lis
ha-ma'-ta
Ham-el'-ŷ-a
Ham-il-to'-ni
Ham-il-to'-nŷ-a
Ham-il-to-nŷ-a'-mus
Ham-mond'-i
ha-mo'-sa
Han-bur'-ŷ-i
Han-bur-ŷ-a'-num
Han-cor'-nŷ-a
Hands-worth-en'-sis
Han-so'-ni
Hap-loch-i'-lus
Hap-lop-ap'-pus
Hap-lop-ŷt'-al-um
Hap-loph-ŷl'-lum
Har-den-ber'-gl-a
Har'-dŷ-i
Hard-wick'-ŷ-a
Har-i'-na
Har-lan'-dŷ-i
Har'-mal-a
Har-on'-ga
Har-pag-oph'-ŷt-um
Har-pal'-ŷ-um
Har'-pal-us
Har-pal'-ŷ-cŷ
har-pŷ-o'-dŷ
har-poph-ŷl'-la
Har-ra'-chŷ-a
Har-ring-to'-nŷ-a'-na

Har'-ris-i
Har-ris-ŷ-a'-na
Har-ris'-ŷ-i
Har-ris-o'-nŷ-a
Har-ris-o'-nŷ-æ
Har-ris-o'-nŷ-a'-num
Har-ry-a'-na
Hart'-ŷ-i
Hart-man'-ni
Hart-man'-nŷ-a
Hart-nel'-li
Har-tog'-ŷ-a
Hart-weg'-ŷ-a
Hart-weg-ŷ-a'-na
Hart-weg'-ŷ-i
Hart-wias-ŷ-a'-na
Har-vey-a'-na
Har-wood-ŷ-a'-num
Has-ska'-ri-i
has-ta'-ta
has-tif'-er-a
has-til-ab'-ŷ-um
has-ti'-lis
Ha-sling'-ŷ-a
Hauss-knecht'-ŷ-i
Hav-an-en'-sis
Haw'-ker-i
Haw-orth'-ŷ-a
Haw-orth'-ŷ-i
Haw-tay-nŷ-a'-na
Hay-lodg-en'-sis
Hay-nal-dŷ-a'-num
Hay'-nŷ-i
*He-be-an'-dra**
he-be-car'-pum
He-be-clad-us
He-be-clŷ-nŷ-um
he-be-gyn-um
Heb-el'-ŷ-a
Heb-en-ster'-ŷ-a
heb-ra'-ic-um
Hec-at-e'-a
Hech'-tŷ-a
he-cis'-toph-ŷl'-la
He-dar-o'-ma
Hed'-er-a
hed-er-a'-cŷ-a
Hed-er-a'-cŷ-w
hed-er-æ-fol'-ŷ-um
Hed-wig'-ŷ-a
*He'-dŷ-a**
He-dŷch'-ŷ-um
he-dŷ-os'-mum
He-dŷ-o'-ti
he-dŷ-ar-ŷ-i'-dŷ
He-dŷ-ar-um
He-dŷ-cep-o
Hee'-ri-a
Hee'-ri-i
Hei'-mŷ-a
Hein'-ŷ-i
Hein'-tŷ-a
Heis-te'-ri-a
Hek-at-or-os'-ach-ne
Hek-or'-ŷ-ma

Words derived from Latin and Greek (*i.e.*, all except those in italics) to be pronounced as follows: *ā* as in *āp-art'*; *ā* as in *psŷ-lmist*; *ē* as in *slŷn'-der*; *ē* as in *vŷ-ined*; *ŷ* as in *thŷn*; *ŷ* as in *mach-ŷ-nist*; *ŷ* as in *rŷt'-ten*; *ŷ* as in *vŷ-ter*; *ū* as in *pow'-er-fŷl*; *ū* as in *rŷ-ler*; *ŷ* as *ŷ*; *ŷ* as *ŷ*; *æ*, *œ*, *ei*, as *ai* in *pain*; *au* as *ou* in *house*; *g*, *c*, and *ch*, always hard, as, for example, *g* in *good*, *c* in *muscular*, and *ch* in *Christian*. (For the old method, see page 276.)

* This word is discussed at the end of the Pronouncing Dictionary.

Pronouncing Dictionary—continued.

Hel'-oi-a
Hel-dreich-y-a'-nus
Hel-dreich'-y-i
 Hel-en'-y-um
 He-ly-ac'-zè-us
 Hel-y-am'-phor-a*
 He-ly-anth'-em-um
 he-ly-anth-è-i'-dès
 He-ly-anth'-us*
 He-lich'-rè-a
 He-lich-ry'-sum
 Hel-ic-o'-dè-a
 Hel-ic-od-ic'-er-os
 Hel-ic-o'-ni-a
 hel-ic-o'-ni-a-fol'-y-um
 hel-ic-o'-ni-è-i'-dès
 Hel-ic-te'-rè-ø
 Hel-ic-te'-rès
 Hol-ig'-ma
 Hel'-in-us
 He-ly-oc-ar'-pus
 He-ly-om'-er-is
 He-ly-oph'-il-a
 He-ly-op'-sis
 He-ly-oth'-rips
 He-ly-ot-rop'-y-è-ø
 he-ly-ot-rop-y-è-i'-dès
 He-ly-ot-rop'-y-um
 Hel-ip'-ter-um
 Hel'-ix
 hel-lob-or-if-ol'-y-um
 Hel-leb-or-i'-na
 Hel-leb'-or-us*
Hel-ler-i
Hel-ler-y-a'-na
Helm-holtz'-i-a
 Hel'-ni-a
 Hel-minth-os'-tach-ys
 Hel-o'-ni-as
 hel-ve'-tic-um
 hel'-vol-a
Hel-wing'-y-a
Hel-wing-y-a'-cè-ø
 Hel-yg'-y-a
 he-mer-ob-y-ol'-la*
 He-mer-ob'-y-us
 He-mer-oc-al'-lè-ø
 He'-mer-oc-ol'-lis
 He-my-and'-ra*
 He-mic-ar-pu'-rus
 He-mich'-æ-na
 He-mic-li'-dè-a
 He-mid-ic'-tè-um
 He-mim-er-id'-i-ø
 He-mim'-er-is
 He-my-on-i'-tès
 he-my-on-i-tid'-æ-um
 He-my-on-i'-tis
 He-miph-rag'-ma
 He-mip'-ter-a
 He-mis-ao'-ris
 he-mis-phæ'-ric-a
 He-mis-tem'-ma
 He-mit-e'-ll-a
Hench-man'-nè-i

Hen-der-i
Hen-der-so'-ni-a
Hen-der-so-ni-a'-num
Hen-der-so'-ni-i
Hen-frey'-a
Hen-ri'-cè-a
Hon-ri'-ci
Hen-ri'-cus
Hen-ry'-a-num
Hen-ry'-i
Hen-ulo-vi-a'-num
 hep-ar-a'-na
 Hep-at'-ic-a
 hep-at'-ic-æ-fol'-y-a
 Hep'-ot-is
 He-pi-al'-id-a
 He'-pi-al-us
 hep-taph-il'-la
 Hep-tap-leu'-rum
 He-rac-le-a'-na
 He-rac-le-if-ol'-y-a
 He-rac-le'-um
 her-ba'-cè-a
 Her'-ba-rot'-a
 her-ba'-rum
 her'-ba-ven'-ti
Her-ber'-ti
Her-ber'-ti-a
Her-ber-ti-a'-na
Herb'-sti-i
Her-y-ol'-y-i
Her-it-e'-ri-a
Her-it-i-c'-ra
Her-man'-ni
Her-man'-ni-a
Her-man'-ni-è-ø
her-man'-ni-æ-fol'-y-a
Her-min-i-c'-ra
Her-min-i-c'-ri
 Her-mi'-ni-um
 Her'-mi-on-ø
 Her-mod-ac'-tyl-on
Her-nan-de'-zi-i
Her-nan-di-a
her-nan-til-æ-fol'-y-a
her-nun-dif-ol'-y-a
 Her-ni-a'-ri-a
 Her-pe'-stès
 Her-pe'-stis
Her-ra'-ni-a
Her-re'-ry-a
Herr-man'-ni-ø
 He'-st-od-a
 He-si-od'-y-a
 Hes-per-an'-tha*
 hes-per-id-if-ol'-y-a
 Hes-per-id'-y-um
 Hes'-per-is
 Hes-per-oc'-lès
 Hes-per-os-cor'-don
Hes-sè-a
 het-er-æo-an'-tha*
 He-ter-ac'-tis
 het-er-an'-drum
 Het-er-an-the'-ra

het-er-æo-ar'-pum
 Het-er-æo-en'-tron
 Het-er-æo'-er-a
 Het-er-æo-w'-ta
 het-er-æo'-lit-a
 Het-er-od'-er-a
 het'-er-od-on
 het-er-od-ox'-um
 het-er-og-lòs'-sa
 Het-er-ol-o'-ma
 het-er-om-al'-lum
 Het-er-om'-el-è-s
 het-er-om-or'-phum
 Het-er-on'-om-a
 Het-er-op-ap'-pus
 Het-er-oph-leb'-y-um*
 het-er-oph-yl'-la
 Het-er-op'-ter-a
 Het-er-op'-ter-ys
 Het-er-os'-path-ø
 Het-er-os'-tal-is
 Het-er-oth-o'-ca
 Het-er-ot'-om-a
 Het-er-ot'-rich-um
 Het-er-ot'-rop-a
Hen-che'-ra
Henf-jel'-y-i
He-re'-a
Hew-ard'-i-a
Hew-it'-ti-a
 Hox-æo-n'-tris
 hex-æ-droph'-or-us
 Hox-ug-lòt'-tis
 hex-ug-o'-na
 hex-ug-o-nop'-ter-um
 hex-ap-ot'-al-um
 hex-æ'-tich-on
 hex-or'-im-a
Hey-mas'-sol-i
Huy-nè'-a-na
 hy'-aus
Hib-ber'-ti-a
 hib-er'-nic-a
 Hib-is'-cus
 hy-er-a'-cif-ol'-y-a
 Hy-er-a'-ci-um
 Hy-er-och'-lè-ø
 Hy-er-och-un'-tin-a
 hy-er-og-lyph'-ic-a
Hig-gin'-sè-a
Hil-àir-y-a'-na
Hil-deb-rand'-li-i
 Hil-lè-a'-num
 Hil'-li-a
 Hil-li-a'-na
 Hil'-li-i
 hi-ma'-lè-ic-a
 hi-ma-lay-a'-na*
 Him-an-tog-lòs'-sum
 Him-at-an'-thus
Hinck-yl'-nus
Hind'-si-a
 Hip-pè-as'-trum
 Hip'-pi-a

Words derived from Latin and Greek (i.e., all except those in italics) to be pronounced as follows: ä as in äp-art'; ä as in peä'-lmist; è as in èlèn'-der; è as in vè'-ined; y as in thyn; i as in mach-i'-nist; ò as in ròt'-ten; ò as in vò'-ter; ù as in pow'-er-fül; ù as in rü'-ler; ý as y; ý as i; æ, æ, ei, æ as oi in pain; au as ou in house; g, c, and ch, always hard, as, for example, g in good, c in muscular, and ch in Christian. (For the old method, see page 276.)

* This word is discussed at the end of the Pronouncing Dictionary.

Pronouncing Dictionary—continued.

Hip'-pŷ-on
 Hip-pob-ro'-mus
 Hip-poc-as-tan'-ŷ-æ
 Hip-poc-as'-tan-um
 Hip-poc-ent-au'-rŷ-a
 Hip-poc-rat-ŷ-a'-cŷ-a
 Hip-poc-ro'-pis
 Hip-pog-lŷs'-sum
 Hip-pom'-an-e
 Hip-poph'-ŷ-o
 Hip-pu'-ris
 Hir-ca'-nic-um
 hir-ci'-na
 Hir'-cul-us
 hir-sn-tis'-sim-um
 hir-su'-tul-a
 hir-su'-tum
 hir'-ta
 hir-tel'-lum
 hir-tif-lo'-ra
 hir'-tip-ŷs
 his-pa'-nic-um
 his'-pid-a
 his-pid-is'-sim-a
 his-pid'-ul-um
 his-ti-on-anth'-a
 His'-tri-o
 his-tri-o'-nic-um
 Hod'-rŷ-a
 Hody-in'-ŷi-i
 Hody-so'-ni
 Hody-so'-niŷ-a
 Ho-eg'-ŷi-i
 Hoel'-zer-i
 Hoff-man'-nŷ-a
 Hoff-man-nŷ-a'-na
 Hoh-en-ber'-gŷ-a
 Hoil'-ŷ-a
 Hol-bat'-ŷ-a
 Hol-och-lŷs'-na
 Hol'-eus
 Hol-for-dŷ-a'-num
 hol-mŷ-a'-na
 Holm-ski-ol'-dŷ-a
 hol-och-ry'-sum*
 Hol-od-is'-eus
 Hol-og-ym'-ne
 Hol-ol-ach'-ne
 Hol-os-cha'-nus
 hol-os-er-ic'-ŷ-unt
 Hol-os'-tŷ-a
 Hol-ton-ŷ-a'-num
 Holt'-zer-i
 Hom-al-anth'-us*
 Hom-al'-ŷi-a
 Hom-al'-ŷi-um
 Hom-al-om-e'-nn*
 Hom-al-om-y'-ŷ-a
 Hom-al-on-o'-ma
 Hom-e'-ri-a
 Hom-og'-yn-e
 Hom-oi-anth'-us
 hom-om-al'-la
 Hom-op'-ter-a
 Honck-en'-ŷ-a

Hond-bes'-sen
 Hond-en'-sis
 Hood'-ŷ-a
 Hoog-en-dorp'-ŷi-i
 Hook'-er-a
 Hook'-er-i
 Hook-er-ŷ-a'-na
 Hoop-es'-ŷi-i
 Ho'-pŷ-a
 Ho'-pŷ-i
 Hop-kirk'-ŷi-a
 Hop-loph'-yt-um
 Hop-pŷ-a'-num
 Hop-wood-ŷ-a'-na
 Hor'-dŷ-um
 hor-l'-zon-ta'-lis
 Hor-kel'-ŷ-a
 Hor-mŷ'-num
 Hor'-nŷ-i
 Hor-nem-an'-nŷ-a
 hor'-rid-a
 Hors-fall'-ŷi-i
 Hors-field'-ŷ-a
 Hors-field'-ŷ-i
 Hors'-man-i
 Hors'-man-nŷ-i
 Hor-ten'-si-a
 hŷr-ten'-sis
 hor-tic'-ol-a
 Hos-ark'-ŷ-a
 hos-mar-ŷ-en'-sis
 Hos'-pit-a
 Host'-a
 Host'-ŷ-a
 Host'-ŷi-i
 Ho-te'-a
 hol-ten-tot-o'-rum
 Hol-to'-nŷ-a
 Houl-lŷ'-ŷ-a
 Houl-lŷ-ŷ-a'-num
 Houl-lŷ'-ŷ-i
 Hous-to'-nŷ-a
 Houl'-tŷ-a
 Houl-tŷ-a'-na
 Houl-tuyn'-ŷ-a
 Ho'-rŷ-a
 Ho-ren'-ŷ-a
 Hor-ey'-i
 How-ar'-dŷ-a
 How-ar'-dŷ-i
 How'-ŷ-a
 How-el'-ŷ-i
 How-ie'-a
 How'-a
 How-by-a'-num
 Hud-so'-nŷ-a
 Hud-so-nŷ-a'-na
 Hueg-el'-ŷ-a
 Hueg-el-ŷ-a'-num
 Hueg-el'-ŷ-i
 Hu-ern'-ŷ-a
 Hug-el'-ŷ-a
 Hug-el'-ŷ-i
 Hugh'-ŷ-i
 Hulkŷ-a'-na

Hul-lŷ'-ti
 Hul-thŷim'-ŷ-a
 Hum-a'-ta
 Hum-blo'-ŷ-i
 Hum-bŷldt'-ŷ-a
 Hum-bŷldt'-ŷ-a'-na
 Hum-bŷldt'-ŷ-i
 Hu'-mŷ-a
 Hu-mŷ-a'-num
 Hu'-mŷ-i
 hum-if-u'-sa
 hum-il-if-ol'-ŷ-a
 hum'-il-is
 Hu-mŷ'-rŷ-a
 Hu-mi-rŷ-a'-cŷ-a
 Hum'-ul-nŷs
 Hun-nem-an'-nŷ-a
 Hunt-ŷ-a'-num
 Hunt-ley'-a
 Hu'-ra
 hu-ron-en'-ŷŷ
 Hutch-in'-ŷi-a
 Hut-to'-ni
 hŷ-ac-in'-tha
 Hŷ-ac-in-thol'-la
 hŷ-ac-in'-thiu-a
 hŷ-ac-in'-thŷ-i'-dŷ-a
 hŷ-ac-in-thos'-ma
 Hŷ-ac-in'-thus
 Hy-ŷen-ach'-ne
 hŷ-al'-in-a
 Hŷ-al-op'-ter-us
 Hy-ban-the'-ra
 hy-ber-na'-lis
 Hy-ber'-nŷ-a*
 hy-ber'-nus
 hyb'-rid-a
 Hyd'-num
 Hyd-ran'-gŷ-a*
 Hyd-ran'-gŷ-a
 hyd-ran'-gŷ-a-fol'-ŷ-a
 hyd-ran'-gŷ-a-for'-mis
 hyd-ran'-gŷ-a-i'-dŷ-a
 Hyd-ras'-tis
 Hyd-ri-as-te'-le
 Hyd-roo'-er-a
 Hyd-roch-ar-id'-ŷ-a
 Hyd-roch'-ar-is
 Hyd'-roc-leis
 Hyd-roo'-ŷl-e*
 hyd-roo'-ŷl-if-ol'-ŷ-a
 Hyd-rog-lŷs'-sum
 Hyd-rol'-ŷ-a
 Hyd-rol'-ŷ-a
 Hyd-rom-es'-tus
 Hyd-rom-ŷs'-tri-a
 Hyd-rop-el'-tis
 Hyd-roph-ŷl-la'-cŷ-a
 Hyd-roph-ŷl'-lum
 Hyd-rop-y'-rum
 Hyd-ros'-tach-ŷs
 Hyd-rot-ŷ-nŷ-a
 hŷ-om-a'-lis
 Hyg-roph'-or-nŷs
 hyg-rom-et'-rio-nŷs

Words derived from Latin and Greek (i.e., all except those in italics) to be pronounced as follows: ŷ as in ŷp-art'; a as in psŷ-mist; ŷ as in slŷn'-der; c as in vŷ-ined; ŷ as in thŷn; i as in mach-i'-nist; ŷ as in rŷt'-ten; ŷ as in vŷ'-ter; ŷ as in pow'-er-ŷl; ŷ as in rŷ'-ler; ŷ as in ŷ; ŷ as i; ŷ, ŷ, as ai in pain; au as ou in house; g, o, and ch, always hard, as, for example, g in good, o in muscular, and ch in Christian. (For the old method, see page 276.)

* This word is discussed at the end of the Pronouncing Dictionary.

Pronouncing Dictionary—continued.

Hyl-e'-sin-us
 Hy-lob'-i-us
 Hy-log'-yn-e
 Hy-lob'-om-a
 Hym-en-æ'-a*
 Hym-en-an'-dra
 hym-en-an'-tha
 Hym-en-anth-e'-ra
 Hym-en-et'-ron
 Hym-en-oc-al'-lis
 Hym-en-oc-ys'-tis
 hym-en-o'-dēs
 Hym-en-od-ic'-tŷ-on
 Hym-en-o'-di-um
 Hym-en-ol-æ'-na
 Hym-en-ol'-ep-is
 hym-en-oph-yl-lō-i'-dēs
 Hym-on-oph-yl'-lum
 Hym-en-op'-ter-a
 Hym-en-ost'-ach-ys
 Hym-en-ox'-ys
 Hŷ-oph-or'-be
 Hŷ-os'-oy-am-us*
 Hy-os'-path-e
 Hyp-e'-cō-um
 Hyp-e'-na
 Hyp-er-anth-e'-ra*
 hyp-er-bor'-i-a
 hyp-er-ic-if-ol'-i-a
 hyp-er-ic'-in-a
 Hyp-er-ic-in'-ŷ-æ
 hyp-er-ic-ō-i'-dēs
 Hyp-er-ic-op'-sis
 Hyp-er'-ic-um*
 Hyp-er-og'-yn-e
 hyph-æ-mat'-ic-um
 Hyph-æ'-ne
 hyp-nō-i'-dēs
 Hyp-oc-al-ym'-na*
 Hyp-oc-al-yp'-tus
 hyp-och-on'-dri-ac-us
 hyp-oc-ra-te-rif-or'-mis
 hyp-oc'-rit-a
 Hyp-oc-yr'-ta
 hyp-oc-yr-tif-lo'-rum
 Hyp-od-em-at'-i-um
 Hyp-od-er'-ris
 hyp-od-is'-cus
 hyp-od'-yt-ēs
 Hyp-o-es'-tēs
 hyp-og-æ'-a
 Hyp-og-æ'-i
 hyp-og-lau'-ca
 Hyp-og-lōs'-sum
 Hyp-ol'-ep-is
 hyp-ol-eu'-ca
 Hyp-ol-yt'-rum
 Hyp-om'-yc-ēs
 Hyp-om-yc-e'-lōs
 Hyp-on-om-eu'-ta
 hyp-oph-yl'-la
 hyp-oph-yl-lanth'-us
 Hyp-op'-ith-ys
 Hyp-ox-id'-ē-æ
 Hyp-ox'-is

hyp-ox'-yl-on
 hys-so-pif-ol'-i-a
 Hys-so'-pus
 Hys-ter-ŷ-a'-cō-i*
 Hys-ter-ŷ-on'-ic-a
 Hys-ter'-ŷ-um
 Hys-ter-oph'-or-us
 Hys'-trix

 ŷ-anth'-a
 ŷ-anth'-e
 ŷ-anth'-in-a
Ib-a'-ti-a
Ib-bet-so'-nŷ-a
 ib-e'-ric-um
 Ib-e'-rid-el'-la
 ib-e'-rid-if-ol'-ŷ-a
 Ib-e'-ris*
 Ib-id'-ŷ-um
Ib-o'-ta
Ic-a-ci'-na
Ic-a-ci'-nō-æ
Ic-a'-co
Ic-ar-an'-da
 Ich-no-car'-pus
Ic-i'-ca
 i-coo-an'-dra
 ic-ter-a'-na
 Ic-to'-dēs
 I-dæ'-us
I-dē'-ŷi-a
 I-doth'-ŷ-a
 I-doth-ŷ-a'-rŷ-a
Ig-na'-ti-a
 ig-nē'-cens
 ig'-nō-um
 ig-nŷ-a'-rŷ-us
I'-hur
 I'-lex
 i'-lic-if-ol'-ŷ-a
 I-lic-in'-ŷ-æ
 I'-lic-is
 il-ŷ-en'-sis
Il-lai'-rŷ-a
 Il-loc-eb-ra'-cō-æ
 Il-loc-eb-rum
 Il-lic'-ŷ-um
 il-lin-a'-ta
 il-lin'-it-um
 il-lus-tra'-ta
 il-lus'-tris
 il-lyr'-ic-um
 il-ven'-sis
 Im-ant'-oph-yl'-lum
 im-ber'-be
 im'-bric-ans
 Im-bric-a'-rŷ-a
 im-bric-a'-ta
Im-huf'-ŷ-a
 im-mac-ul-a'-ta
 im-mer'-sa
 Im-pat'-ŷ-ens*
 Im-per-a'-ti

im-per-a'-tor
 Im-per-a'-tric-e
 im-per-a'-trix
 im-per-fol-ŷ-a'-ta
 im-per-ŷ-a'-lis
 im-plex'-a
 im-pres'-sa
Im-ray'-i
 in-æ-qua'-lŷ
 in-æ-qua-lif-ol'-ŷ-a
 in-æ-quil-at'-er-um
 in-a-nŷ'-ta
 in-ap-er'-tum
 in-ca'-na
 in-car-na'-ta
In-car-vil'-lŷ-a
 in-cer'-tum
 in-ci'-sa
 in-ci-sif-ol'-ŷ-a
 in-clau'-dens
 in-eli-na'-ta
 in-oom-par-a'-bil-is
 In-oom-ple'-tū
 in-oomp'-ta
 in-oon-epic'-ū-us
 in-our-va'-tum
 in-our'-vum
 in-den-ta'-ta
 in'-di-ca
In-dig-ol'-er-a
 in-di-vi'-su
 in-o'-brŷ-ans
 in-er'-mis
 in-fes'-ta
 in-fes'-tans
 in-fla'-ta
 in-for-tu-na'-tum
 in-frae'-ta
 in-fun-dib'-ul-if-or'-mis
 in-fun-dib'-ul-um
Inŷ-a
In-gran'-ŷ-i
In-nas'-ŷ-i
In-noc-ent'-ŷ-i
 In-noc-ar'-pus*
 in-od-o'-ra
 i-noph-yl'-la
 in-or-na'-tus
 in-quil-i'-nus
 in'-quin-ans
 in-scrip'-ta
 in-sculp'-tum
 In-see'-ta
 in-sig'-nis
 in-sit-it'-ŷ-a
In-sleay'-i
 In-stit'-ŷ-æ
 in-sua'-vo
 in-tao'-ta
 in-teg-er'-rim-a
 in'-teg-ra
 in-teg-rif-ol'-ŷ-a
 in-ter-jec'-ta
 in-ter-med'-ŷ-um
 in-ter-rup'-tum

Words derived from Latin and Greek (i.e., all except those in italics) to be pronounced as follows: ã as in ãp-art'; ä as in peã-lmist; ê as in slên-der; é as in vè-ined; ŷ as in thŷn; i as in mach-ŷ-nist; ô as in rôl'ten; ö as in vö-ter; ù as in pow'-er-fül; ŷ as in rŷ-ler; ŷ as ŷ; ŷ as i; æ, œ, ei, æ as ai in pain; au as ou in house; g, o, and oh, always hard, as, for example, g in good, c in muscular, and ch in Christian. (For the old method, see page 276.)

* This word is discussed at the end of the Pronouncing Dictionary.

Pronouncing Dictionary—continued.

in-ter-tex'-ta
 in-tra-mar-gin-a'-lis
 in-tri'-ca-ta
 in-tror'-sum
 in-tum-es'-cens
 in-tyb-a'-cē-us
 In'-tyb-us
 In'-ul-a
 in-ul-ō-i'-dēs
 in-ver'-sa
 in-vi'-sum
 In-vol-u-erā'-rī-a
 in-vol-u-erā'-tū
 in-vol-u'-tum
 I'-o
 I-och-ro'-ma
 I-o-das'-ter-um
 I-o-nan'-tha
 I-o'-ne
 I-o-ne'-ma
 I-on-id'-i-um
 I-on-och'-ar-is
 I-on-op-sid'-i-um
 I-on-op'-sis
 I-on-oph-thal'-mum
 I-on-op'-tor-a
 I-on-os'-mum
 I-os-teph'-an-o
 Ip-ec-ac-ū'-an'-lu
 I-pom-e'-rī-a
 I-pom-a'-a
 I-pom-op'-sis
 Ip'-sē-a
 Ir-ap-ē-a'-num
 Ir-by-a'-na
 I-res'-i-ne
 Ir-i-ar'-tē-a
 I-rid'-i-a
 i-rid-es'-cens
 i-rid-if-lo'-ra
 i-rid-if-ol'-i-a
 i-rid-ī-ō-i'-dēs
 I'-rī-o
 I'-ris
 Ir-reg-ul-a'-rē
 Ir-rig'-u-a
 I'-ro-ra'-ta
 Is-ab-el-li'-na
 Is-an'-dra
 is-an-the'-rus
 Is-a'-rī-a
 I'-sat-is*
 Isch'-ar-um
 Isch'-nī-a
 isch-noo'-er-us
 Isch-yr-ol'-ep-is
 I-ser'-i-a
 i-slan'-dic-a
 Is-me'-ll-a
 Is-me'-no
 Is-och-i'-lus
 Is'-ō-et-ēs
 Is-ol'-ep-is
 Is-ol'-i-nū
 Is-ol'-o-ma

Is-ol'-oph-us
 Is-om'-er-is
 Is-on-an'-dra
 is-op-et'-al-a
 is-oph-yl'-la
 Is-op-lex'-is
 Is-op'-od-a
 Is-op-o'-gōn
 is-op-y'-rō-i'-dēs
 Is-op-y'-rum
 I-so'-ra
 Is-ot'-om-a
 Is-ot'-rop-is
 it-al'-ic-um
 I'-tē-a
 i-væ-fol'-i-a
 Ie'-i-ra
 I-wa'-ra
 ix-anth-e'-rus
 Ix-an'-thus
 Ix-auch'-en-us
 Ix'-i-a
 ix'-i-ō-i'-dēs
 Ix-i-ol'-i-ri-on
 ix-i-oph-yl'-la
 Ix-o'-dēs
 Ix-o'-dī-a
 Ix-o'-did-w
 Ix-on-an'-thēs
 Ix-o'-ra

Jab-or-o'-sa
 Jab-ol-a-pi'-la
 Jab-u'-van
 Jac-ar-an'-da
 jac-ē-ō-i'-dēs
 Jack-i-a'-na
 Jack-man'-ni
 Jack-so'-ni
 Jack-so'-nī-a
 Jac-ob-a'-a
 Jac-o-bi-a'-num
 Jac-o-bin'-i-a
 Jac-quem-on'-ti-a
 Jac-quem-on'-ti-a'-na
 Jac-qui'-ni
 Jac-qui'-nī-a
 jac-qui-nī-æ-fol'-i-a
 Jac-fray-a'-nus
 Jac-am-bi'-cī-a
 Jac-ap'-a
 Jac-tom'-at-a
 jam-ai-cen'-sē
 Jam'-bos
 Jam-bo'-sa
 Jam-bo-sel'-la
 Jame'-sī-a
 Jame-sī-a'-num
 Jame'-sī-i
 Jame-so'-ni
 Jame-so'-nī-a
 Jam-ies-o'-ni
 Jan-eir-en'-sē

Jan-i'-pha
 Jank'-w-a
 Jap-on'-ic-a
 Jar-rat'-tī-i
 Jas-i-o'-ne*
 Jas-min-anth'-ēs
 jas-min'-i-a
 Jas-min'-i-æ
 jas-min-if-lo'-ra
 jas-min-ī-ō-i'-dēs
 jas-min-od-o'-rū*
 jas-min-ō-i'-dēs
 Jas'-min-um
 Jat-am-an'-si
 Ja-tē-ō-rhi'-za
 Ja'-troph-a
 ja-troph-æ-fol'-i-um
 Jau'-a-ri
 jav-a-len'-sis
 ja-van-en'-sis
 ja-van'-ic-um
 Jef-fer-so'-nī-a
 Jef-fer-so'-nī-i
 Jef'-frey-i
 Jen-ken'-i-i
 Jen-kins'-i-a
 Jen-kins'-i-a'-na
 Jen-kins'-i-i
 Jen-kins-o'-nī
 Jen-kins-o'-nī-a
 Jen-nings'-i-a'-num
 Jen-nings'-i-i
 Jer-do'-nī-a
 Jer-do'-nī-w
 Jer-do-nī-w'-num
 Jer'-sī-c-æ
 jez-ō-en'-sis
 Jo-an'-nis
 Joc-as'-to
 Joh-an'-nis
 John'-i-a
 John-so'-ni
 John-sto'-ni
 Join-nil'-lī-i
 Jul-ij'-fī-a
 Jones'-i-a
 Jones'-i-a'-num
 Jones'-i-i
 Jon-ghē'-i
 Jon'-ghē-i
 Jon-qui'-la
 jor-ul-len'-sis
 Jo-se'-pha
 Jo-se'-phi
 Jo-se'-phī-a'-na
 Jo-seph'-i'-na
 Jo-seph'-i-nē-w
 Jos-ik'-w-a
 Jov-el-la'-na
 Ju-an-nī-lo'-a
 Ju-a-re'-zī-i
 Jub-a'-a
 jub-a'-ta
 ju-cun'-da
 Ju-glan-dn'-cē-w

Words derived from Latin and Greek (i.e., all except those in italics) to be pronounced as follows: ā as in āp-art'; ā as in pāi'-lmist; ē as in slēn'-der; ē as in vē'-ined; i as in thīn; ī as in mach-ī'-nist; ō as in rōt'-ten; ō as in vō'-ter; ū as in pow'-er-tūl; ū as in rū'-ler; ŷ as ŷ; ŷ as i; æ, œ, ei, as ai in pain; an as ou in house; g, c, and ch, always hard, as, for example, g in good, c in muscular, and ch in Christian. (For the old method, see page 276.)

* This word is discussed at the end of the Pronouncing Dictionary.

Pronouncing Dictionary—continued.

Ju-glan'-dž.æ
ju-glan-dif-ol'-Y-um
Ju'-glans
jug-o'-sa
Ju'-jub-a
Ju-ŭ-a'-na
Ju-lib-ris'-sin
Jul-ŭ-a'-num
Ju'-lus
Jun-ca'-oč-w
jun'-oč-a
Jun'-oč-w
jun-cif-ol'-Y-um
jun-cif-or'-mis
Jun'-cus
Jung-er-man'-ni-a
Jung-huhn'-Y-i
ju-nip-er-a'-ta
ju-nip-er-i'-num
ju-nip-er-ŭ-i'-dés
Ju-nip'-er-us
Ju-ri'-nŭ-a
Jus-sa'-i
Jus-st-a'-a
Jus-sieu'-a
Jus-tic'-Y-a
juv-en'-cus

Kad-su'-ra
Kamp'-fer-a
Kamp'-fer-i
Kamp-fer'-Y-a
Kay-en-eck'-Y-a
Kai'-do
Kai'-sha
Kai-et-ur'-um
Ka'-ki
Kal-am'-chö-e
Kal-brey'-er-i
Kal-brey'-er-Y-a'-na
Ka'-li
Kalm'-Y-a
Kalm-Y-a'-na
Kalm'-Y-i
Kal-os-anth'-és*
kamp-tschat'-ic-us
kam-tschat'-ic-um
Kap'-pler-i
kar-am-a'-na
Kar-a'-tas
kar-at-a'-rŭ-en'-sž
Kar-el'-ni
Kar-el-i'-ni-a
Kar-sten-Y-a'-na
Kar-sten'-Y-i
Kar-win-skŭ-a'-na
Kar-win'-skŭ-i
kash-mŭ'-rŭ-a'-na
Kath-er-i'-næ
Kat-on'-Y-i
Kat'-zer-i
Kauf-man-nŭ-a'-na
Kau'-ki

Kaul-fus'-si-a
Kaul-fus'-si-i
Kef-er-stein'-Y-a
Keg-el-ja'-ni
Kel-ler-man'-ni
Kel-let'-ŭ-a
Ken-drick'-Y-i
Ken-ned'-y-a
Ken-ned'-y-a'-na
Kent'-Y-a
Kent-Y-op'-sis
Ken-troph-yl'-lum
Kep-pler'-Y-a
Ker-am-anth'-us
Ker-chov-ž-a'-na
Ker-chov'-ž-i
Ker'-Y-i
Ker-me-si'-na
Ker'-rŭ-a
Ker-ri-š-i'-dés
Ker-sel-ring'-Y-i
Ket-el-er'-i
Ket-el-er'-Y-a
kew-en'-sis
Keys'-Y-i
khas-Y-a'-na
khas-ŭ-a'-nus
khas-ŭ-Y-a'-na
Kicke'-Y-i
Ki-el-mey'-er-a
Ki-en-as-ŭ-a'-num
Ki-en-as'-ŭ-i
King'-Y-a
King-Y-a'-num
Kiry-an-ol'-Y-a
Kir-il-ow'-Y-i
Kirk'-Y-i
Kil-ai-bel'-Y-a
Kil-ai-bel'-Y-i
Kit-so'-ni-w
Klab-och-Y-a'-num
Klab-och-o'-rum
Klee'-i
Klein-hov'-Y-a
Klein'-Y-a
Klein'-Y-w
Klop-stock'-Y-a
Klug'-Y-a
Knaut'-Y-a
Knight'-Y-a
Knight-Y-a'-na
Kniph-of'-Y-a
Knowl-to'-ni-a
Knox'-Y-a
Koch'-Y-i
Koch'-ler-i
Koh-lar'-Y-a
Koel-len-stein'-Y-a
Kœl-lik-er'-Y-a
Kœl-reu-ter'-Y-a
Kœ'-mig-a
Kœ'-mig-i
Kok-am-ir'-ic-a
Kolb'-Y-i
Kol'-lar-i

Kol-om-ik'-ta
Kolp-ak-ows-ki-a'-num
Koop-man'-ni-i
Kop'-si-a
kor-ai-a'-na
kor-ai-en'-sis
Kor-ol-kow'-i
Kor-ol-kow'-Y-a
Kor-sak-ow'-Y-i
Kor-thale'-Y-a
Kots-chy'-i
Kra'-mer-i
Kra-mer'-Y-a
Kra-mer-Y-a'-num
Kraus-sŭ-a'-na
Kraus'-ŭ-i
Krebs'-Y-i
Krel-a'-gž-i
Krey-sig'-Y-a
Kuhl'-Y-a
Kuhl'-Y-i
Kuhn'-Y-a
Kunth'-Y-a
Kunth-Y-a'-na
Kunz'-ž-a
Kunz'-ž-a'-na
Kunz'-ž-i
Kunz'-ŭ-a
Kur-roo'
Kur-roo'-a
Kus-ter-Y-a'-na
Kyd'-Y-a
Kyl-ling'-a
Kyl-ling'-Y-a
Kyr-tan'-thus

lab-Y-a'-ta
Lab-Y-a'-ta
Lab-i'-chž-a
Lab-il-lar-dŭ-e'-ra
lab-Y-o'-sa
Lab-is'-Y-a
Lab'-lab
Lab-lar'-vŭ-a
Lab'-ou-che'-rŭ-a
Lab'-ou-che'-rŭ-i
lab-ro'-gus
Lab-rus'-cu
Lab-ur'-num
Lac-w'-na
Lac-e-pe'-dž-a
lac'-er-ans
Lach-au'-mž-i
Lach-en-ol'-Y-a
Lach-en-ol'-Y-i
Lach-na'-a
Lach-nanth'-és
lach-nŭ-i'-dés
lach-nop-od'-Y-um
Lach-nos'-tom-a
Lach'-nus
lach'-rym-a
lac-il-Y-a'-ta

Words derived from Latin and Greek (i.e., all except those in italics) to be pronounced as follows: ä as in äp-art'; ä as in psž-lmist; ž as in slžn'-der; é as in vž'-ined; Y as in thŭn; I as in mach-i'-nist; ŭ as in rŭt'-ten; ŭ as in vŭ'-ter; ŭ as in pow'-er-fŭl; ŭ as in rŭ'-ler; y as I; y as i; æ, œ, ei, as ai in pain; au as ou in house; g, c, and ch, always hard, as, for example, g in good, c in muscular, and ch in Christian. (For the old method, see page 276.)

* This word is discussed at the end of the Pronouncing Dictionary.

Pronouncing Dictionary—continued.

lac-in-y-a'-tum
 lac-in-y-o'-sa
 Lac-is-te'-ma
 Lac-is-te-ma'-cē-a
 Lac-os'-tē-a
 Lac-our'-y-i
 lac'-rym-ans
 Lac-ta'-rī-a
 Lac-ta'-rī-us
 lac-ta'-tōs
 lac-ta'-tus
 lac'-te-um
 lac-tic'-ol-or
 lac-tif'-er-um
 lac-tif'-lo'-ra
 Lac-tu'-ca
 Lac-tu'-ca
 lac-tu-ca'-rī-us
 lac-u-no'-sa
 lac-us'-tris
 la-dan-if'-er-us
 La'-dan-um
 La'-lī-a
 La-lī-op'-sis
 laos-ta'-dī-a
 la-te'-vir-ens
 la'-tus
 la-vic-an'-lis
 la-vig-a'-ta
 la'-vī-or
 la'-vip-ēs
 la'-vis
 la-vī-us'-enl-us
 laf-ō-en'-sī-a
 lag-as'-ca
 lag-as'-ca
 lag-asc'-ō-a
 lag-o-no-fo'-rus
 lag-o-na'-rī-a
 lag-e-noph'-or-a
 La-ger-s'tō'-mī-a
 La-gel'-la
 lag-ge'-rī
 lag-o'-pus*
 lag-o'-tis
 Lag-u-no'-a
 Lag-u-na'-rī-a
 Lag-u'-rus
 La-hay'-a
 Laving'-y-i
 La'-is
 Lal'-ag-e
 Lal'-ind'-s-i
 Lal-lem-ant'-y-a
 Lams-ar-chē'-a'-na
 Lam-arek'-y-a
 Lam-arek'-y-a'-na
 Lam-arek'-y-i
 Lam-berl'-y-a
 Lam-berl'-y-a'-na
 Lam-berl'-y-i
 la-mel-lī'-ta
 la-mel-lie-or'-nēs
 La-mel-lig'-er-um
 la-mel-lo'-sum

la-mī-if-ol'-y-a
 la-mī-ō-i'-dēs
 La'-mī-um
 Lam-ol'-tē-i
 Lam-our-our'-y-a
 Lam-pen'-y-i
 Lam-proc-oc'-cua
 Lam-pro'-nī-a
 Lam-py'-ris
 La-na'-rī-a
 la-na'-ta
 lan-cas-trī-en'-sō
 lan-cō-ō-fol'-y-a
 Lan-cō-ā'-num
 Lan'-cō-ol-a
 lan-cō-ol-a'-rī-a
 lan-cō-ol-a'-tus
 lan'-cō-um
 lan-cif-ol'-y-um
 Lan-dolph'-y-a
 lane'-y-i
 Langs-dorf'-f'y-a'-na
 Langs-dorf'-f'y-i
 la'-nig-er
 la-nig'-er-um
 la'-nip-ēs
 La-nip'-il-a
 Lan-kes-to'-rī-a
 Lams-berg'-y-a
 Lams-berg'-y-a'-na
 Lams-berg'-y-i
 Lan-ta'-na
 lan-ta-nif-ol'-y-us
 lan-ta-nō-i'-dēs
 la-nu-gin-o'-sa
 Lap-a-ge'-rī-a
 Lap-ey-rou'-sī-a
 lap-id'-sī-a
 Lap-la'-cē-a
 Lap-or'-tē-a
 lap-pa'-cē-a
 lap-pon'-ic-um
 lap-po'-num
 Lap-pul-a
 Lar'-bre-a
 Lar-dī-ab-a'-la
 Lar-dī-ab-a'-lō-ū
 lar-ic-if-ol'-y-a
 Lar-ic'-y-o
 Lar'-ic-is
 Lar'-ix
 Lar-pen'-tēs
 Lar'-rea
 la-ser-pī-tī-if-ol'-y-um
 Las-i-ag-ro'-stis
 Las-i-an'-dra*
 las-y-anth'-os
 las-y-oc-ar'-pus
 las-y-og-lōs'-sum
 Las-y-on-e'-ma
 las-y-op-et'-al-a
 Las-y-op-et-al'-ō-ū
 Las-y-op-et'-al-um
 Las-y-op'-ter-a
 Las'-y-op-us

las-y-os'-path-a
 Las-y-os-per'-mum
 Las-y-os'-tom-a
 Las-se-aus'-y-i
 Las-tho'-nī-a
 Las'-tre-a
 la'-ta
 Lat-a'-nī-a
 lat-eb-ro'-sa
 lat-er-if-lo'-ra*
 lat-er-it'-y-a
 La-tham'-y-w
 La'-thom-i
 Lath-ras'-a
 lath-yr-ō-i'-dēs
 Lath-yr-us
 la-tif-ol'-y-a*
 la'-tif-rons
 la-tim-ao-ul-a'-tum
 la'-tip-ēs
 la-tis-oc'-ta
 la-tis'-sim-a
 La'-tū-a
 Lauch-ō-a'-na
 Lau-ge'-rī-a
 Lau-re'-lī-a
 Laur-em-berg'-y-a
 Laur-en-cī-a'-na
 Laur-enl'-y-a
 Laur-enl'-y-i
 Laur'-ō-ol-a
 laur-if-ol'-y-um
 laur-i'-na
 Laur-i'-nō-ū
 Lau-roc-er'-as-us
 Laur'-us
 Lav-al'-le-i
 Lav-an'-dul-a
 lav-an-dul-a'-cē-a
 lav-an-dul-m-fol'-y-um
 Lav-a'-ter-a
 Lav-ra'-dī-a
 Lav-ren-cē-a'-na
 Lav-so'-nī-a
 Lav-so-nī-a'-na
 lax-if-lo'-ra
 lux-if-ol'-y-a
 Laz-man'-nī-a
 lax'-us
 Lay'-y-a
 Laz-u'-li
 Leach-y-a'-num
 Leur'-y-i
 Lean-en-worth'-y-a
 Leb'-bek
 Lob-eck'-y-a
 Leb-ret'-ō-nī-a
 Lec-an-y'-na
 Lec-an'-y-um
 Lec-an-op'-ter-is
 Lec-an-o'-ra
 Lech-en-aul'-tī-a
 Lech-le'-ra
 Lec-on'-tē-i
 Lec-on'-tī-a

Words derived from Latin and Greek (*i.e.*, all except those in italics) to be pronounced as follows: *ā* as in *ap-art'*; *ā* as in *psā-lmist*; *ē* as in *slēn'-der*; *ē* as in *vī'-ned*; *ī* as in *thīn*; *ī* as in *mach'-nist*; *ō* as in *rōt'-ten*; *ō* as in *vō'-ter*; *ū* as in *pow'-er-ful*; *ū* as in *ta'-ter*; *y* as *i*; *y* as *i*; *ū*, *ū*, *ei*, as *ai* in *pan*; *au* as *ou* in *noise*; *g*, *c*, and *ch*, always hard, as, for example, *g* in *good*, *c* in *muscular*, and *ch* in *Christian*. (For the old method, see page 276.)

* This word is discussed at the end of the Pronouncing Dictionary.

Pronouncing Dictionary—continued.

Lē'-cyth-æ
 Le-cyth'-s-a
 Le-cyth-id'-s-æ
 Le'-cyth-is*
 Led-eb-our'-y-a
 Led-eb-our'-y-a'-na
 Led-eb-our'-y-i
 Led-en-berg'-y-a
 Ledg-er'-y-a'-na
 le-dif-ol'-y-a
 Le-doo-ar'-pum
 Le'-dum
 Lee'-a
 Lee-a'-na
 Leech'-i-a'-num
 Leeds'-y-i
 Leg-ous'-y-a
 Leg-rand'-y
 Leg-rel'-læ
 Leg-rel-l'-u'-na
 Leg-uay-a'-na
 Leg-u-min-o'-s-u
 Leh-man'-ni
 lei-anth-o'-rum
 Lei-anth'-us
 Lei-bold'-y-i
 Leich-arilt'-y-a
 Leich-arilt'-y-a'-na
 Leich-ten-stein'-i-a'-na
 Leicht'-lin-i
 Leicht'-lin'-y-i
 Leim-anth'-y-um
 lei-oc-ar'-pus
 lei-oc-ar'-y-a
 lei-och-i'-lus
 lei-oph-yl'-lum
 lei-orh-i'-zon
 lei-os-per'-mum
 lei-ot'-ul-us
 Lei-phai'-mos
 Leit-ne'-r'i-a
 Leit-ne'-r'i-ë-æ
 Leit'-y-a
 Le'-jic-a
 Le'-ma
 Lem-ai-rë-a'-num
 Lem-bot-rop'-is
 Lem-min'-ghë-i
 Lem'-na
 Lem-na'-cë-æ
 Lem-ot'-në-i
 Lem-oin'-y-e'-r'i-i
 Le-mo'-ni-a*
 Lem-on-y-a'-na
 len-dig'-er-a
 Len-dy-a'-nus
 Lens
 len'-ta
 Len-ta'-go
 Len-tib-ul-a'-r'i-ë-æ
 len-tic-ul-a'-ris
 len-ti'-gin-is
 len-ti-gin-o'-sum
 len-tis-cif-ol'-y-a
 Len-tis'-ous

le-o-nen'-sis
 Lë-o-no'-tis*
 Lë-on-tic'-e
 Lë-on'-tod-on
 Lë-on-tog-lës'-sa
 Lë-on-top-od'-y-um
 lë-o-nu-rë-i'-dës
 Lë-o-nu'-rus
 Lë-op-ar-danth'-us
 lë-op-ar-di'-num
 Le-op-öl'-di
 Le-op-öl-di'-n'i-a
 Lep'-sah-ys
 Lep-anth'-ës
 Lep-anth'-us
 Lep-ech-i'-n'i-a
 Lep-er-i'-za
 Lep-ic-ys'-tis
 lep'id-a
 Lep-id-ag'-ath-is*
 Lep-id'-y-i
 Lep-id'-i-num
 lep-id-oc-ar'-pon
 Lep-id-oc-ar'-y-a
 lep-id-oc-au'-ion
 Lep-id-op-cl'-ma
 lep-id-oph-yl'-lu
 Lep-id-op'-ter-a
 lep-id-op'-ter-is
 lep-id-o'-ta
 lep'id-us
 Lep-y-o'-ta
 Lep-is'-mi-um
 lep-ro'-sa
 Lep-tan'-dra
 Lep-tar-gyr-ei'-a
 lep-tin-ol'-la
 Lep-toc-ar'-pus
 lep-toe-an'-lis
 Lep-toc'-er-us
 Lep-toch-i'-lus
 Lep-toc-y-on'-y-um
 lep-toc'-lad-a
 Lep-tod-æ'-tyl-on
 Lep-tod-er'-mis
 Lep-tog-löt'-tis
 Lep-tog-rain'-më
 Lep-tog'-yn-ë
 lep-tol'-ep-is
 Lep-tom-er'-y-a
 lep-toph-yl'-la
 Lep-top-leu'-r'i-a
 Lep-top'-ter-is
 lep'-top-us
 Lep-top-y'-rum
 lep-tos-ep'-al-a
 Lep-tow'-iph-on
 lep-tos-pa'-dix
 Lep-tos-per'-mum
 Lep-tos-tach'-y-a
 Lep-tos-tig'-ma
 Lep-tos'-yn-ë
 Lep'-tot-ës
 Lep'-toth-rix
 Lep-toth-yr'-y-um

Lep'-tus
 Les-chen-aull'-y-a
 Les-chen-aull'-y-a'-na
 Les-chen-aull'-y-i
 Les-pe-dë'-za
 Les-vert'-y-a
 les-vert'-y-if-ol'-y-a
 Les-so'-n'i-i
 Lett-som'-y-a
 Leu-cad-en'-dron
 leu-canth'-a
 leu-canth-em-if-ol'-y-a
 Leu-canth'-em-nu
 Leuch-ten-berg'-y-a
 leu-coob'-ot-rys
 Leu-coc-ar'-pus
 len-coc-oph'-al-us
 leu-cooh-i'-lum
 Leu-coc-or'-yn-o
 Leu-cë-hy'-lo
 Leu'-cë-y-um
 Leu-cool-a'-na
 leu-con-en'-ra
 leu-coph-a'-a
 leu-coph-æ-a'-r'i-a
 leu-coph-æ'-r'i-a
 leu-coph-thul'-mu
 Leu-coph-yl'-lë-æ
 len-coph-yl'-lum
 Leu-cop-o'-gön
 leu-cop-y'-rus
 leu-corh-i'-za
 leu-corh'-od-u
 Leu-cos-per'-mum
 leu-cos'-tach-ys
 Leu-cos-teg'-y-a
 leu-cos'-tom-un
 Leu-coth'-b-o
 leu-cox-anth'-a
 leu-cox'-yl-a
 Leuz'-ë-a
 Leuz'-ë-a'-num
 Lev-en-hook'-y-a
 Lev-is'-tic-un
 Lev-is'-y-a
 Lev-is-y-a'-nus
 Lew-is'-y-i
 Les-ar'-su
 Leyces-te'-r'i-a
 Ley'-i
 Ley's-ser-a
 E'He-rit'-y-e'-r'i
 E'Her-min'-i-e'-r'i
 Lhotz'-k'y-a
 Li-a'-bum
 Li-a'-tris
 lib-an-en'-sis
 Lib'-an-i
 lib-an-o'-tic-us
 Lib-an-o'-tis
 lib-s'-ric-a
 Lib-ert'-y-a
 Lib-oc-ed'-rus
 Li-bo'-n'i-a
 Li-bo-ni-a'-na

Words derived from Latin and Greek (i.e., all except those in italics) to be pronounced as follows: æ as in æp-art'; ä as in psä'-lmist; ð as in slæn'-der; ö as in vë'-ined; Y as in th'n; I as in mach-i'-nist; ö as in röt'-ten; ö as in vö'-ter; ü as in pow'-er-fäl; ü as in rü'-ler; ý as Y; ý as i; æ, ce, ei, as at in pain; au as ou in house; g, c, and ch, always hard, as, for example, g in good, c in muscular, and ch in Christian. (For the old method, see page 276.)

* This word is discussed at the end of the Pronouncing Dictionary.

Pronouncing Dictionary—continued.

lib-ur'-nic-us
 li-che'-nēs
lich-ten-stein'-i-a
lic-u-a'-la
lic-hig'-i-a
lieb-man-ni-a'-num
li-er-val'-i-i
li-etz'-ē-i
li-etz'-i-a
li-ev-a'-na
lig-e'-ri-a
light-fool'-i-a
 lig-nip-er'-da
 lig-no'-sus
lig'-tu
 lig-ul-a'-ro
 lig-ul-a'-ri-a
 lig-us'-tic-i
 lig-us'-tic-um
 lig-us'-tri
 lig-us-trif-ol'-i-a
 lig-us-tri'-na
 lig-us'-trum
 li-la-ein-cl'-la
 li-la'-cin-us
 li-la'-cis
 li-ly-a'-cē-a
 li-li-a'-go
 li-li-as'-trum
 li-lt-if-lo'-ra
 li'-ly-um*
 li-ma-ci'-na
 li-ma'-cis
 li-mat-o'-dēs
 li'-max
 lim-ba'-tum
 li-mot'-ta
 li'-mā-a
lim-mingh'-ē-i
lim-nanth'-ē-a
lim-nanth'-em-um
lim-nanth'-es
lim-ne'-tis
lim-nob'-y-um
lim-noch'-ar-is
lim-non-o'-sis
 li-mod-o'-rum
 li-mo'-nā-a
 li-mo-nā-as'-trum
 li-mo-nā-if-ol'-i-um
 li-mo'-num
 li-mo'-sa
 li'-na
 li-na-rī-a
 li-na-rī-w-fo-l'-i-a
 li-na-rif-ol'-i-us
lin-am-y-a'-num
lin-co'-nā-a
lin-del-ol'-i-a
lin-den-i
lin-den'-i-a
lin-den-y-a'-na
lin-de'-ra
lind-heim'-er-a
lind-heim'-er-i

lin'-dig-i
lind'-ley-a
lind-ley-a'-num
lind'-ley-i
lind-sw'-a
lind-suy'-a
 li'-nē-ō
 li-nē-a'-re
 li-nē-a-rif-ol'-i-a
 li-nē-a-rif-ob-a
 li-nē-at-el'-la
 li-nē-a'-tus
 lin'-gua
 lin-guæ-fo-l'-i-a
 lin-guæ-for'-me
 lin-guel'-la
 lin-guif-or'-mo
 lin-gul-a'-ta
 li-nif'-er-a
 li-nif-ol'-i-us
link'-y-a
lin-na'-a
lin-na-a'-na
lin-na'-i
lin-na-ē-i'-dēs
 li-nō-i'-dēs
 li-noph-yl'-la
 li-nos'-yr-is
 lin-tē-a'-ri-a
 li'-num
 li-nyph'-i-a
 li-par'-y-a
 li-poch-w'-to
 lip'-ar-is
 lip-os'-tom-a
lip'-pā-a
 liq-uid-am'-bar
 liq-uir-i'-ti-a
 li-ri-od-en'-dron
 li'-rī-op-o
 lis-i-anth'-us
 lis-santh'-o
 lis-soch-i'-lus
lis'-ter-a
 lis-tros'-tach-ys
 lis-y-anth'-us
 li'-ta
 li-tanth'-us
lit'-chi
 lith-oc-ol-le'-tis
 lith-os-per-mō-i'-dēs
 lith-os-per'-num
 lith-ræ'-a
 li-tob-roch'-i-a
lit'-e'-a
lit-tā'-a
lit-ton'-y-a
 lit-tor-a'-lis
 lit-tor'-ē-a
 lit-tor-el'-la
 lit-u-if-lo'-rum
 lit'-um
 li'-vid-us
liv-ing-sto-nē-a'-na
liv-ing-sto-nē-i

liv-is-to'-na
 lla'-ve-a
lloyd'-i-a
 lo-a'-sa
 lo-a'-sō-w
 lob-a'-ta
 lob-bl-a'-nus
 lob'-bi-i
 lo-be'-ll-a
 lo-be-ll-a'-cē-ō
 lo-be-ll-a'-num
 lo-be'-ll-i
 lo-be-ll-ō-i'-dēs
 lo-bel'-li-i
 lob-e'-sā-a
 lob-os-tē-mōn
 lob-ul-a'-ris
 Loch-e'-ri-a
 Lock-hart'-i-a
lod-dig-e'-sā-a
lod-dig-e-sā-a'-num
lod-dig-e'-sā-i
 lod-ō-i'-cē-a
loof-ling'-i-i
 lovs-e'-li
 lovs-e'-lā-a
 log-an'-i-a
 log-an-y-a'-cē-ō
 lois-el-eur'-i-a
 lois-el'-li
 lol-y-a'-cē-us
 lol'-y-um
 lo-mag-ram'-me*
 lo-man'-dra
 lo-mā'-ri-a
 lo-ma-rid'-y-um
 lo-ma-rī-op'-sis
 lo-mā'-tā-a
 lo-mat-og-on'-y-um
 lo-mat-oph-yl'-lum
 lo'-nas
 lonch-it-id'-ē-a
 lonch-i'-tis
 lonch-oc-ar'-pus
londes-bor-ough'-i-a'-num
 lon'-gu
 lon-gē'-va
 lon-gā'-na
long-champ'-i-a
 long-eb-rac-tē-a'-tum
 long-ep-ed-un-cul-a'-ta
 long-er-ac-em-o'-sum
 long-ib-rac-tē-a'-ta
 long-ic-aud-a'-ta
 long-ic-ol'-la
 Long-ic-or'-nā-a
 long-ic-or'-nu
 long-ic-ru'-ris
 long-ic-us'-pis
 long-if-i'-lis
 long-if-lo'-ra
 long-if-ol'-i-a
 long-y-ha-mā'-ta
 long-il-a'-min-a'-tum
 long-il'-ob-a

Words derived from Latin and Greek (i.e., all except those in italics) to be pronounced as follows: ä as in äp-urt'; a as in pas'-lmist; ð as in slēn'-der; ē as in ve'-ned; i as in thū; i as in mach-ī'-nist; ð as in rōt'-ten; ō as in vo'-ter; ū as in pow'-er-fūl; ū as in rū'-ler; y as i; æ, œ, ei, as ai in pain; au as ou in house; g, c, and ch, always hard, as, for example, g in good, c in muscular, and ch in Christian. (For the old method, see page 276.)

* This word is discussed at the end of the Pronouncing Dictionary.

Pronouncing Dictionary—continued.

long-im-u-cro-na'-ta
 long-ip-ès
 long-ip-è'-al-a
 long-ip'-il-a
 long-ip-in-na'-ta
 long-ir-ac-e-mo'-sa
 long-ir-os'-tris
 long-is-ca'-pa
 long-is'-path-a
 long-is-pi'-nus
 long-is'-sim-a
 long-is'-tyl-um
 long-us
 Lon-ic-e'-ra
 lon-ic-e-rò-i'-dès
 Lop-ad-oc'-al-yx
 Lop-e'-z-i-a
 Loph-anth'-us*
 Loph-id'-y-um
 Loph'-y-ol-a
 Loph-y-os-tom-a'-cè-i
 Loph-i'-ra
 Loph-oc-li'-ny-um
 Loph-ol'-ep-is
 Loph-os'-rus
 Loph-os-per'-mun
 Loph-y'-rus
 Lop-im'-y-a
 Lo-ranth-a'-cè-a
 Lo-ranth'-us*
 Lor-ent'-i-a
 Lor-ent'-i-a'-na
 Lor-ey'-a
 Lor-ey'-i
 lo-ri'-cè-um
 lo-rif-ol'-y-us
 Lor-in-se'-ri-a
 Lo-rop-èt'-al-um
 lo-tif-ol'-y-a
 Lo'-tus
 Lot'-zè-a
 Lou'-don-i
 Lou-don'-y-a'-na
 Lou-don'-y-i
 Lou-el'-ti
 Lour-cir'-i
 Loue-re'-i-a'-num
 Lou'-é-a
 Lou'-è-i
 Lou'-y-a'-num
 Lou'-y-i
 Lox-anth'-ès
 Lox-anth'-us
 lox-en'-sis
 Lox-oc-oc'-cus
 Lox-os'-caph-e
 Lox-o'-tis
 Lox-so'-ma
 Loz-ot-è'-nè-a
 Lub-ber'-y-a'-na
 Lu-bin'-y-a
 lu-bric-ip'-ed-a
 Lu'-ca-nus
 Lu-ci-a'-ni
 lu-cid-um

lu-cif'-ug-us
 Lu-ci'-li-è
 Lu-ci'-no-a
 lu-co'-rum
 Lu-cu'-dè-a
 Lu-cu'-dè-è
 Lu-cu'-na
 Lu-cum'-bè-a'-na
 Lu-cy-a'-nus
 Lud-dem-an'-nè-a
 Lud-dem-an-nè-a'-num
 Lud-dem-an'-nè-i
 Lu'-dè-a
 lu-dib-un'-da
 Lu-di'-st-a
 Lu-dov'-i-a
 lu-dov-ic-y-a'-na
 Lud-wig'-y-a'-na
 Luf'-fa
 lug-du-nen'-sis
 Lu'-he-a
 Lu'-i'-st-a
 Lu'-ma
 Lum-bri'-cus
 lu'-na
 Lu-na'-ri-a
 lu-na-rif-ol'-y-a
 lu-na'-ris
 lu-na-rò-i'-dès
 lu-na'-ta
 lu-nif'-er-a
 lu-nul-a'-ta
 lup-ic-i'-dum
 lup-i-nas'-ter
 lup-i-nif-ol'-y-a
 lup-i-nò-i'-dès
 Lup'-i'-nus
 lup-ul'-y-na
 Lup'-ul-us
 lu'-rid-a
 Lusch-nath'-i-a'-num
 Lusch-nat'-i-a'-num
 lu-sit-a'-nic-us
 Lus-sa'-cè-a
 lu'-tè-a
 lu'-tè-ol-um
 lu-tes'-cens
 lu-te-ti-a'-na
 lux-a'-tum
 Luca-em-berg'-y-a
 lux-ur'-y-ans
 lu'-zul-a
 Luz-u-ri'-a'-ga
 Ly-all'-i-i
 Lyc-as'-te
 Lych'-is
 lych-nid'-c-a
 lych'-nis
 lych-ni'-tis
 lyc'-y-a
 Lye-im'-nè-a
 lye-i-è-y'-dès
 Lye-y-op-le'-st-um
 Lyc'-y-um
 lye-oc'-ton-um

Lye-op-er'-don
 Lye-op-or'-sio-um
 Lye-op-od-y-a'-cè-è
 Lye-op-od'-y-è-è
 lye-op-od-y-è-i'-dès
 Lye-op-od'-y-um*
 lye-op'-sod-is
 Lye-o'-ris
 Lye-o'-sa
 Ly'-da
 ly'-dè-um
 Ly-el'-li
 Lyg-is'-tum
 Lyg-od-ic'-tj-on
 Lyg-o'-dè-um
 Lyg'-us
 Lyn-co'-a
 Lych-y-a'-na
 Ly'-on-i
 Ly-on'-y-a
 Ly-on'-si
 Ly-on'-st-a
 Ly-pe'-ri-a
 Lyr-a'-ta
 Lyr-og-lòs'-sum
 Lys-anth'-o
 Ly-sim-ach'-y-a
 Ly-sin-o'-ma
 Lys-y-on-o'-tus
 Lys-is-tig'-ma
 Lyth-ra'-ri-è-è
 Lyth'-rum
 lyt'-ta

Ma-ack'-y-a
 Ma-ack'-y-i
 Ma'-bu
 Mac-ad-am'-y-a
 Mac-af-ee-a'-na
 Mac-arth-ur'-y-i
 Mac-Carth'-y-a
 Mac-don-ald'-y-a
 Mac-don-ald'-y-a
 Mac-far'-lane-i
 Mac-fee-a'-na
 Mach-wr-anth-o'-ra
 Mach-wr'-y-um
 mac-il-en'-tu
 Mac-kai-a'-na
 Mac-kay'-a
 Mac-kay-a'-nus
 Mac-kay'-i
 Mac-ken'-y-i
 Mac-ken'-zè-i
 Mac-lea'-i
 Mac-leau'-a
 Mac-leau'-y-a
 Mac-leay'-a
 Mac-leay'-i
 Mac-lu'-ra
 Mac-nab-y-a'-na
 Mac-o'-dès
 Mac-ou'-an-i

Words derived from Latin and Greek (i.e., all except those in italics) to be pronounced as follows: à as in àp-art'; ä as in psà'-lmist; è as in slèn'-der; é as in vè'-ined; í as in thín; í as in mach'-i-nist; ò as in röt'-ten; ó as in vò'-ter; ù as in pow'-er-fùl; ù as in rá'-ler; ý as í; ý as í; æ, œ, ei, as ai in pain; au as ou in house; g, c, and ch, always hard, as, for example, g in good, c in muscular, and ch in Christian. (For the old method, see page 276.)

* This word is discussed at the end of the Pronouncing Dictionary.

Pronouncing Dictionary—continued.

Mac'-qui
mac-rac-an'-thia
Mac-rad-o'-ul-a
mac-rad-o'-num
Mac-ræ'-u
Mac-ræ'-i
mac-ran'-dra
Mac-ran-op'-lon
Mac-ranth'-us
mac-rob'-ot-rys
mac-roc-al'-yx
mac-roc-ar'-pa
mac-roc-eph'-al-a
Mac-roc-er-at'-i'-dēs
mac-roch'-i'-lum
Mac-roch'-lō-a
Mac-roc'-lad-us
*Mac-roc-ne'-mum**
mac-rod-ac'-tyl-a
mac'-rod-on
mac-rod-on'-ta
Mac-rog-lōs'-su
Mac-rol-op-id-op'-ter-a
Mac-rol-ob'-y'-um
mac-rol'-ob-um
Mac-rom-er'-i'-a
mac-rop-et'-ul-a
mac-roph-yl'-lum
Mac-rop'-ip-cr
mac-rop-lee'-tron
Mac-rop-le'-thus
mac-rop'-od-a
mac-rop'-ter-a
mac'-rop-us
mac-rorh-i'-zon
Mac-rorh-yn'-chus
Mac-ros'-iph-ōn
mac-ros-pa'-dix
mac-ros-pef'-la
Mac-ros-por'-y'-um
mac-ros'-por-um
mac-ros-tach'-y-a
mac-ros'-tach-ys
mac-ros-teg'-i-a
mac-ros-te'-ma
mac-ros-teph'-an-a
Mac-ros-tig'-ma
mac-ros'-tyl-a
Mac-ros'-tyl-is
mac-roth-yr'-sa
mac-ro'-tis
Mac-rot'-rop-is
mac-rou'-ra
Mac-roz-a'-m)-a
mac-ru'-ra
mac-ul-a'-tus
mac-ul-o'-sa
mad-ag-as-car-i-en'-sis
Ma-da'-ri-a
Mad-ar-og-lōs'-su
Mad'-den-i
Mad-dis-on-i-a'-na
mad-e-ren'-sis
Ma'-di-a
Mad-on'-na

mad-ras-pat-a'-na
mad-ren'-sē
Mæ'-ru-a
Ma'-sa
mæ'-el-ac-us
Mag-dal-o'-nus
mag'-l-lan'-ic-us
mag'-ic-um
Mag'-ly-a
Mag-nic-or-o-na'-ti
mag-nif'-ic-us
Mag-no'-ll-a
Mag-no-ll-a'-cē-a
mag-no-ll-a-fol'-y'-um
Mah-ag-o'-ni
Mah'-al-eb
Ma-har-ang'-a
Ma-her'-nī-a
Ma-ho'-nī-a
Ma-hu'-rē-a
Ma'-i
Mai-anth'-em-um
ma-id-if-ol'-y-a
Maim'-ē-a
Mair'-y-a
ma-ja'-lis
ma-jes'-tic-a
ma'-jor
Maj-or-a'-na
maj-or-a-nō-i'-dēs
ma'-jus
Ma'-ki
Mak-oy'-a
Mak-oy-a'-na
Mal-ab-a'-la
mal-ab-a'-ric-a
mal-a-bath'-ric-a
Ma-lab-ath'-rum
Mal-ach-ad-e'-nī-a
Mul-ach'-y-um
Mal-ach-od-on'-dron
Mal-ach'-ra
Mal-ac-oc-ar'-pus
mal-ac-ē-i'-dēs
mal-ai-a'-na
Mul-ax'-is
ma-lay-a'-num
Mal-col'-m)-a
*mal'-ē-ol-ens**
Mal-es-herb'-y'-ō-a
*Ma'-lj**
ma-lif-or'-mis
mal-lē-if'-er-a
Mal-loc-oc'-ca
Ma'-lop-e
Mal-or-ti'-ā-a
Mal-or-ti'-ā-a'-nus
Mal-pi'-ghī-a
Mal-pi'-ghī-a'-ci-ō
Ma'-lus
Mal'-va
Mal-va'-cē-a
Mal-va-cē-a'-rum
mal-va'-cē-um
Mal-vas'-trum

Mal-vav-is'-cus
Ma'-ly-i
Mal-zī'-nē-i
Ma'-mē-i
Mam-es'-tra
Mam-il-la'-ri-a
Mam'-me-a
Mam-mil-la'-ri-a
mam-mo'-sa
Man-cin-el'-la
Man-dec-il'-la
Man-di-oc'-ca
man-di-oc-ca'-na
Man-drag'-or-a
mand-schul'-ric-us
Man-es-ca'-vi
Man-el'-tī-a
man-el-tī-a-flo'-rus
Mang'-has
Mang-if'-er-a
Mang'-le
Mang-les'-i-a
Mang-les'-y-i
Mang-bil'-la
Mang'-or-a
Mang-os-tā'-na
Man-ic-a'-ri-a
man-ic-a'-ta
Man'-i-hot
Man-li'-y-a
Man'-nī-i
Man-tis'-y-a
Man-ul'-ē-a
Man-ul-ē-ē'-ō
Ma-on-et'-ti
Mu'-pa
Map'-ja
Mar-a'-ja
Mu'-rum
Mar-an'-ta
Mar-an'-tō
mar-an-tō'-ō
Mar-anth'-es
Mar-us'-mī-tus
Mar-at'-tī-a
Mar-at'-tī-ē-ō
Marc-grav'-y'-ō-ō
March'-y-i
Mar-ci-a'-nus
mar-gar-i-tā'-cē-um
mar-gar-i-tif'-er-a
mar-gin-a'-lis
mar-gin-a'-la
mar-gin-el'-la
mar'-gin-em-tor'-quens
Mar-gyr-ic-ar'-pus
Mar'-i-ē
Mar-i'-ē-Beg-i'-no
Mar-i-al'-va
Mar-i-a'-na
Ma-ri-anth'-us
Mar-i-a'-num
Ma'-ric-a
Ma-ries'-y-i

Words derived from Latin and Greek (i.e., all except those in italics) to be pronounced as follows: ä as in äp-art'; ä as in psä-lmist; ð as in slēn'-der; ē as in vē'-ined; y as in thŷn; i as in mach-ī'-nist; ð as in rŷt'-ten; ð as in vŷ-ter; ŷ as in pow'-er-fŷl; ŷ as in rŷ'-ler; ŷ as y; ŷ as i; æ, œ, oi, as ai in pain; au as ou in house; g, o, and ch, always hard, as, for example, g in good, e in muscular, and ch in Christian. (For the old method, see page 276.)

* This word is discussed at the end of the Pronouncing Dictionary.

Pronouncing Dictionary—continued.

Ma'-ril-a
ma-ri-land'-ic-a
mar-i'-na
mar-it'-im-a
Mar'-lè-a
Mar-me'-los
mar-mor-a'-ta
mar-mor'-è-a
mar-mor-oph-yl'-lum
Mar-nock-Y-a'-na
mar-oc-ca'-na
mar-o-ni-en'-sè
Mar-ri-of-fl-a'-na
Mar-rub-Y-as'-trum
Mar-rub'-Y-um
Mar-ry-at'-tw
Mar-schal-li-a'-na
Mars-den'-Y-a
Mar-shal'-li-a
Mar-shal'-li-w
Mar-shal-li-a'-num
Mar-shal'-li-i
Mar-si'-lè-a
Mar-si'-lè-w
Mar-su'-pè-um
Mar'-tag-on
Mar-tens'-Y-i
Mar-ti-a'-na
Mar'-ti-i
Mar-ti-ne'-zi-a
Mar-ti'-ni
mar-tin-i-cen'-sis
Mar-tin-i-e'-ri-a
Mar-tyr'-Y-a
Ma'-ru
Mar'-um
Mar-u'-mè-a
ma-ry-land'-ic-a
mas
Mas-car-en-ha'-sè-a
mas-cul-a
mas-cul-a'-ta
Mas-dev-àl'-li-a
Mas-sal-ong-Y-a'-num
Mas-san'-gè-a
Mas-san-gè-a'-na
Mas-san'-gè-i
Mas-so'-ni
Mas-so'-nè-a
Mas-so-nè-a'-na
Mas-so'-vè-a
Mas-tac-anth'-us
Mas-tern-Y-a'-na
Mas-tern'-Y-i
Mas-u'-ca
Mat-ax'-a
Math'-è-a
Math'-Y-ol-a
Math-o-fl-a'-na
Mat-o'-ni-a
Mat-ou'-re-a
Ma-tri-ca'-rè-a
ma-tro-na'-lis
Mat-thews'-Y-i
Mat-thè'-ol-i

Mat-this-o'-nè-a
Mat-tuschk'-Y-a
ma-tu-ti'-na
Mau'-gè-i
Mau'-lè-i
mau'-ra
Mau-ran'-dy-a
Mau'-rè-a
mau-ri-ta'-nic-a
Mau-rit'-Y-a
mau-rit'-Y-w-for-mis
mau-rit'-Y-a'-nus
Mau-roc-e'-nè-a
man-ro'-rum
Maw-e-a'-na
Maw'-Y-i
max-il-la'-rè
Max-il-la'-rè-a
max'-im-a
Max-im-il-Y-a'-na
Max-im-èl-Y-a'-ni
Max-im-ow-ic'-zi-a
Max-im-ow-ic'-zi-i
May-a'-ca
May-a'-cè-w
May-a'-na
Mayr'-i
Ma'-ys
May'-ten-us
Maz'-el-i
Maz'-èl-i
Maz'-us
Mead'-Y-a
Me-oo-nop'-sè-a*
Me-cos-o'-rus
Me-de'-ol-a
Me'-dic-a*
Me-dio-a'-go
Med-i'-cè-a*
Me-din-il'-la
Med-Y-oc-or-o-na'-ti
med-it-er-ra'-nè-us
med'-Y-um
med-ol-è-j'-dès
Med-o'-ra
med-ul-la'-ris
Med-u'-sè
Meg-ac-ar-pæ'-a
Meg-ac-ar'-pha
meg-ac'-er-as
Meg-ach-i'-lo
Meg-ac-li'-nè-um
meg-al-anth'-a
meg-al'-od-us
Meg-al-oth-e'-ca
meg-aph-yl'-la
meg-ap-ot-am'-ic-us*
Meg-ar-rhi'-za
Meg-as'-è-a
meg-as-per'-ma
meg-as-tach'-Y-a
meg-as-tig'-ma
me-if-ol'-Y-um
Meir-ac-yl'-Y-um
meir'-ax

Mel-al-en'-os*
Mel-amp'-sor-a
Mel-am-py'-rum
mel-an-anth'-um
mel-an-a'-ri-us
mel-an-chof'-ic-us
Mel-an'-drè-um
Mel-an-oc-ar'-pum
mel-an-oc-an'-lon
mel-an-och-w'-tes
mel-an-och-ry'-sum
mel-an-oc-oc'-ca
mel-an-ol-eu'-ca
mel-an-op-et'-al-um
mel-an-oph-thal'-mum
mel'-an-ops
Mel-an-op'-ter-is
mel-an'-op-us
mel-an-orch'-od-a*
Mel-an-or-rhoc'-a
Mel-an-os-el-i'-num
mel-an-ox-anth'-a
mel-an-ox'-yl-ou
Mel-anth-u'-cè-w
Mel-anth-e'-ra
Mel-anth'-Y-um
Mel-arh-i'-za
Mel-as'-ma
Mel-as-pha'-rul-a
Mel-as'-tom-a
Mel-as-tom-a'-cè-w
Mel-è-a'-gris
mel-è-a'-grè-i'-dès
Mel-eg-ue'-la
Mel-han'-Y-a
Mel'-Y-a
Mel-Y-a'-cè-w
Mel-Y-anth'-è-w
Mel-Y-anth'-us
Mel-ich'-rus
Mel-ic-oc'-ou
Mel-ic'-op-o
mel-il-o-tè-i'-dès
Mel-il-o'-tus*
Mel-in'-dres
Mel-in-o'-ni
Me'-lin-um
Mel-Y-oc'-ma
mel-Y-o'-sum
Mel-jè'-sa
mel-is-sè-fol'-Y-a
mel-is-sè-j'-dès
Mel-is-soph-yl'-lum
mel-it-tif-ol'-Y-a
Mel-it'-tis
mel'-lè-us
mel-lif'-er-a
mel-lif'-ic-a
Mel'-loc-a
Me'-lo*
Me-loc-ac'-tus
mel-oc'-ton-um
Me-lod-i'-nus
me-lof-or'-mis
Mel-ol-onth'-a

Words derived from Latin and Greek (i.e., all except those in italics) to be pronounced as follows: à as in àp-art'; á as in pæá-lmist; è as in slèn'-der; é as in vé-ined; Ý as in thÿn; Ì as in mach-i'-nist; ð as in rôtt'-ten; ò as in vò'-ter; ù as in pow'-er-fùl; ù as in rà'-ler; ý as Ý; ý as Ì; æ, œ, ei, as ai in pain; au as ou in house; g, c, and ch, always hard, as, for example, g in good, c in muscular, and ch in Christian. (For the old method, see page 276.)

* This word is discussed at the end of the Pronouncing Dictionary.

Pronouncing Dictionary—continued.

Me-long'en-a
Mel-vil'-la
 mem-bra-na'-cō-um
 mem-bra-nif-ol'-i-um
 Me-mo-cyl'-ō-a
 Me-mo'-cyl-on
 Mēm-phi'-tie-a
Men-de'-li-i
Men-de'l'-li
 men-di'-ca
 Me-nin'-i-a
 me-nis-ef-if-ol'-i-um
 me-nis-ef-ō-i'-des
 Me-nis'-ef-um
 Me-nis-per-ma'-cō-ō
 Me-nis-per'-mum*
 Men'-tha
 Men'-the
 men-tha-fol'-i-a
 Men-thas'-tri
 mon'-tā-ens
Ment-ze'-li-a
 Mo-ný-anth'-ō-a
Men-zies'-i-a
Men-zies'-i-a'-na
Men-zies'-i-i
 Merck'-i
 Mēr-cur'-i-a'-lis
 mer-dig'-er-a
Mer-en-de'-ru
Me-ri-a'-na
Me-ri-a'-nae
Me-ri-a'-nā-a
 Me-ris-los-tig'-ma
 Mēr'-od-on
Mer-ten'-si-a
Mer-ten-si'-na
 Mer-ul'-i-us
 Mēr'-yt-a
 Mes-em'-brý-anth-om'-ō-a
 mes-ēm-brý-anth'-em-ō-i'-dēs
 Mes-ēm-brý-anth'-em-um*
 Mes-ēm'-brý-ō-a
 Mes-oel-lu'-na
 mes-och'-lō-a
 Mes-oc-las'-tēs
 mes-ol-ou'-eum
 Mes-os-pi-nid'-i-um
 mes-pil-ō-i'-dēs
 Mes'-pil-us
Mes-ser-schmid'-i-a
Me'su-a
Met'-ak-e
 met-al'-lic-a
 Met-ax'-ý-a
Me'tel
me-tel-ō-i'-dēs
Meth-on'-ic-a
 Me-trod-ō'-rē-a
 Me-tros-id-ō'-ros
 Me-trox'-yl-on
Met-ter-nich'-i-a
Met-ter-nich'-i-i
 me-tul-ō-flo'-ra
 me-tul-if'-er-us

Me'-um
mes-ic-a'-na
Mey-en'-i-a
Meg'-er-i
Mey-er'-i-a'-num
Meyn'-i-a
Mez-e'-rē-on
Mez-e'-rē-um
 mic'-ans
Mich-aux'-i-a
 • *Mich-aux'-i-a'-num*
Mich-aux'-i-i
Mich-el'-i-a
Mich-el'-i-i
Mich-el'-li
Mi-co'-nā-a
 Mi-cran'-dra*
 mi-cran'-tha
 Mi-cran-thel'-la
 Mi-cran-tho'-ra
 Mi-croc-ach'-rys
 Mi-croc-al'-i-a
 mi-croc-ar'-pū
 Mi-croch-i'-lus
 Mi-croc-oc'-cus
 Mi-croc-y'-cas
 mi-crod'-as-ys
 mi'-crod-on
 Mi-crog-as'-tēr
 Mi-crog-en'-et-ēs
 Mi-crog-lō'-sa
 Mi-crog-ō'-nū-um
 Mi-crog-ram'-me
 mi-crog-raph-us
 Mi-crol-op'-i-a
 Mi-crol-op-id-op'-ter-a
 Mi-crol-ic'-i-a
 Mi-crol-ō'-ma
 Mi-crom-er'-i-a
 mi-crom-er-is
 Mi-crom-yr'-tus
 Mi-crop-ē'-ra
 Mi-crop-et'-al-on
 mi-crop-et'-al-um
 mi-croph-yl'-lu
 Mi-crop'-ip-er
 mi-crop'-ter-a
 mi-cros-cop'-ic-a
 mi-cros'-cyph-a
 Mi-cros-ō'-ri-um
 Mi-cros-per'-ma
 Mi-cros-phæ'-ra
 Mi-cros-taph'-yl-a
 mi-cros-te'-ma
 Mi-cros-teph'-i-um
 Mi-cros'-tyl-is
Mid-den-dorf'-i-a'-na
Mid-den-dorf'-i-i
Mie-lich-af'-er-i
Mi-cr'-i-a
mi-ers'-i-ō-i'-dēs
Mik-an'-i-a
Mik-an'-i-a'-na
 mik-an'-i-ō-i'-dēs
Mi-le'-si-i

mil-ford-en'-sis
 mil'-i-a'-cō-um
 mi-lit-a'-ris
Mil'-la
 mil-lef-ol'-i-a
 mil-lef-ol'-i-a'-tum
 Mil-leg-ra'-na
Mil-lel'-ti-a
Mil-lā'-num
Mil-ling-to'-na-a
Mil-nē'-a'-na
Mil-tits'-i-a
Mil-to'-nā-a
 Mi-me'-tes
 mi'-mic-us
 Mi-mo'-sa
 Mi-mo'-sæ
 mi-mo-sif-ol'-i-a
 Mi'-mul-us*
 mi'-mus
 Mi'-mus-ōps
Mi'-na
 min'-ax
 min'-i-a'-tus
 min'-im-a
 min'-or
 min'-ta
 min'-us
 min-u-tis'-sim-a
 min-u'-tum
Mi-quel'-i-a
Mi-quel'-i-a'-na
Mi-quel'-i-i
Mi-quel'-li
 mi-ra'-bil-e
 Mi-ra'-bil-is
mi-ra-do-ren'-sis
 mi-ran'-dum
Mir-bel'-i-a
 Mis-canth'-us
 Mis-cop-et'-ul-um
mis-son'-ric-a
mis-sou-ri-en'-sis
mis-tar-si'-nic-a
Mil-chol'-lu
Mil-chol'-li-a'-na
 Mit-el'-la
 mit-el-lō-i'-dēs
Mil-i'-qui
 mi'-tis
 mi-tis'-sim-us
 Mit-op-et'-al-um
 Mit-rac-ar'-pum
 mit-ræ-for'-mis
 Mit-ra'-ri-a
 Mit-ras-tig'-ma
 mit-ra'-tum
 Mit-ri-os-tig'-ma
 mix'-ta
 Mne-mos-il'-la
Moc-an-e'-ra
Moc-in'-i-a'-na
Mod-e'-ca
 mod-es'-tum
 Mod'-i-ol-a

Words derived from Latin and Greek (i.e., all except those in italics) to be pronounced as follows: ã as in ãp-art'; a as in psã-lmist; ð as in slðn'-der; ð as in vð'-ined; I as in thin; i as in mach'-nist; ð as in rðt'-ten; ð as in vð'-ter; ñ as in pow'-er-fñl; ù as in rù'-ler; ý as I; ý as i; æ, œ, ei, as æt in pain; an as ou in house; g, c, and ch, always hard, as, for example, g in good, c in muscular, and ch in Christian. (For the old method, see page 276.)

* This word is discussed at the end of the Pronouncing Dictionary.

Pronouncing Dictionary—continued.

Mahn'-i-a
Mähr-ing'-i-a
Mær-en-houl'-i-a'-na
mog-ad-u-ren'-sis
Mog-grid'-gē-i
Moh'-rī-a
moh-rī.ñ.ī'-dēs
mol-da'-ric-um
Mol'-u'-nī-a
Mol'-le
*mol'.lē**
Mol'-ti-a
mol'-lie-eps
mol-lis'-sim-a
Mol-loj'-u
Mol-lu-gin'-ē-æ
Mo-lo-pos-per'-mum
Moll'-kī-a
Mol-uc'-ca
mol-uc-cu'-na
Mol-uc-cel'-la
mo-luc-con'-sis
*Mo'-ly**
Mom-or'-dic-a
*mon-ae-anth'-a**
mon'-ach-a
Mon-ach-anthi'-us
Mon-ach-os-o'-rum
mon-ad-el'-pha
mon-anth'-em-um
Mon-anth'-os
Mon-ar'-da
Mon-ar-del'-la
Mon-el'-li
Mon'-es-ēs
mon-gol'-io-a
Mon-i'-li-a
mon-i-lif'-er-a
mon-i-lif-or'-mis
Mon-im'-i-a
Mon-im-ī-a'-cē-æ
Mon-im'-i-ī-æ
Mon-iz'-i-a
Mon-nī-e'-ra
Mon-nī-e'-ri
Mon-nī'-na
Mon-ob-oth'-rī-um
mon-oc-eph'-al-a
Mon-oc'-er-a
mon-oc'-er-as
Mon-och-æ'-tum
Mon-och-i'-lus
mon-och'-lam-ys
Mon-och-o'-rī-a
mon-oc-oc'-cum
*Mon-od'-or-a**
Mon-og-ram'-me
mon-og'-yu-um
mon-oi'-ca
Mon-o'-len-a
Mon-ol'-oph-us
Mon-ol-o'-pl-a
Mon-om-er'-i-a
Mon-op'-an-ax
mon-op-et'-al-a

mon-oph-yl'-la
Mon-op'-sis
mon-op'-ter-a
mon-op-yr-e'-num
Mon-or'-chis
mon-os-o'-rum
mon-os-per'-mum
mon-os-tach'-y-a
Mon-oth-y'-lac-ē-um
Mon-ot'-oc-a
Mon-ot'-rop-a
Mon-ot-rop'-ē-æ
Mon-ox'-or-a
mon-ro-ga-len'-sē
Mon-so'-nī-a
Mon-so'-nī-æ
mon-spel'-i-æ-nis
mon-spel'-i-en'-sis
mon-spel'-i-en'-si-um
mon-spes-sul'-a'-num
Mon'-ster-a
mon-stro'-sa
Mon-tag'-nī-a
mon-tal-ban'-sis
mon-ta'-na
Mon-ta'-no-a
Mont-bret'-i-a
Mon-teir'-i
Mon-teir'-i-ī
mon-ter-id-en'-sis
Mon-ter-n'-ma
Mon-ter-n'-ma
mon-tic'-ol-a
Mont-rich-ard'-i-a
Moon'-i-i
Moor-a-a'-na
Moor'-e-i
Mo-qui'-lā-a
Mo-qui'-li-a
Mor-a'-a
mor-bil-lo'-sum
Mor-chel'-la
Mor-dil-c'-na
Mor'-ē-æ
Mor-el'-i
Mor-el-ī-a'-na
Mor-el'-la
Mor-e'-nī-a
Mor-e'-nī-i
Mor-ga'-qui-a
Mor-gan'-i-a
Morg-sa'-nu
mo'-ri
Mor-i-can'-dī-a
Mor'-ī-na
Mor-in'-da
Mor-ing'-a
Mor-ing'-ē-æ
Mo'-rī-o
Mor-ir-o'-nī-a
Mor-itz-ī-a'-na
Mor-mo'-dēs
Mor-mol'-ye-a
Mor'-na
Mor-on-o'-bī-a

Morph-ix'-i-a
Mor-ren'-i
Mor-ren-ī-a'-na
Mor-ren'-i-i
Mor'-sus-ra'-na
Mor-tin'-i-a
Mo'-rus
Mos-cha'-rī-a
mos-cha'-ta
Mos-chou'-tos
Mo-sen'-i-i
Mos-ig'-i-a
Foss'-i-æ
Mouf-fel'-lu
moul-main-en'-sē
Mou'-tan
Mu-oc'-din-ēs
Mu'-oor
mu-cro-na'-ta
mu-cro-nif-ol'-i-um
mu-cro-nul-a'-ta
Mu-cu'-na
Muehl-en-beck'-i-a
Muel'-ler-a
Mu'-ghus
Muhl-en-berg'-i
Mu'-ki-a
Mul-go'-dī-um
mul-tib-rac-tā-a'-tus
mul-tic-an'-lis
mul'-tic-eps
mul-tic'-ol-or
mul-tif'-id-a
mul-tif lo'-ra
mul-tif-ur-on'-ta
mul-tij'-ng-a
mul-tin-er'-va
mul'-tip-lex
mul-tir-ad-ī-a'-tus
mul-tis-oc'-tum
mu'-lus
Mu'-me
Mun-by-a'-na
mun'-di
Mund'-li-a
mun'-dul-a
mu-nī'-tum
Mun'-ja
Mun-ro-a'-num
Mun-ro'-i
Mun-ting'-i-a
mu-ra'-lis
Mu-rall'-i-a
mu'-rex
mu-ric-a'-ta
mu-rī'-num
Mur-ray'-u
Mur-ray-a'-na
Mur-ray'-i
Mur-rel'-li-a'-num
Mur-sel'-li
Mur-ton-ī-a'-na
Mu-ru-cu'-ja
Mu'-ru-Mu'-ru
Mus

Words derived from Latin and Greek (i.e., all except those in italics) to be pronounced as follows: ā as in āp-art'; a as in paā-lmist; ē as in slēn'-der; ē as in vē-ined; ŷ as in thīn; ī as in mach-ī'-nist; ō as in rōl'-ten; ō as in vō'-ter; ū as in pow'-er-fāl; ū as in rā'-ler; ŷ as ī; ŷ as i; æ, œ, ei, as ai in pain; au as ou in house; g, c, and ch, always hard, as, for example, g in good, c in muscular, and ch in Christian. (For the old method, see page 276.)

* This word is discussed at the end of the Pronouncing Dictionary.

Pronouncing Dictionary—continued.

Mu'-sa
 mu-æ-fol'-y-um
 mu-sa'-ic-a
 Mus-cæ-tox'-ic-um
 Mus-cæ'-ri
 Mus-cæ'-rī-a
 Mus'-ci
 mus-cif'-er-um
 mus-cip'-ul-a
 mus-cō-i'-dēs
 Mu'-sō-m
Mus-aæn'-da
 Mus'-schī-a
 Mus-schī'-a-num
 Mus-si'-ni
 Mus-si'-nī-a
 Mus-te'-la
 mu-ta'-bil-e
 mu-ta'-ta
Mu-tel-li'-na
 mut'-ic-a
 mut-il-a'-ta
Mu-ti'-st-a
 Mu-ti'-st-i
 Mŷ-anth'-us
 Myc-od-er'-ma
 My'-con-i
 My-con'-y-a
 Myg-in'-ta
 My-lam'-y-a'-na
 Myl-i'-num
 Myl-oc-ar'-y-um
 mŷ-op-æ-for'-mis
 Mŷ-op-or-in'-d-æ
 mŷ-op-or-δ-i'-dēs
 Mŷ-op'-or-um
 mŷ-os-o'-tid-if-lo'-ra
 Mŷ-os-o-tid'-y-um
 Mŷ-os-o'-tis*
 mŷ-os-o-tō-i'-dēs
 Mŷ-os-u'-rus
 Myr'-ol-a
 my-rī-æ-anth'-a*
 My-rī-ud-e'-nus
 My-rī-ap'-od-a
 Myr'-y-æa
 Myr-i-cæ'-cō-æ
 Myr-i-cū'-rī-a
 myr-i-cō-i'-dēs
 my-rī-oc-ar'-pum
 My-rī-oc-oph'-al-us
 My-rī-oph-yl'-lum
 My-rī-op'-ter-is
 my-rī-os-tig'-ma
 Myr-is'-tic-a
 myr-is-tic-æ-for'-mis
 Myr-is-tic'-æ
 Myr-ob-al'-un-us*
 Myr-ob-ro'-ma
 Myr-o'-dī-a
 Myr-os-per'-mum
 Myr-ox'-yl-on
 Myr'-rhia
 Myr'-sin-e
 Myr-sin'-d-æ

Myr-sin-i'-tēs
 Myr-siph-yl'-lum
 Myr-stiph-yl'-lum
 Myr-ta'-cō-æ
 myr-tif-ol'-y-a
 myr-til-lō-i'-dēs
 Myr-til'-lus
 myr-tō-i'-dēs
 Myr'-tus
 my-so-ren'-sis
 mys-tac'-in-um
 my-su-ren'-sis
 My-til-as'-pis
 Myx'-a
 Myx-om-yc-e'-tēs
 Myz'-us

Nab'-al-us
 Nac-ib-e'-a
 Nag-el'-y-a
 næg-el-γ-δ-i'-dēs
 Næ'-nī-a
 næ-vī-um
 Nag-ei'-a
 Na'-gi
 Nai-ad-a'-cō-æ
 Na'-ma
 na-ma-quen'-sis
 na'-na
Nan-di'-na
 Nan-ki-men'-sis
 Nan'-norh-ops
 Na-no'-dēs
 Na-pæ'-a
 na-pel-lō-i'-dēs
 Na-pel'-lus
 Na'-pi
 na-pif-or'-mis
Nap-o-le-o'-na
Nar-av-e'-ly-a
 nar-bo-nen'-sē
 nar-cis'-sif-lo-ra
 nar-cis-sō-i'-dēs
 Nar-cis'-sus
 Nar'-da
 Nar-dos'-mī-a
 Nar-dos'-tach-ys
 nar-the-ci-δ-i'-dēs
 Nar-the'-of-um
 Nar'-thex
Nas-myth'-y-a
 Na'-so
 Na-σ'-nī-a
 Nas-tur'-tī-um
 na-su'-tum
 nat-al-en'-sis
 na-ta-lit'-y-us
 nat'-ans
 Na-tī-o'-nis
 Nat'-rix
 Nau'-clō-a
Naum-berg'-y-a
 Nau'-plī-us

Nau-til-oc'-al-yx
Nav-ar-rel'-tī-a
Nav-e'-nī-a
 na-vic'-ul-a
 na-vic-ul-a'-ris
 Ne-g'i
 Nē'-ra
 nē-a-pol-it-a'-num
 neb-ro'-den-sis
 neb-ul-o'-sa
 neo-a'-trix
 Nec-tan'-dra*
 Nec-tar-ob-oth'-rī-um
 Nec-tar-os-cor'-dum
 Nēo'-trī-a
 Nēo-trī-a'-cō-æ
 Nēo'-tris
Neem'-da
 ne-glec'-tus
Neg'-un-do
 neil-gher-ren'-sē
 Neil'-lī-a
 Neip-erg'-y-a
 Neit-ner'-y-i
 Nē'-ja
 Nel-i'-st-i
 Nel-it'-ris
 Nel-so'-ni
 nel-um'-br-if-ol'-y-um
 Nel-um'-br-um
 Ne-mac-o'-nī-a*
 Ne-mas'-tyl-is
 Ne-mat-anth'-us
 Ne-mat'-in-a
 Ne-mat-oc'-er-as
 Ne-mat-oph-yl'-lum
 Ne-mat-os-tig'-ma
 Ne'-ma-tus
 Nem-ē-oph'-il-a
 Nem-es'-y-a
 Ne'-mī-a
 Ne-mop-anth'-ēs
 Nem-oph'-il-a*
 nem-or-a'-lis
 nem-or-o'-sa
 nem'-or-um
 Ne-mos'-tyl-is
 Ne'-mu
Neng'-a
 Neng-el'-la
 ne-nū'-phar
 nē-ob-or-y-en'-sis
 nē-oc-al-e-don'-ic-um
 nē-ōg-uin-e-en'-sē
 Nē-og'-yn-e
 Nē-ol-ex'-is
 nē-on-on-ta'-num
 Nē-ot'-tī-a
 Nē-ot-tid'-y-um
 Nē-ot'-tī-ē-æ
 Nē-ot-top'-ter-is
 nep-a'-len-sis
 nep-au-len'-sis
 Ne-pen-thu'-cō-æ
 Ne-pen'-thēs

Words derived from Latin and Greek (i.e., all except those in italics) to be pronounced as follows: ä as in *äp-art'*; ä as in *psä-lmist*; ä as in *slän'-der*; ä as in *vē-ined*; I as in *thin*; I as in *mach-i'-nist*; ö as in *röt'-ten*; ö as in *vö'-ter*; ù as in *pow'-er-fül*; ù as in *rü'-ler*; ŷ as I; ŷ as I; æ, œ, ei, as *ai* in *pain*; au as *ou* in *house*; g, c, and ch, always hard, as, for example, g in *good*, o in *muscular*, and ch in *Christian*. (For the old method, see page 276.)

* This word is discussed at the end of the Pronouncing Dictionary.

Pronouncing Dictionary—continued.

ne-pen-thō-i-dēs
 Nep-et-a*
 nep-et-æ-fol'-y-a
 nep-et-ō-i'-dēs
 Neph-el-aph-yl'-lum
 Neph-el'-y-um
 Neph-ran'-dra*
 Neph-ran-the'-ra
 neph-ro-dī-ō-i'-dēs
 Neph-ro'-dī-um
 Neph-rol'-ep-is
 Neph-ros-per'-ma
 Neph'-thyt-is
 Nep-tic'-ul-a
 Nep-tū-nī-a
 Ne-ri-e'-ne
 Ne'-ry-i
 ne-ry-if-ol'-y-a
 ne-ry-if-or'-mis
 ne-ri-næ-flo'-rum
 Ne-ri'-ne
 ne-ri-nif-lo'-rum
 Ner-is'-sa
 Ne'-ry-um
 Ner'-ter-a
 Ner-ter'-y-a
 ner-vo'-sum
 Ne-sæ'-a
 Neu-beck'-i-a
 neu-berg-on'-sō
 Neu-be'-ri-a
 Neu-ber'-ti
 Neu-dorf'-y-a
 Neu-man'-nī-a
 Neu-man-nī-a'-na
 Neu-rad'-ō-æ
 Neu-ro'-dī-um
 Neu-rol'-æ-na
 Neu-rol'-o'-ma
 Neu-rop'-ter-a
 Neur-ōs-per'-ma
 Neur-ot'-er-us
 Neus-tan'-thus
 neus'-trī-a
 nev-a-den'-sis
 Ne'-vi-i
 Nev-il'-li-æ
 Nev-ber'-ry-i
 New-bould'-y-a
 New-el'-li
 New-man'-y-i
 Ney-pegy'-y-a-na
 Nhan-dir'-o'-ba
 Nhan-dir'-o'-bā-æ
 Ni'-bung
 ni-cæ-en'-sō
 Nic-an'-dra
 Nick-el'-li
 Nic-ol-a'-i
 Ni-co-ll-a'-na
 ni-co-ll-a-næ-fol'-y-um
 nic'-tit-ans
 nid-path-en'-sis
 Ni-dul-a'-ri-um
 ni'-dus

Ni'-dus-av'-is
 Nie-buh'-ri-a
 Nier-em-berg'-y-a
 Nig-el'-la
 Nig-el-las'-trum
 nig-el-lif-lo'-ra
 nig'-er
 nig'-ra
 nig-ra'-tum
 nig-res'-cens
 nig-ric-a'-na
 nig'-ric-ans
 nig-ric-or'-nis
 Nig-ri'-na
 nig'-rip-ēs
 nig-ri'-ta
 nig'-rum
 nik-o-en'-sō
 Nil
 ni-lag-er'-ic-um
 ni-lo'-tic-a
 Ny'-ob-e
 Ni'-pa
 Ni-pa'-cō-æ
 Niph-w'-a
 Niph'-et-ōs
 Niph-ob'-ol-us
 Niph-op'-sis
 Nis-so'-li-a
 nit'-ens
 nit'-id-a
 niv-a'-lis
 niv'-ō-a
 Niv'-en-i
 Niv-en'-y-a
 niv-o'-sus
 No-ack'-y-i
 no-bil'-y-or
 no'-bil-is
 no-bil-is'-sim-us
 no-bil'-y-us
 No'-bla
 No-ble-a'-num
 Noc'-ca
 Noc-æ'-a
 noc-til-u'-ca
 Noc'-tu-a
 Noc'-tu-æ
 Noc'-tu-id-æ
 Noc-tu-i'-na
 Noc-tur'-ni
 no-da'-tum
 no-dif-lo'-ra
 no-do'-sa
 Noi-sel'-ti-a
 Noi-sel-ti-a'-na
 Nol-a'-na
 Nol-a-na'-cō-æ
 no'-li-me-tan'-ger-æ
 No-li'-na
 Nol'-y-a
 Non-at-e'-li-a
 Non'-ō-a
 Non'-ne-a
 non-scrip'-ta

noot-ka-ten'-sis
 No-pal'-e-a
 No-ran'-tō-a
 Nord-man'-nī-a
 Nord-man-nī-a'-na
 Nor-man-by-a'-na
 Nor-man-by'-i
 Nor'-na
 Nor-ōn'-hæ
 Nor-lē'-nī-a
 North-y-a'-na
 not-a'-tus
 Not-cl-a'-a*
 Noth-och-læ'-na
 Noth-oc-læ'-na
 Noth-ol'-æ-na
 Noth-ol-i'-ri-on
 Noth-ōs-cōr'-dum
 No-thri'-a
 Not-y-oph'-rys
 No-tod-ont'-id-æ
 Not-on-y-a'-na
 Not-ōs-par'-tī-um
 No-ty'-ll-a
 nov'-æ-ang'-li-a
 nov'-æ-bel'-gī-a
 Nov'-æ-Zeal-and'-y-c
 nov-ob-or-æ-en'-sō
 Now-el-li-a'-na
 No-wod-wor'-sky-a
 nu-bio'-ol-a
 nu-big'-en-um
 nuc-if'-er-um
 nuc'-um
 nu'-da
 nu-da'-ta
 nu-dic-an'-lis
 nu-dif-lo'-rum
 Num-id'-ic-a
 num-is-ma'-tus
 Nūm-mul-a'-ri-a
 nūm-mul-a'-ri-a-fol'-y-a
 Nun-nex'-hu'-ri-a
 Nun-nex'-y-a
 Nu'-phar
 nu'-tans
 nul-ka-en'-sis
 nul-ka'-na
 Nut-tal'-li-a
 Nut-tal'-li-a'-na
 Nut-tal'-li-i
 Nuyt'-sī-a
 Nyc-ta-gin'-ō-æ
 Nyc-ta-gin'-y-a
 nyc-ta-gin-if-lo'-ra
 Nyc-tanth'-es
 Nyc-ter'-in-a
 Nyc-ter-in'-y-a
 Nyc-ter'-y-um
 nyo-tic'-al-us
 Nyc-toc'-al-ōs
 Nyl-and'-tī-a
 Nym-phæ'-a
 Nym-phæ-a'-cō-æ
 nym-phæ-if-ol'-y-a

Words derived from Latin and Greek (i.e., all except those in italics) to be pronounced as follows : ä as in äp-art'; ä as in psä-lmist; ð as in slæn'-der; ē as in vēr'-ined; Y as in thīn; I as in mach-i'-nist; ö as in röt'-ten; ö as in vō'-ter; ū as in pow'-er-fūl; ū as in rū'-ler; y as Y; y as i; æ, œ, ei, as ai in pain; au as au in house; g, c, and ch, always hard, as, for example, g in good, c in muscular, and ch in Christian. (For the old method, see page 276.)

* This word is discussed at the end of the Pronouncing Dictionary.

Pronouncing Dictionary—continued.

nym-phæ-ð-i'-dēs
Nys'-sā
Nys-sā'-cē-w

Oakes'-i-a
ob-co'-nic-a
ob-cor-da'-tus
ob-cor-dol'-lum
Ob-el-is-cū'-ri-a
Ober-on'-i-a
Ob-e'-sī-a
ob-e'-sum
ob-fus-cū'-ta
ob-lī'-qua
ob-li-qua'-tum
ob-lit-er-a'-ta
ob-lon'-ga
ob-lon-ga'-tum
ob-lon-grif-ol'-i-a
ob-ov-a'-ta
ob-ry-zā'-tum
ob-sen-rel'-la
ob-scu'-rus
ob-sol-o'-tus
ob-tu'-sa
ob-tu-san'-gul-um
ob-tu-sā'-tum
ob-tu-sif-ol'-i-a
ob-tu-sil'-ob-a
ob-tu-sil-ob-a'-ta
ob-val-la'-ris
ob-val-la'-tus
Oca'-nae
oc-cid-en-tā'-lis
oc-cul-tā'-na
o-ce-an'-ic-a
oc-el-lū'-na
oc-el-la'-ta
Och'-ma
Och-na'-cē-w
o-chra'-cē-a
O-chran'-the*
o-chrō-a'-tum
O-chroc-ar'-pus
o-chrol-cū'-ca
O-chro'-ma
O-chrop'-ter-is
O-chro'-sī-a
o-cim-ð-i'-dēs
O'-cim-um
Oc-ol-e'-a
Oc-tad-es'-mī-a
oct-an'-dra
oc-tho'-des
Oc-to-mel'-es
Oc-to-mer'-i-a
oc-to-pet'-al-a
oc-to-phyll'-lum
oc-ul-a'-tus
Oc'-ul-us
Oc'-ul-us-so'-lis
o-cym-if-ol'-i-a
o-cym-ð-i'-dēs

O'-cym-um
O'-cy-pus
Od-i-er'-i-a'-na
Od-on-tad-e'-nf-a*
Od-on-tar'-rhen-a
od-on-ti'-tēs
Od-ont-oc-ar'-pa
od-on-toch-i'-lum
Od-on-tog-lōs'-suta
Od-on-tol'-o'-ma
Od-on-ton-e'-ma
Od-on-tos-o'-ri-a
Od-on-tos-per'-mum
od-o'-ra*
od-o-ra'-ta
od-o-ra-tis'-sim-a
Oð-ee-oc'-lad-ēs
Oð-e'-mon-e
Ed'-era
Eð-ec'-tra
Eð-ec-tri'-na
Eð-oc-ar'-pus
æn-oph'-il-a
Eð-oth-e'-ra*
Eð-oth-e'-rae
Ör-sted'-i-i
of-fic-i-na'-lis
of-fic-i-na'-rum
Of'-i-a
O-hig-gin'-sī-a
o-hi-o-en'-sē
Oh-len-dorf'-fī-a
O-i'-dī-um
Ol-ae-in'-ē-w
Ol'-ax
Olb'-i-a
olb-i-on'-sis
Old-en-land'-i-a
Old-field'-i-a
Ol'-ē-a
Ol-ē-a'-cē-w
ol-ē-a-fol'-i-a
Ol-ē-an'-der
Ol-ē-an'-dra
Ol-ē-a'-rī-a
Ol-ē-as'-ter
ol-ē-if'-er-a
ol-ē-if-ol'-i-a
ol'-ens
ol-ē-ð-i'-des
ol'-ens
ol-er-a'-cē-a
Ol-fer'-sī-a
Ol'-gæ
ol-ig-an'-tha*
Ol-ig-oc-ar'-pha
ol-ig-oc-ar'-pus
Ol-ig-os'-ci-as
Ol-ig-os'-ma
ol-ig-os-per'-ma
ol-ig-ot'-rich-um
ol-it-o'-rī-a
ol-i-va'-cē-us
ol-i-væ-for'-mis
ol-i-va'-ris

Ol-iv-e'-ri
Ol-iv-e'-ri-a'-na
Ol-us-a'-trum
ol-ym'-pic-um
O-n-al-anth'-us
O-men-tā'-ri-a
om-nil-uc'-er-um
om-niv'-or-a
Om-or-i'-ka
Om-phal-an'-dri-a*
Om-phal'-ē-a
Om-phal'-i-a
Om-phal-ob'-i-um
Om-phal-oc-oc'-ca
Om-phal-o'-dēs
On-ag-ra'-rī-ē-w
on-cid-i-ð-i'-dēs
On-cid'-i-um*
On-coc-y'-clus
On-cor-rhyn'-chus
On-cos-per'-ma
On-is'-cid-w
On-is'-cus
On-i'-tēs
On-ob-ro'-ma
On-ob-rych-is
on-ob-rych-ē-i'-dēs
On-oc'-lō-a
on-oc-lō-ð-i'-dēs
On-o'-nis
on-op-or'-din-is
On-op-or'-don
On-op-or'-dum
On-os'-er-is*
On-os'-ma
on-os-mæ-flo'-ra
On-os-mo'-dī-um
on-us'-tum
on-yeh'-in-a
On-yeh'-i-um*
O-os'-por-a
op-a'-ca
Op'-al-us
Op-er-cul-a'-rī-a
op-er-cul-a'-ta
Oph-el'-i-a
Oph'-el-us
Oph-i-oc-ar'-y-on
Oph-i-oc-an'-on
Oph-i-od-er'-ma
Oph-i-og-lōs-sū'-cē-w
Oph-i-og-lōs-sē-w
oph-i-og-lōs-sē-i'-dēs
Oph-i-og-lōs'-sum*
Oph-i-op-ō'-gron
Oph-i-or-rhi'-za
Oph-i-ox'-yl-on
Oph-ryd'-ē-w
Oph'-rys
Op-lis'-men-us
Op-loth-e'-ca
Op-op'-on-ax
Op-or-an'-thus
op-pos-it-if-ol'-i-um
op-ul-if-lo'-ra

Words derived from Latin and Greek (i.e., all except those in italics) to be pronounced as follows: ð as in *ðp-art'*; ā as in *pea'-lmist*; ð as in *elēn'-der*; ē as in *vē'-ined*; ī as in *thin*; ī as in *mach'-nist*; ō as in *rōt'-ten*; ō as in *vō'-ter*; ū as in *pow'-er-fil*; ū as in *rū'-ler*; ŷ as ī; ŷ as ī; æ, œ, ei, as *ai* in *pain*; au as *ou* in *house*; g, c, and ch, always hard, as, for example, g in *good*, c in *muscular*, and ch in *Christian*. (For the old method, see page 276.)

* This word is discussed at the end of the Pronouncing Dictionary.

Pronouncing Dictionary—continued.

op-nl-ð-i'-dēs
 Op'-ul-us
 Op-un'-ti-a
 Or-a'-ni-a
 Orb'-ð-a
 orb-ic-ul-a'-ris
 orb-ic-ul-a'-ta
 Or-bi-gny-a'-nus
 or-bo'-na
 Orch-es'-tēs
 orch-id'-i-a
 Orch-id'-i-a
 orch-id-if-or'-mis
 Orch-id'-i-nm
 orch'-id-ð-i'-dēs
 orch'-i-ð-i'-dēs
 Orch'-is
 Ord-i-a'-nus
 or-ð-ad'-ēs
 or-eg-a'-na
 Or-el'-i-a
 Or-el-lat'-na
 or-en-o-ven'-sū
 Or-ð-och'-ar-is
 Or-ð-oc'-om-e
 Or-ð-od-aph'-no
 Or-ð-od-ox'-a
 Or-ð-op-an-ax
 Or-ð-oph'-il-a
 or-gan-en'-sis
 or-gy'-al-is
 Or-gy'-a
 or-i-en-ta'-lis
 or-i-gan-if-ol'-i-a
 Or-i'-gan-um*
 or-in-o-ven'-sū
 O-ri-thal'-i-a
 O-ri-thy'-i-a
 or-in-en'-sū
 Or-moc-ar'-pum
 Or-mo'-si-a
 or-na-tis'-sim-um
 or-na'-tum
 or-nif-ol'-i-a
 Or-ni-tha'-ri-um
 Or-ni-thid'-i-um
 Or-ni-thoc-eph'-al-us
 Or-ni-thoch-i'-lus
 Or-ni-thog'-al-um*
 Or-ni-thog-lōs'-sum
 or-ni-thop-od'-um
 Or-ni-thop'-ter-is
 Or-ni'-thop-us
 or-ni-thorh-yn'-chum
 Or-ni-thox-anth'-um
 Or-ni'-troph-e
 Or'-nus
 Or-ob-anch-a'-cē-a
 Or-ob-anch'-e
 Or-ob-el'-la
 or-ob-ð-i'-dēs
 Or'-ob-us
 Or-on'-ti-i-a
 Or-on'-ti-um
 Or-oph-o'-ma

Or-oth-am'-nus
 Or-ox'-yl-um
 Orph-an-id'-i-a
 Orph-an'-id-is
 Orph'-i-um
 Or-si'-ni-i
 Ort-gies'-i
 Ort-gies'-i-a
 Ort-gies'-i-a-na
 Ort-gies'-i-i
 orth-an'-tha
 Orth-oc-ar'-pus
 Orth-oc'-or-us
 Orth-och-i'-lus
 orth-op-loc'-tron
 Orth-op-o'-gon
 Orth-op'-ter-a
 Orth-os'-iph-ōn
 Orth-os-tem'-ma
 Orth-ros-anth'-us
 Or-ra'-la
 Or-y'-za
 Os-beck'-i-a
 Os-beck'-i-i
 Os-born'-i-i
 Os-kamp'-i-a
 Os-man'-thus
 Os-mo'-di-um
 Os-mun'-da
 os-mun-da'-cē-um
 Os-sa'-a
 os-sif'-rag-um
 Os-tē-os-per'-mum
 os-trē-w-for'-mis
 os-trē-a'-tus
 Os-trow-ski-a'-na
 Os-tru'-thi-um
 Os'-trū-a
 Os-y-a'-na
 Os'-yr-is
 O-tac-an'-thus
 Ot-ak'-sa
 Ot-an'-dra
 O-tan'-thus
 O-ta'-ri-a
 Oth-e'-ra
 Oth-on'-na
 Oth-on-nop'-sis
 O-tid'-i-a
 O-til'-is
 O-ti-orh-yn'-chus
 O-ti'-tes
 O-toch-i'-lus
 O-top'-ter-a
 O-tos-tem'-ma
 Ot-tel'-i-a
 Ot-to-ni-a'-na
 Ot-to'-nis
 Our'-eg-on
 Ou-ri'-si-a
 Ou-rou-pu'-ri-a
 Ouse-ley-a'-na
 Ou-tram-i-a'-na
 Ou-vir-an'-dra
 o-va-lif-ol'-i-a

o-va'-lis
 o-va'-la
 o-va-tif-ol'-i-a
 Ovie'-da
 o-vif'-or-a
 o-vig'-er-um
 O'-vil-la
 ow-a'-ri-en'-sis
 Ox-al-id'-i-a
 ox-al-id-if-ol'-i-a
 Ox'-al-is
 ox-ÿ-ac-an'-tha*
 ox-ÿ-ac-an-thif-ol'-i-a
 ox-ÿ-ac-an-thō-i'-dēs
 Ox-ÿ-an'-thus
 Ox-yb'-aph-us
 Ox-ye-ar'-pus
 ox-ye-od'-rus
 Ox-ye'-er-os
 Ox-ye-lad'-i-um
 ox-ye-oc-ob-i'-dēs
 Ox-ye-oc'-eus
 Ox-yd-en'-dron
 Ox-yg-o'-ni-um
 ox-yg-o'-nus
 Ox-yl-ob'-i-um
 Ox-yp-ob'-al-um
 ox-yph-yl'-lum
 ox-ys-op'-al-a
 Ox-ys'-por-a
 Ox-ys-tel'-ma
 Ox-yl'-rop-is
 Ox-ÿ-u'-ra
 Ox-ÿ-u'-ris
 Oz-oph-yl'-lum
 Oz-oth-am'-nus

Pach-id-en'-dron
 Pach-i'-ra
 Pach-ou'-li
 pach-ÿ-an'-tha*
 pach-yb-ul'-bus
 Pach-yoh-i'-lus
 Pach-yd-er'-is
 Pach-yl-o'-ma
 Pach-yl'-oph-us
 Pach-y'-ne
 Pach-yn-e'-ma
 Pach-yn-eur'-um
 pach-yph-ter'-a
 Pach-yph-yl'-lum
 Pach-yph'-yl-um
 Pach-yp-ob'-i-um
 pach-yp-ter'-a
 Pach-yrb-i'-zus
 Pach-y'-sa
 Pach-ys-an'-dra
 Pach-ys'-tach-ys
 Pach-ys-tig'-ma
 Pach-ys'-tim-a
 Pach-ys'-tom-a
 pach-ÿ-u'-ra
 pa-cif'-i-a

Words derived from Latin and Greek (i.e., all except those in italics) to be pronounced as follows: ã as in ãp-art'; a as in pa'-lmist; è as in slèn-der; e as in vè-ined; I as in thín; i as in mach-i'-nist; ò as in rōt'-ton; ò as in vò'-ter; ù as in pow'-er-fūl; ũ as in rŭ'-ler; ŷ as I; ŷ as I; œ, œ, oi, as ai in pain; au as ou in house; g, c, and oh, always hard, as, for example, g in good, c in muscular, and ch in Christian. (For the old method, see page 276.)

* This word is discussed at the end of the Pronouncing Dictionary.

Pronouncing Dictionary—continued.

pad-ol'-la
 Pad'i
 Pad'-y-a
 pad-if-ol'-y-us
 Pad'-us
 Pæ-de'-ry-a
 Pæ-der-o'-ta
 Pæ-o'-ny-a
 pæ-o-nif-lo'-rum
 Pæ's'-y-a
 pa-ga'-na
 Pa'-gin-a
 Pa-hu'-d'i-i
 Pæw'-æ
 pal-æ-s-ti'-num
 Pa-laf-æ'-y-a
 Pal-a'-m
 pal-e-a'-cæ-a
 Pal'-æ-w
 pal-em-ban'-ic-us
 Pal-æ-ol-a'-ri-a
 pal-æ-ol-a'-ta
 Pa-li-av'-na
 Pal-ic-ou'-re-a
 Pal-in-u'-ri
 Pal-is-o'-ta
 Pal-y-u'-rus
 Pal-las'-y-a
 Pal-las-y-u'-m
 Pal-las'-y-i
 Pal-la'-v'i-a
 Pal-lav-i-cé'-ni-a
 Pal'-len-is
 pal'-lens
 pal-les'-cens
 pal-li-a'-tus
 pal'-lid-a
 pal-lid-if-lu'-vens
 pal-lid-if-lo'-ra
 pal-lid-if-ol'-y-us
 pal-lid-is-pi'-na
 pal-lid-iv-o'-ny-um
 pal-lid'-ul-us
 Pal-ma'-cæ-w
 Pal'-ma
 pal-ma-tiff'-id-um
 pal-mu'-tum
 Palm'-er-i
 Pal-met'-to
 Palm'-y-a
 Pal-mi'-ta
 Pal-ton'-y-um
 pal-u-do'-sus
 Pal-um-bi'-mæ
 pal-ue'-tris
 Pan-a'-ti-a
 pan-am-en'-sæ
 Pan'-ax
 Pan'-cher-i
 Pan-erat'-y-um
 Pan'-dac-a
 Pan-dan'-s-æ
 pan-dan-if-ol'-y-um
 pan'-dan-ð-i'-des
 Pan'-dan-us

pan-do-ræ-fol'-y-a
 Pan-do'-ræ-a
 pan-du-ra'-ta
 Pan-gl-a'-cæ-w
 pa-nic-ul-a'-ta
 pa-nic-ul-ig'-er-a
 Pa'-nic-um
 Pan-is-zi-a'-nus
 pan-nif-ol'-y-us
 pan-non'-ic-us
 pan-no'-sa
 pan-the-ri'-num
 pan-toth'-rix
 Pap-a'-ver
 pap-a-ver-a'-cæ-a
 Pap-a-ver-a'-cæ-æ
 pap-a-ver-æ-flo'-ra
 Pap-a'-ver-is
 Pap-ay'-a
 Pap-ay-a'-cæ-w
 Paph-in'-y-a
 Pa-pil'-y-o
 pa-pil-y-o-ma'-cæ-a
 Pa-pil-y-o-ma'-cæ-w
 Pa-pil-y-o'-nid-æ
 Pap-il'-læ
 pap-il-la'-ris
 pap-il-lo'-sa
 Pap'-ul-æ
 pap-y-rac-an'-tha
 pap-y-ru'-cæ-a
 Pap-y'-ry-a
 pap-y-rif'-er-a
 Pap-y'-rus
 Par-ac-ar'-y-um*
 Par-ac-le'-tus
 Par-ad-i-san'-thus
 Par-ad-i'-sæ-w
 Par-ad-i'-si
 Par-ad-i'-si-a
 par-ad-i'-si-ac-a
 par-ad-ox'-a
 Par-ag-ram'-ma
 par-ag-ua-ri-en'-sis
 par-ag-uay-en'-sis
 par-aib'-ic-a
 Par-al'-y-us
 par-al-le-lop-ip'-ed-us
 Par-an-eph-el'-y-us
 Par-an'-om-us
 Par-ap-et-al-if'-or-a
 par-as-i'-tic-a
 Par-as-tran'-thus
 Par-at-rop'-y-a
 Par-cel'-li
 Par-dal-y-an'-ches
 par-dal-i'-na
 Par-dan'-thus
 Par'-di-a
 par'-din-a
 Par-dy'-na
 Par-ech-i'-tes
 Par-ci'-ra
 Par-l-et-a'-ri-a
 Pa-ri-na'-ri-um

Par'-is
 Par-ish'-y-i
 Par-i'-ty-um
 Par'-ker-i
 Par-ker'-y-a
 Parkes'-y-i
 Park'-y-a
 Par-kin-so'-ni
 Par-kin-so'-ny-a
 Par-kin-so'-ni-a'-num
 Parks'-y-i
 Par-la-to-re-a'-na
 Par-la-to'-re-i
 Par-men-ti-e'-ra
 Par-men-ti-e'-ri
 Par-men-ti-e'-ri-a'-na
 Par-nas'-si-a
 par-nas-sif-ol'-y-a
 Par-och'-et-us
 Par-on-yeh'-i-a
 Par-on-yeh'-i-æ-w
 par-on-yeh-ð-i'-des
 Par'-qui
 Par-ri'-ta
 Par-rot'-y-a
 Par'-ry-a
 Par-ry-u'-m
 Par'-ry-i
 Par-son'-si-a
 Par-son'-si-i
 Par-then-oi'-on
 par-then-if-ol'-y-um
 Par-then'-i-um
 par-ti'-tus
 Par-vic-or-o-ma'-ti
 par-vif-lo'-ra
 par-vif-ol'-y-a
 par-vis'-sim-um
 par'-vul-a
 par'-vum
 Par-yph-os-phæ'-ra
 Pas-cal'-y-a
 Pas'-pal-um
 Pas-sif-lo'-ra
 Pas-sif-lo'-ræ-w
 Pass-ing-ham'-y-i
 Pas-tin-a'-cæ
 pat-ag-o'-nic-a
 Pat-ag-o'-nul-a
 Pat-an'-y-a
 pat-av'-y-a
 Patch-ou'-li
 pat-el-lu'-ris
 pat'-ous
 pat-en-tir-os'-tris
 Pat-er-so'-ni
 Pat-er-so'-ni-a
 Pat-y-en'-ty-a
 Pat'-y-ni
 pat-y'-ny-i
 pat-oc-o-ten'-sis
 Pat-ri'-ni-a
 Pat-ri'-si-a
 Pat-tis-o-ni-a'-num
 Pat-to'-ni-a

Words derived from Latin and Greek (i.e., all except those in italics) to be pronounced as follows: ù as in *ép-art'*; á as in *psal-mist*; é as in *slèn-der*; è as in *vè-ined*; I as in *thin*; i as in *mach'-nist*; ò as in *ròl'ten*; ð as in *vò-ter*; ù as in *pow'-er-fùl*; ù as in *rù-ler*; ý as I; æ, œ, ei, as ai in *pain*; au as ou in *house*; g, o, and ch, always hard, as, for example, g in *good*, o in *muscular*, and ch in *Christian*. (For the old method, see page 276.)

* This word is discussed at the end of the Pronouncing Dictionary.

Pronouncing Dictionary—continued.

Pat-to-ni-a'-na
pat'-ul-um
pa-u-cif-lo'-ra
Paul-li'-ni-a
Paul-ow'-ni-a
pan-per'-cul-a
Pav-el'-ta
Pa'-vi-a
Pav-o'-ni-a
Par-o'-ni-i
pa-vo-ni'-na
pa-vo'-ni-um
Pax-to'-ni
Pax-to'-ni-a
Pax-to-ni-a'-na
Pea-cock'-i-i
Peak-i-a'-num
Pear'-ce-a
Pear'-ce-i
Pec-ot'-tè-i
pec-tin-a'-cè-a
pec-tin-a'-ta
pec-tin-ic-or'-nis
pec-tin-if'-er-us
Pec'-tis
pec-tor-a'-le
Pe-dal-in'-tè-a
Pe-dal'-i-um
ped-a'-tum
ped-em-on-tu'-num
Ped-i-cul-a'-ris
*Ped-i-lan'-thus**
Ped-i-lè-a
Ped-i-lo'-ni-a
Ped-i-lo'-num
Ped-ro'-si-a
ped-un-cul-a'-ris
ped-un-cul-a'-ta
ped-un'-cul-i
ped-un-cul-o'-sa
Peep'-la
Pe'-gan-um
Peir-esc'-i-a
pe-kin-en'-sis
pel-ar-go-ni-if-'lo'-rum
Pel-ar-go'-ni-um
Pel-ec-yph'-or-a
Pel-eg-ri'-na
Pel-ex'-i-a
pel-ic-a'-num
pel-y-og-ram'-ma
pel-y-ol-o'-sum
pel-y-orch-yn'-thus
Pel-y-os-an'-thes
Pel'-lè-a
Pel-li-o'-ni-a
pel-lu'-ceus
pel-lu'-cid-a
Pe-lon-as'-tès
Pel-o'-ri-a
Pel-tan'-dru
P.l-tan-the'-ra
Pel-ta'-ri-a
pel-ta'-ta
pel-tid'-è-um

pel-tif-ol'-i-a
Pel-toph'-or-um
Pel-tos-tig'-ma
pel-vif-or'-mis
Pem-phi'-gus
Pe-nè'-a
Pe-nè-a'-cè-a
pen'-dul-a
pen-dul-if-lo'-rum
pen-dul-i'-na
pe-nic-il-la'-ta
Pe-nic-il'-li-um
pen-na'-ta
pen-na-tif-ol'-i-us
pen-nig'-er-um
pen-nim-er'-vis
Pen-nis-e'-tum
pen-ni-syl-ra'-nic-um
pen'-nul-a
Pen-rhos-i-en'-sis
Pen-ste'môn
Pent-ach-è'-ta
pen-tach-ro'-mum
Pent-ad-ac'-tyl-is
Pent-ad-ac'-tyl-on
Pent-ad-es'-ma
pent-ag-o'-na
Pent-ag-o'-ni-a
pent-ag-yn-a
Pent-ag-yn'-i-a
pent-an'-dra
pent-an'-dru
Pent-an'-dri-a
pent-an'-thus
Pent-ap-e'-ra
pent-ap-et-al-è-i'-dès
Pent-ap'-et-ès
Pent-aph-il'-trum
Pent-aph-rag'-ma
Pent-aph-yl'-la
Pen-taph-yl'-lon
Pent-ap'-ter-a
Pent-ap-ter-yg'-i-um
Pent-arh-aph'-i-a
Pen'-tas
Pen-tat-ax'-is
Pent-tand'-i-a
Pent-tand'-i-i
Pent-ste'môn
Pent-ste'-ri-a
Pentz'-i-a
Pep-er-id'-i-um
Pep-er-o'-ni-a
Pep-in'-i-a
Pep'-lis
pep-lè-i'-dès
Pep'-o
Per-att'-è-a
Pe-ram'-i-um
Pe-ran-e'-ma
per-bel'-la
per-cus'-sum
Per-di'-cl-um
Per'-dir
per-eg-ri'-num

Per-eiv'-i-a
per-e'-leg-ans
per-en'-nans
per-en'-nis
Per-esh'-i-a
per-esh'-i-a-fol'-i-a
Pe-re'-zi-a
per-fol-i-a'-ta
per-for-a'-tum
Per-gul-a'-ri-a
*per-i-ac-an'-thus**
Per-ib-è'-a
Per-ic-al'-lis
Per-ic-al-ym'-na
Per-ic-lym'-en-um
per-i-cul-a'-rum
per-i-cul-o'-sa
Per-ic-y'-cla
Per-id-er'-ni-um
Per'-i-la
Per-il-o'-ni-a
Per-iph'-an-ès
Per-iph-rag'-mos
*Per-ip'-loc-a**
per-ip-loc-a-fol'-i-a
Per-is-por-a'-cè-i
Per-is-por-i-a'-cè-a
Per-is-por-i-a'-cè-i
Per-is-ter'-i-a
Per-is-troph'-e
Per-ist'-tyl-is
Per-ith-e'-um
Per-it'-om-a
Per-it-ym'-hè-a
per-mix'-ta
Per-nel'-ty-a
Per-of-ski-a'-num
Per-o'-nè-a
Per-o'-ni-a
*Per-on-è'-por-a**
Pe-ov-ski-a'-na
per-pen'-su
per-pux-il'-lus
Per-ral-dèr-i-a'-num
Per-ri-ni-a'-na
Per-r'i-ni-i
Per'-ry-i
Per-se'-a
Per'-sic-a
Per'-sic-a
per-sic-a-fol'-i-a
per-sic-if-ol'-i-um
per-sic-um
per-sol-n'-ta
Per-so-na'-ta
Per-soon'-i-a
Per-soon'-i-i
per-spice'-ti-a
per-tu'-sum
per-u-if'-er-um
per-u-vi-a'-na
Per-cal-o'-re-a
Per-cat-o'-re-i
Pès'-oor'-vi
Pes-om-er'-i-a

Words derived from Latin and Greek (i.e., all except those in italics) to be pronounced as follows: ù as in ùp-art'; à as in pès'-lmist; è as in slèn'-der; è as in vè'-ined; ÿ as in thèn; ÿ as in mach'-nist; è as in röt'-tan; è as in vò'-ter; ù as in pow'-er-ful; ù as in ræ'-ler; ÿ as ÿ; ÿ as ÿ; œ, ce, ei, as ai in pain; au as ou in house; g, c, and ch, always hard, as, for example, g in good, c in muscular, and ch in Christian. (For the old method, see page 276.)

* This word is discussed at the end of the Pronouncing Dictionary.

Pronouncing Dictionary—continued.

Pea-tal-oz'-zæ
*Pet-al-ac'-te**
Pet-al-id'-i-um
pet-al-ō-i'-dē-um
Pet-al-ol'-ep-is
Pet-al-ōs-tē'-mōn
Pet-am'-eu-ēs
pet-an'-dra
Pet-as-i'-tōs
Pet-as-ōs'-tyl-is
Pe-ter's'-i-i
pet-y-ol-a'-ris
pet-y-ol-a'-tu
Pet-iv-er'-i-a
Pet'-ol-a
Pet-ou'-mo
Pet-rw'-a
pet-rw'-um
Pet-rarch'-æ
Pel'-ri
Pet-rob'-i-um
Pet-roc-al'-lis
Pet-roc-ar'-y-a
Pet-roc-op'-tis
Pet-rom-ar'-al-a
Pet-roph'-il-a
Pet-roph'-y-ēs
Pet-roph'-yt-um
Pet-ros-el'-i-um
Pet-ter'-i-a
Pet-ung'-a
Pet-ū'-nī-a
Pen-ced'-an-um
Pen'-nus
Pey-rous'-i-a
Pez-iz'-a
Pfaff'-i-a
Pfai'-ri-i
Pfaij'-fer-a
Pfaij'-fer-el'-la
Pfaij'-jūr-i
Pfaij'-jūr'-i-a
Phac'-a
Phac-el'-i-a
phac-el-i-ō-i'-dēs
phac-ae-nū'-thū
Phac'-don
Phac-dun-as'-sa
Phac-oc'-dōn
Phac-oc'-om-a
Phac-op'-od-a
Phac-os-per'-ma
phac-os-tē'-mōn
Phac-os'-tom-a
pha'-um
Phai'-us
Phai'-jus
Phal-ac-ræ'-a
Phal-ac-rol'-ma
Phal-lac-rom'-es-us
Phal-æ'-na
Phal-æ-nop'-sis
Phal-ang'-i-um
Phal'-ar-is
phal-ar-ō-i'-dēs

Phal-e'-ri-a
Phal-la'-ri-a
Phal-loc-al'-lis
Phan-er-oph-leb'-i-a
Phar-bi'-tis
Pha'-ri-um
Phar-nac-e'-um
Pha'-rus
phas-ō-ol-ō-i'-dēs
Phas'-ē-ol-us
Phob-al'-i-um
Phē-gop'-tor-is
Phē-lip-w'-a
Phel'-los
Phen-ak-ōs-per'-mum
Pher-ot'-rich-is
Phi'-al-is
Phil-ad-el'-phē-æ
phil-ad-el'-phic-um
*Phil-ad-el'-phus**
*Phil-ag-e'-ri-a**
Phil-brick'-i-a'-na
Phil-ē'-si-a
Phil-ē-si-a'-cē-æ
Phil-ib-er'-i-a
phil-ip-pi-nen'-sis
Phil-ip'-po-ō-hur'-yī
Phil-lip-i-a'-na
Phil-lyr'-ē-a
phil-lyr-ē-æ-fol'-i-a
phil-lyr-æ-ō-i'-dēs
Phil-od-on'-dron
Phil-og'-yn-o
Phil-oth-e'-ca
Phil-yd-rū'-cē-æ
Phil-yd'-rum
Phin-æ'-a
*Phleb-ig-o'-nī-um**
Phleb-i-oph-yl'-lum
Phleb-o'-dī-um
Phleg-ma'-ri-a
Phle'-um
Phlog-ae-an'-thus
phlog-if-ol'-ra
Phlom'-is
phlom-ō-i'-dēs
Phlox
phoen-i'-cē-us
phoen-i'-cē-a
phoen-i-cif-ol'-i-ns
phoen-i'-col-as'-i-us
Phoen-i-coph-or'-i-um
Phoen'-ix
Phol-id-oc-ar'-pus
Phol-id-oph-yl'-lum
Phol-id-o'-ta
Pho'-ma
Pho-niph'-or-a
Phor'-bī-a
Phor'-mī-um
Phor'-od-on
Pho-ti'-nī-a
Pho-ti-nop'-ter-is
Phox-an'-thus
Phrag-mat-ob'-i-a

Phrag-mid'-i-um
Phra-to'-ra
phryg'-i-a
Phry'-ma
phry-nī-ō-i'-dēs
Phry'-nī-um
Phu
Phu-op'-sis
Phy-cel'-la
Phyg-an'-thūs
Phyg-e'-li-us
Phyl'-ic-a
phyl-ic-if-ol'-i-a
phyl-ic-ō-i'-dēs
*Phyl-lach'-nē**
Phyl-lac-ti'-nī-a
Phyl-lag'-ath-is
Phyl-lam'-phor-a
phyl-lan-thō-i'-dēs
Phyl-lan'-thūs
Phyl-lar'-thron
Phyl-lau'-rē-a
Phyl-ler'-i-um
Phyl'-lis
Phyl-li-ti'-dēs
Phyl-lob'-i-ns
Phyl-loc-ac'-tus
Phyl-loc-al'-yx
Phyl-loc-e'-rē-us
Phyl-loc'-lad-us
Phyl-loc-y'-clux
Phyl-ō'-dēs
Phyl-ō'-dī-um
Phyl-ōd'-oc-e
phyl-log-lūs'-sum
Phyl-lol-ob'-i-um
Phyl-ō'-ma
phyl-lo-man'-i-æ-a
Phyl-lop-er'-thū
Phyl-los-tach'-y-a
Phyl-los'-tach-ys
Phyl-los-tic'-tu
Phyl-ō'-ta
Phyl-lot-æn'-i-um
Phyl-lot'-ret-a
Phyl-lox'-er-a
Phy-mat-an'-thus
phy-mat-och-i'-lum
Phy-mat-o'-dēs
phy-mat-oth-e'-lo
Phy-mo'-si-a
*Phy'-sal-is**
phy-sal-ō-i'-dēs
Phy-sap'-ter-is
Phy-se-mat'-i-um
Phy-sī-an'-thus
Phy-sid'-i-um
Phy-sing'-a
Phy-soc-al-yō'-i-um
Phy-soch-lai'-na
Phy-sod-el'-ra
phy-so'-dēs
Phy-sol-ob'-i-um
Phy-sop'-ōd-a
Phy-sos'-iph-ōn

Words derived from Latin and Greek (i.e., all except those in italics) to be pronounced as follows: ð as in ðp-art'; å as in puå-lmist; ð as in slån'-der; ð as in vø'-ined; Y as in thÿn; I as in mach-i'-nist; ð as in røt'-ten; ö as in vø'-ter; ü as in pow'-er-fül; ü as in rü'-ler; y as Y; y as i; æ, œ, ei, as æi in pain; an as on in house; g, o, and ch, always hard, as, for example, g in good, o in muscular, and ch in Christian. (For the old method, see page 276.)

* This word is discussed at the end of the Pronouncing Dictionary.

Pronouncing Dictionary—continued.

Phy-sos-per'-mum
 Phy-sos-teg'-y-a
 Phy-sos-tel'-ma
 Phy-sos-tig'-ma
 Phy-su'-rus
 Phyt-ar-rhi'-za
 Phyt-el'-eph-as*
 Phyt-el-eph-u'-st-ō-æ
 Phyt-eu'-ma
 Phyt-oc-re'-no
 Phyt-oc-re'-nō-æ
 Phyt-ol-ac'-ca
 Phyt-ol-ac-ca'-cō-w
 phyt-ol-ac-cō-i'-dēs
 Phyt-om-y'-za
 Phyt-oph'-thor-a
 Phyt-op'-ti
 Phyt-op'-tid-æ
 Phyt-op'-tus
 Phyt-ox'-is
 Pi-ar-an'-thus
 Pic'-ē-a
 pich-inch-en'-sis
 pic-ip'-ēs
 Pi-co'-dī-a
 Pic-rad-e'-nī-a
 Pic'-rī-a
 Pic-roph-la'-um
 Pic-rorh-i'-za
 Pic-te'-tī-a
 pic-tif-ol'-y-a
 pic-to'-rī-us
 pic-tu-ra'-ta
 pic'-tus
 Pid-ding-to'-nī-a
 Pi-er-ar'-dī-i
 Pier'-cē-a
 Pi'-er-is
 Pig-af-el'-ta
 Pil'-cher-i
 Pi'-lō-a*
 Pi-lō-an'-thus
 pi-lō-orph-i'-za
 Pil-grim'-y-i
 pil-if'-er-um*
 pil-ig'-er-a
 Pil-ler-y-a'-na
 Pi-loc-ar'-pus
 Pi-loc-e'-rē-us
 Pi-log'-yn-e
 Pi-loph'-or-a
 pil-o'-sa
 Pil-o-sel'-la
 pil-o-sel-lō-i'-dēs
 pil-o-sis'-sim-a
 pil-o-sī-us'-cul-a
 Pil-ul-a'-rī-a
 pil-ul-if'-er-a
 Pi-lum'-na
 Pi-mel'-ē-a
 pi-mel-ē-ō-i'-dēs
 Pi-men'-ta
 Pim-pin-el'-la
 pim-pin-el-læ-fol'-y-a
 Pim-pin-el-lif-ol'-y-æ

Pi-na'-cō-æ
 Pin-al'-y-a
 Pin-ang'-a
 Pi-nar'-dī-a
 Pi-nas'-ter
 pi-nas'-tri
 Pin'-cē-a'-na
 Pin-cen-ūt-it'-y-a
 Pinck'-ney-a
 Pin'-dō-r-i
 Pin'-drow
 pi'-nō-a
 Pin-el'-lī-a
 pi-ne-to'-rum
 Pin-guic'-ul-a
 pin-guif-ol'-y-a
 Pi'-ni
 pi-nī-a'-rī-a
 pi-nic-ol-a'-na
 pi-nif-ol'-y-a
 pi-nip-er'-da
 Pink'-nē-a
 Pink'-ney-a
 pin-na'-ta
 pin-na-tif'id-um
 pin-na-tif-rous
 pin-na-tin-er'-va
 pin-na-tis-tip'-ul-a
 Pin-sa'-po
 Pi'-nus
 Pi-on-an'-dra
 Pi-o'-nē-a
 Pi-on-no'-tēs
 Pi-oph'-il-a
 Pip'-er*
 Pip-er-a'-cō-æ
 Pip-er-el'-la
 pip-er-i'-ta
 Pip-tad-e'-nī-a
 Pip-tan'-thus
 Pip'-toc-lai'-na
 Pip-tos'-path-a
 Pi-que'-rī-a
 Pir-ig-a'-ra
 Pir-i-que'-ta
 Pir-on-neau'-a
 pi-sac-om-en'-sis
 pi-sa'-na
 Pi-sau'-ra
 Pis-ci'-dī-a
 Pi'-si
 pi-sif'-er-a
 pi-soc-ar'-pa
 Pi-so'-nī-a
 Pis-sar'-dī-i
 Pis-so'-dēs
 Pis-ta'-cī-a
 Pis'-tī-a
 Pis-to-ri'-nī-a
 Pi'-sum
 Pit-at'-ach-e
 Pit-cairn'-y-a
 pit-cairn-y-æ-fol'-y-a
 Pitch'-er-i
 Pith-e-coc-ten'-y-um

Pith-e-col-ob'-y-um
 Pit-to'-ni
 Pit-tos-por'-ē-æ
 Pit-tos'-por-um
 Pit-y-roph-yf'-lum
 pla-ca'-ta
 Plac'-e-a
 Pla'-cō-i
 Pla-co'-dī-um
 Plac-o'-ma
 Plad-e'-ra
 Plag-y-an'-thus*
 Plag-y-og-y'-rī-a
 Plag-y-o-li'-rī-on
 Plag-y-ol-ob'-y-um
 Plag-y-oph-yf'-lum
 Plan'-e-ra
 pla-nic-sū'-le
 pla-nif-lo'-ra
 pla-nif-ol'-y-um
 pla-nil-ab'-rē
 plan-ta-gin'-ē-a
 Plan-ta-gin'-i-um
 Plan-ta-gin-is
 Plan-tu'-go
 Plan'-tī-i
 Plan'-tī-i
 pla'-num
 Plas-mo-dī-oph'-or-a
 Plat-an-a'-cō-æ
 plat-an-if-ol'-y-um
 plat-an-ō-i'-dēs
 plat-an'-tha
 Plat-un-the'-ra
 Plat'-an-us
 pla-len'-sis
 Plat-o'-nī-a
 plat-yc-an'-tha*
 Plat-yc-ap'-nos
 plat-yc-ar'-pa
 Plat-yc-ar'-pha
 Plat-yc-ar'-pum
 Plat-yc-ar'-y-a
 plat-yc-en'-tra
 Plat-yc-er'-y-um
 Plat-yeh-i'-lum
 plat-yc-lad'-a
 Plat-yc-li'-nis
 Plat-yc-o'-dun
 Plat-yc-ra'-ter
 plat-yc-lōs'-sa
 Plat-yf'-ep-is
 Plat-yf-ob'-y-um
 Plat-yf-o'-ma
 Plat-yf'-oph-us
 Plat-ym-e'-tra
 phat'-y-on-od
 plat'-y-on-yx
 Plat-yp-et'-al-um
 plat-yph-yf'-la
 plat-yph-yf'-los
 Plat-yp'-ter-is
 plat-yrh-yn'-chos
 plat-yf'-path-a
 Plat-ys-tach'-y-a

Words derived from Latin and Greek (i.e., all except those in italics) to be pronounced as follows: ã as in ãp-art'; ä as in pãr'-lmist; ê as in slã'n'-der; ö as in vö'-ined; Y as in thÿn; i as in mach'-nīst; ö as in röl'-ten; ö as in vö'-ter; ü as in pow'-er-fäl; ü as in rü'-ler; ý as Y; ý as I; æ, œ, oi, œ as ai in pain; au as ou in house; g, c, and ch, always hard, as, for example, g in good, c in muscular, and ch in Christian. (For the old method, see page 276.)

* This word is discussed at the end of the Pronouncing Dictionary.

Pronouncing Dictionary—continued.

Plat-ys'-tach-ys
 Plat-ys-te'-môn
 Plat-ys-tig'-ma
 Plat-ys'-tyl-is
 Plat-yth-e'-ca
 Plat-yz-a'-mī-a
 Plat-yz-o'-ma
Platz-man'-ni
 pleb-ei'-um
 Plec-os-o'-rus
 Plec-toc-eph'-al-us*
 Plec-too-om'-y-a
 Plec-tog'-yn-e
 plec-tol'-ep-is
 Plec-tran-the'-ra
 plēo-tran-thif-ol'-y-a
 plēo-tran-thō-i'-des
 Plēc-tran'-thus*
 Plēc-tri'-tis
 Plēc-tro'-nī-a
 Plēc-tru'-rus
Plēe'-a
 plēi-och-ro'-ma
 plōi-og'-on-us
 Ple'-y-on-a
 Plei-on-e'-ma
 ple-nis'-sim-us
 ple'-nus
 Plē-oc-ne'-mī-a
 Plē-om'-el-e
 Plē-op-el'-tis
 Ple-os'-por-a
 Ple-ro'-ma
 ple-si-os-o'-rum
 Pleur-an'-tra
 Pleur-an'-the
 Pleur-id'-y-um
 Pleur-oc-oc'-eus
 Pleur-og-ram'-me
 Pleur-og'-yn-e
 Pleur-op-et'-al-um
 Pleur-os-per'-mum
 pleur-os'-tach-ys
 Pleur-oth-al'-lis
 plie-a'-ta
 plie-ig'-er-um
 Ploc'-am-a
 Ploc-og-lōt'-tis*
 Ploc-os-tem'-ma
Plu-oss'-lī-a
Plu'-chē-a
 plu'-ma
 plu-mo'-for'-mis
 plu-mā'-rī-us
 plu-mā'-tum
 Plum-ba-gel'-la
 Plum-ba-gin'-ō-a
 plum-ba-gin-ō-i'-dēs
 Plum-ba'-go
 plum'-bē-a
Plu-me'-rī-a
Plu-mī-e'-ri
 plu-mo'-sa
 Plu'-mul-a
 Plu'-rid-ens

Plu'-sī-a
 Plu-tel'-la
 Pneu-mon-an'-the
 Pŕ'-a
 pŕ-ar'-num
Poc-ock'-y-a
 po-cul-if-or'-mis
 Pod-ach-sen'-y-um
 pod-ag'-ric-a
 Pod-al-y'-rī-a
 pod-al-y-rī-ō-i'-dēs
 Pod-an'-thēs
 Pod-an'-thūs
 pod-ic-ar'-pum
 Pod-is-o'-ma
 Pod-oc-al'-lis
 Pod-oc-ar'-pō-a
 Pod-oc-ar'-pus
 Pod-ol-a'-sī-a
 Pod-ol'-ep-is
 Pod-ol-ob'-y-um
 Pod-op-el'-tis
 pod-oph-thal'-ma
 Pod-oph-yl'-lum
 Pod-op'-ter-us
 Pod-o'-rī-a
 Pod-os-per'-ma
 Pod-os-per'-mum
 Pod-os-pha'-ra
 Pod-os-to-ma'-cē-a
 Pod-os-te'-mōn
 Pod-os-tig'-ma
 Pod-oth-e'-ca
 Pœc-il-ip'-tar-is
 Pœc-il-os-o'-ma
Pœp-pig'-y-a
Pœp-pig'-y-a'-na
Pœp-pig'-y-i
 Pœ'-sī-a
 pœ-e-ta'-rum
 pœ-e'-tie-us
Pœg-gen-dorf'-fī-a
 Pœ-gog'-yn-e*
 Pœ-go-nel'-la
 Pœ-go'-nī-a
 Pœ-go'-nop-us
 Pœ-gos-te'-mōn
Pohl'-y-a'-na
Pohl'-i-i
Poin-ct-a'-na
Poin-ct'-lī-a
Poi-re'-lī-a
Poi-tē'-a
Poi'-rē-a
 Pol-an-is'-y-a
Pole-man'-nī-a
 Pol-em-o-nī-a'-cē-a
 Pol-em-o'-nī-um
 Pol'-y-a
 Pol-y-an'-thēs
 pol-if'-er-us
 pol-if-ol'-y-a
 pol-y-if-ol'-y-a
 pol-i'-ta
 Pol'-y-um

Pol-lio-a'-ris
 Pol-lich'-y-a
 Pol-lī'-nī-a
Poll-ver'-lī-a
 pol-ŷ-ac-an'-tha*
 Pol-ŷ-ac-tid'-y-um
 Pol-ŷ-ac'-tis
 Pol-ŷ-ad-el'-ph-y-a
 Pol-ŷ-al'-thī-a
 Pol-ŷ-an'-drī-a
 pol-ŷ-an'-drum
 pol-ŷ-an'-tha
 Pol-ŷ-an'-thēs
 pol-ŷ-an'-thos
 Pol-ŷ-an'-thus
 Pol-yb-a'-a
 Pol-yb-ot'-rŷ-a
 Pol-ye-al-ym'-ma
 Pol-ye-am'-pī-um
 Pol-ye-ar'-pa
 Pol-ye-ar-pæ'-a
 Pol-ye-ar'-pī-a
 pol-ye-eph'-al-us
 Pol-yeh-i'-los
 pol-yeh-lo'-ros
 Pol-ye-ye'-nis
 pol-yd-ac'-tyl-a
 pol-yd-ac'-tyl-on
 Pol-yd-ēs'-mus
 Pol-yg'-al-a
 pol-yg-al-ae-fol'-y-um
 Pol-yg-al'-ŷ-a
 pol-yg-al-if-ol'-y-a
 pol-yg-am-a
 Pol-yg-on-a'-cē-a
 Pol-yg-on-as'-trum
 Pol-yg-on-at-um
 Pol-yg-on'-ŷ-a
 Pol-yg-on'-y-um
 pol-yg-on-ō-i'-dēs
 Pol-yg'-on-um
 Pol-ym'-nī-a
 pol-ym-orph'-um
 pol-ŷ-od-on
 Pol-yp-ap'-pus
 Pol-yp'-ar-a
 pol-yp-et'-al-a
 Pol-yph-e'-ma
 pol-yph-yl'-la
 pol-yp-od'-in-a
 pol-yp-od-y-ō-i'-dēs
 Pol-yp-od'-y-um
 Pol-yp'-or-us
 Pol-yp'-rem-um
 Pol-yp'-ter-is
 Pol-ys'-el-as
 pol-ys-per'-ma
 Pol-ys'-por-a
 Pol-ys-tach'-ŷ-a
 pol-ys-tach'-ŷ-on
 pol-ys-tich-ō-i'-dēs
 Pol-ys'-tich-um
 pol-ys-tic'-ta
 Pol-ys-tig'-ma
 Pol-yt-ō'-nī-um

Words derived from Latin and Greek (i.e., all except those in italics) to be pronounced as follows: ð as in ðp-art'; á as in pŕa'-lmist; ê as in slēn'-der; ö as in vœ'-ined; y as in thŷn; i as in mach-i'-nist; ö as in rōt'-ten; ō as in vō'-ter; ū as in pow'-er-fŷl; ũ as in rā'-ler; ŷ as i; ŷ as i; œ, œ, ei, as ai in pain; au as ou in house; g, o, and ch, always hard, as, for example, g in good, c in muscular, and ch in Christian. (For the old method, see page 276.)

* This word is discussed at the end of the Pronouncing Dictionary.

Pronouncing Dictionary—continued.

Pol'yth-rix
 Pol-yt'-rich-um
 pol-yx-an'-thum
 Pol-yx'-en-a
 Pol-yz-o'-ne
 po-ma'-oë-a
 Po-ma'-oë-æ
 Po-mad-er'-ris
 Po-ma'-ri-a
 po-ma'-ti-a
 Po-mat-oc-al'-pa
 Po'-max
 Pom-bal'-y-a
 Po'më-æ
 Po-mel'-y-a
 po-mer-i'-dî-a'-num
 po'-mi
 po-mif'-er-a
 Po-mo-na'-na
 po-mo'-rum
 pom-pay-an-en'-së
 pom-po'-ni-a
 Pon-cel-e'-ll-a
 pon-der-o'-sa
 Pon-e'-ra
 Pon-gu'-mî-a
 Pon-ted-e-ra'-na
 Pon-ted-e'-ri-a
 Pon-ted-e-ri-a'-cë-æ
 Pon-thic'-va
 Pon'-ti-a
 pon'-tic-a
 Po'-pe-i
 po-pul-if-ol'-y-a
 po-pul-në-a
 Po'-pul-us*
 Po-ra'-na
 Por-an-the'-ra
 por-cel'-lic-eps
 Por-cel'-li-o
 Por-cel'-lus
 por-ci'-na
 Por-ti-e'-ri-a
 Por-os-te'-ma
 Por'-pax
 Por'-phyr-a
 por-phyr-an'-tha*
 por-phyr-a'-ta
 por-phyr'-ë-um
 por-phyr'-y-o
 por-phyr-oc-ur'-pon
 Por-phyr-oc'-om-a
 por-phyr-oph-yl'-lum
 por-phyr-os'-pil-um
 Por-phyr-os'-tach-y-
 por-phyr-os-te'-lo
 por-rif-ol'-y-um
 por'-rig-ens
 Por'-rum
 Por'-të-a
 Por-të-a'-na
 Por'-të-i
 Por-tel'-tæ
 Por-ten-schla'-gi-a
 Por-ten-schla-gi-a'-na

por-ten-to'-sa
 Port-land'-y-a
 Por-tul-a'-ca
 por-tul-a'-ca-fol'-y-a
 Por-tul-a-ca'-ri-a
 Por-tul-a-ca-s'-trum
 Por-tul-a'-cë-æ
 por-tul-a'-cif-ol'-y-a
 Pos-el-ger'-y-i
 Pos-o-que'-ri-a
 pos'-tum-a
 Pot-am-og-e'-ton
 pot-am-oph'-il-a
 pot-a-to'-rum
 Pot-en-til'-la
 Pot-en-til-lë-æ
 pot-en-til-lë-y'-dës
 Pot-e'-ri-ë-a
 Pot-e'-ri-um
 poth'-ë-in-a
 Poth-om-or'-phe
 Poth'-os
 Pott'-si-i
 Poul'-ter-i
 Pou-par'-ll-a
 Pou-rou'-ma
 Pour-re'-ll-a
 Pousch'-kin-i
 præ-ul'-ta
 præ'-cox
 præ-mor'-sa
 præ-nit-ens
 præ-rup-to'-rum
 præ'-stans
 præ-tex'-tum
 Præ-an'-thë-a*
 præ-y-n'-ta
 præ'-in-a
 præ-in-a'-ta
 Præ'-in-us
 Præ-oph-yl'-lum
 præ-ten'-sis
 Præ'-y-a
 præ-a-to'-ri-us
 Præix-si-a'-na
 Præis'-si-i
 Præm'-na
 Præ-nan'-thë-a
 Præ-tan'-thë
 Præ-p-u'-sa
 Præ-col'-y-a
 Præ-col'-ti-a
 Præsl'-y-a
 Præsl'-y-a'-na
 Præsl'-y-i
 Præst'-y-æ
 Præ-to'-ni-a
 præ-ton-y-en'-sis
 Præsl'-y-i
 Præsl'-ley-a
 Pri'-mul-a*
 Pri-mul-a'-cë-æ
 pri-mul-æ-fol'-y-a
 pri-mul'-in-us

pri-mul-ë-y'-dës
 prin'-ceps
 prin'-cip-is
 pri-në-i'-dës
 Pri'-nos
 Pri'-nus
 pri-o-ni'-tis
 Pri-o'-ni-um
 pri-o-noph-yl'-lum
 pris-mat'-io-a
 Pris-mat-oc-ar'-pus
 Pritch-ar'-dî-a
 Pritch-ar'-dî-i
 Prit-zei'-y-a
 Pri'-va
 prob-os-cid-a'-lis
 Prob-os-cid'-ë-us
 pro-co'-rus
 pro-ces-si-o'-në-a
 Prock'-y-a
 Proc-lo'-si-a
 proc-lo-si-ë-i'-dës
 pro-cum'-bens
 pro-cur'-rens
 pro-duc'-tum
 Prof-or'-ë-a
 prof-u'-sa
 Pro'-iph-ys
 pro-let-el'-la
 pro-lif'-er-um
 pro-lif'-ig-um
 Prom-en-a'-a
 Pron-ay'-a
 pro'-nub-a
 Prop-a'-gin-ë-a
 prop-en'-dous
 Pro-phyll'-la
 prop-in'-qua
 pro-ro'-pens
 Pros-ap'-ti-a
 Pros-ar'-tes
 Pros-o'-li-a
 Pros-er-pin-a'-ca
 pros-er-pin-a-cë-i'-dës
 Pros-o'-pis
 Prox-tan-tho'-ra
 pro-stra'-tum
 Pro'-të-a
 Pro-të-a'-cë-æ
 Pro-toin-oph-yl'-lus
 pro-tru'-sum
 Prousl'-y-a
 Prov-en-za'-ll-a
 pro-vin-ci-a'-lis
 prox-im-a'-na
 pri-i-na'-ta
 pri-i-no'-na
 Pru'-vi-i
 Prum-nop'-it-y-a*
 Pru'-në-æ
 Pru-nel'-la
 pru-nel-lë-i'-dës
 Pru'-ni
 pru-nic-i'-da
 pru-nif-ol'-y-a

Words derived from Latin and Greek (i.e., all except those in italic) to be pronounced as follows: ä as in äp-art'; ä as in psä'-lmist; ë as in slën'-der; ê as in ve'-ined; y as in thîn; i as in mach-i'-nist; ö as in röh'-ton; ö as in vö'-ter; ü as in pow'-er-fül; ü as in rä'-ler; ý as y; ý as i; æ, œ, ei, as ai in pain; au as ou in house; g, c, and ch, always hard, as, for example, g in good, c in muscular, and ch in Christian. (For the old method, see page 276.)

* This word is discussed at the end of the Pronouncing Dictionary.

Pronouncing Dictionary—continued.

pru-nif-or'-mis
 Pru-nop'-sis
 pru-nul-us
 Pru-nus
 pru'-ri-ens
 pru-ri'-ta
 Psal-li-o'-ta
 Psam'-ma
 Psam-mi'-si-a
 Pseud-ac-a'-ci-a
 Pseud-as'-gle
 Pseud-al-ang'-i-um
 Pseud-ath-yr'-i-um
 pseud-ep-id-en'-drum
 pseud'-ô-ar-me'-ri-a
 Pseud'-ô-bar-le'-ri-a
 Pseud'-ô-hom-by'-ces
 Pseud'-ô-cap'-sic-um
 pseud'-ô-œr'-æ-us
 pseud'-ô-cyp'-r-us
 Pseud'-ô-cyt'-is-us
 Pseud'-ô-drac-on'-ti-um
 pseud'-ô-ger'-ra-o
 Pseud'-ô-lar'-ix
 Pseud'-ô-pan'-ax
 Pseud'-ô-plat'-an-us
 Pseud'-ô-scor'-dium
 pseud'-ô-su'-ber
 Pseud'-ô-tan'-gu
 psi
 Psid'-i-um
 Psi'-la*
 Psi-lod-och'-o-a
 Psi-log'-yn-e
 Psi-lon'-e-ma
 Psi-los-an'-thus
 psi-los-ep'-al-us
 Psi-los-te'-mon
 Psi-los'-tom-a
 Psi-lo'-tum
 Psith-yr-is'-ma
 psit-tac-i'-na
 psit-tac-o'-rum
 Pso-ral'-i-a
 Psy'-che*
 Psy-choch-i'-lus
 Psy-cho'-des
 Psy-cho'-ri-a
 Psy-cho'-roph-um
 Psyd'-rax
 Psyl'-la
 Ptar'-mic-a
 Ptel'-i-a
 ptel-ô-ô-i'-des
 Ptel-id'-i-um
 pter-id-if-ol'-i-a
 Pter'-is
 Pter'-i-um
 Pter-oc-ar'-pus*
 Pter-oc-ar'-i-a
 Pter-oc-eph'-ul-u.
 Pter-oc'h-i'-lus
 pter-oc'-lud-on
 Pter-oc-œ'-cus
 Pter-od-is'-cus

pter-ô-i'-des
 Pter-ol-ob'-i-um
 Pter-o-lo'-ma
 Pter-on-en'-rum
 pter-oph'-or-a
 Pter-oph-or-i'-na
 Pter-oph-yl'-lus
 Pter-oph'-yt-on
 Pter-op'-sis
 Pter-os-per'-num
 Pter-os'-por-a
 Pter-os-tel'-ma
 Pter-os'-tyl-is
 Pter-os'-tyr-ax
 Pter-o'-ta
 Pter-o-zo'-ni-um
 Pter-yg-oc'-al-yx
 Pter-yg-o'-di-um
 pter-yg-os-per'-ma
 Ptil-oc-no'-ma*
 Ptil-om'-er-is
 Ptil-os-teph'-i-um
 Ptil-ot'-rich-um
 Ptych-och-i'-lus
 Ptych-os-per'-ma
 pu'-bens
 pu'-ber-a
 pu-ber'-ul-a
 pu'-bes
 pu-bes'-cens
 pu-big'-er-a
 Puc-ci'-ni-a
 Puc-ci'-ni-i
 pud-ib-un'-dus
 pud'-ic-a
 Puc-er-a'-ri-a
 Pug-i-o-nel'-lu
 pug-i-o-nif-or'-mis
 pul-chel'-lum
 pul'-cher
 pul-cher'-rim-a
 pul'-chrum
 Pu-le'-gi-um
 pul'-la
 Pul-mo-na'-ri-a
 Pul-sat-il'-la
 Pul-ten'-a-a
 pul-ver'-i-us
 pul-ver-ul-en'-tum
 pul-vi-na'-ris
 pul-vi-na'-tum
 pul-vi'-num
 pu'-mil-a
 Pu-mil'-i-o
 punc-ta'-ta
 punc-ta-tis'-sim-um
 punc-til-la'-ta
 punc-til-ob'-ul-a
 punc-tul-a'-tus
 pun'-gons
 Pu'-nic-a
 pu-nic'-i-a
 pu-nio-if-ol'-i-a
 Pu-pal'-i-a
 Pur-die-a'-na

Pur'-die-i
 pu'-re-um
 Pur'-ga
 pur-pur-a'-œ-a
 pur-pur-as'-cens
 pur-pur-a'-tum
 pur-pur'-i-a
 pur-pur-ô-if-lo'-rum
 Pur-so'-lha
 Pursh'-i-a
 Pursh-i-a'-na
 Pusch-kin'-i-a
 pusch-kin'-i-ô-i'-des
 pus-il'-lus
 pus-tu-la'-ta
 Pu-to'-ri-a
 Put-ter-lick'-i-a
 Put-zeys'-i-a'-na
 Puy'-a
 Puyd'-i-i
 pyc-nac-an'-the
 pyc-nan'-tha
 pyc-noc-eph'-al-us
 Pyc-nod-o'-ri-a
 Pyc-nop'-ter-is
 pyc-nop'-ter-um
 pyc-nos-tach'-i-a
 Pyc-nos'-tach-ys
 Py-gæ'-ra
 pyg-mæ'-a
 Pyl'-i-um
 Pyr-ac-an'-tha*
 pyr-ac-an-thif-ol'-i-a
 Pyr-al-id'-in-a
 Pyr'-al-is
 Py-ram'-i
 py-ram-id'-al-is
 py-ram-id-a'-ta
 pyr-a'-ri-a
 Pyr-as'-ter
 Py-ro'-na*
 pyr-en-æ'-us
 pyr-en-a'-ic-a
 Py-re-nom-yc-œ'-tes
 Pyr-eth'-rum*
 Pyr'-gus
 Pyr'-i
 pyr-io'-ol-a
 pyr-if-ol'-i-a
 pyr-if-or'-mis
 pyr'-in-um
 pyr-is'-ug-a
 Pyr'-ol-a
 pyr-ol-æ-fol'-i-a
 Pyr-ol-i'-ri-on
 pyr-ol-ô-i'-des
 Pyr-os-tog'-i-a
 pyr-roch'-rô-um
 Pyr-rhei'-na
 Pyr-ul-a'-ri-a
 Pyr'-us*
 Py'-thi-on
 Py'-thi-um
 Py-thô'-ni-um
 Pyx-id-an-the'-ra

Words derived from Latin and (Greek (i.e., all except those in italics) to be pronounced as follows: ä as in äp-art'; ä as in psé-lmist; ö as in slén'-der; ö as in ve'-inod; ý as in thén; i as in mach'-nist; ô as in rôl'-ten; ô as in vó'-ter; ü as in pow'-er-tál; ü as in rá'-ler; ý as ý; ý as i; w, o, ei, as ai in pain; au as ou in house; g, c, and ch, always hard, as, for example, g in good, c in muscular, and ch in Christian (For the old method, see page 276.)

* This word is discussed at the end of the Pronouncing Dictionary.

Pronouncing Dictionary—continued.

pyx-id-a'-ta
 pyx-id-if'-er-um
 pyx-id-oph'-or-um

quad-ran-gul-a'-ris
 quad-ran-gul-a'-ta
 quad-ra'-ta
 Qua'-drī-a
 quad-ri-au-ri'-ta
 quad-ric'-ol-or
 quad-ric-or'-nis
 quad-rid-en-ta'-ta
 quad-rif'-id-us
 quad-rif-ol'-i-a
 quad-rip-ar-ti'-ta
 quad-riv-al'-vis
 Qua'-drī-a
 Qua'-moc-lit
 Qua'-qua
 Quar-tin'-i-a
 Quar-tin-i-a'-nus
 Quas'-si-a
 Quæ-el'-i-a
 Quæ'-ti-a
 quer-ec-tic'-ol-a
 quer-cif-ol'-i-a
 quer-ci'-num
 Quer'-cit-ron
 Quer'-ous
 Quæ-nal'-i-a
 Quæ-nel'-i-a'-nu
 Qui-hon'-i
 Quil-la'-ja
 Quil-la'-jū-w
 qui-na'-ta
 quin-quæ-col-or
 quin-quæ-flo'-ra
 quin-quæ-fol'-i-um
 quin-quæ-loc-ul-a'-ris
 quin-quæ-mac-ul-a'-tus
 quin-quæ-ner'-vi-a
 quin-quæ-punc-ta'-tus
 quin-quæ-vul'-ner-a
 Quin-til'-i-a
 Quis-qua'-lis
 qui-ten'-sē
 Qui-vi'-st-a
 quæ-si'-ta

rac-e-mif-lo'-ra
 rac-e-mo'-sus
 rac-e-mul'-o'-ra
 rach-irh-i'-zou*
 Rad-di-a'-num
 Rad-em-ach'-i-a
 ra'-dens
 rad-y-a'-ta
 ra-di'-cans*
 ra-di-cic'-ol-a
 ra-di-cip-er'-da
 ra-di'-cum

rad-y-if-lo'-rus
 Rad'-y-ol-a*
 rad-y-o'-su
 Ra'-dul-a
 Rag'-ner-y-a'-na
 Raff-les-y-a'-na
 Ra-gi-nes'-qui-i
 Raf'-nī-a
 Rag-am-ows'-ki-i
 rag-us-i'-na
 Rail-lar'-di-a
 Rai'-ner-i
 Ra'-jah
 Ra-ju'-nī-a
 Ram-bu'-ri-i
 ra-men-ta'-cc-a
 ra-mif-lo'-ra
 Ra-mond'-i-a
 ra-mond-y-ō-i'-des
 ra-mo'-su
 ra-mo-sis'-sim-um
 ra-mo-sō-i'-des
 Ram-til'-la
 Ra-mul-a'-ri-a
 ra-mul-o'-sa
 ra'-me
 Ra-na'-ri-a
 Ran-ca'-gua
 Ran-dal'-i-a
 Rand'-i-a
 ran-gif-or-i'-na
 ra-nif'-er-um
 Ra-nun-cul-a'-cō-w
 ra-nun-cul-if-lo'-ra
 ra-nun-cul-ō-i'-des
 Ra-nun'-cul-us*
 Ra'-pa
 rap-a'-cō-um
 ra'-pū
 Rap-a'-nō-a
 Rap-a-tē-a
 Rap-a-tē-a'-cō-w
 Raph'-an-i
 Raph-an-is'-trum
 Raph'-an-us
 Raph'-i-a
 raph-id-oc-an'-tha*
 Raph-id-oph'-or-u
 Raph-id-oph-yl'-lum
 Raph-y-ol'-ep-is
 Raph-is-tem'-na
 ra-pun-cul-ō-i'-dōs
 Ra-pun'-cul-us
 Ra-pun'-tl-um
 ra-rif-lo'-ru
 ra'-rum
 Ras-quit'-i-a
 Ras-pal'-i-a
 Rat-clif-fy-a'-na
 Rath'-i-a
 Rath'-kō-u
 Rat-ib'-id-u
 Ra-to'-nī-u
 rat'-tus
 Ratz-eb-ur'-gi

rau'-ous
 Rau-vī-nī-i
 Rau-wolf'-i-a
 Rau-wolf'-i-i
 Rav-en-a'-la
 Rav-en-e'-a
 Rav-en'-i-a
 Rav-em'-mo
 Rawes'-i-i
 Re-a'-li
 Re-a'-na
 Reau-mu'-ri-a
 Reau-mu-ri-a'-cō-ō
 Reb-ec'-cū
 rec-ep-ta'-cul-o'-rum
 Rech-stein-or'-a
 rec-li-na'-ta
 rec'-ta
 rec-ur'-va
 rec-ur-va'-ta
 rec-ur-vif-ol'-i-um
 rec-ut-i'-ta
 red-iv-i'-va
 Red-out'-i-a
 Red-out'-ō-i
 re-du-plic-a'-tum
 Reed-y-a'-num
 Reeves'-i
 Reeves'-i-a
 Reeves-i-a'-na
 ref-lex'-a
 ref-rac'-tum
 ref-ul'-gens
 re-gu'-lis
 Re-gel'-i-a
 Re-gel'-i-a'-num
 Re-gel'-i-i
 reg-er'-min-ans
 re'-gi-a
 Re-gi'-na
 Reg'-in
 Reg-nel'-li
 Reg-nel'-li-i
 Re-guā-e'-ri
 Reh-man'-nī-a
 Reich-ar'-di
 Reich-ar'-di-a
 Reich-el'-i-a
 Reich-en-bach'-i-a'-na
 Reich-en-bach'-i-i
 Reich-en-heim'-i-i
 Reid-el'-i-a'-na
 Reid'-i-a
 Rein-eck'-e-n
 Rein-eck'-i-a
 Rein-wardt'-i-a
 Rein-wardt'-i-i
 Rel-han'-i-a
 rel-ig-i-o'-sum
 rel-iq-ua'-na
 Rem-ac'-lō-u
 rem-o'-tum
 Rem-u-sal'-i-a
 Re-nan-tho'-ra
 Ren'-du

Words derived from Latin and Greek (i.e., all except those in italics) to be pronounced as follows: ä as in äp-art'; ä as in psä-almist; ë as in slën'-der; ê as in ve'-ined; ÿ as in thÿn; ÿ as in mach-i'-nist; ö as in röt'-ten; o as in vö'-ter; ü as in pow'-er-fül; u as in ra'-ler; ý as í; y as i; w, u, ei, as ai in pain; au as ou in house; g, c, and ch, always hard, as, for example, g in good, c in muscular, and ch in Christian. (For the old method, see page 276.)

* This word is discussed at the end of the Pronouncing Dictionary.

Pronouncing Dictionary—continued.

Rend-al'-ler-i
Re-nealm'-i-a
 re-nif-or'-mis
Ren-sel-ter'-i-a
 rep-an'-dus
 re'-pens
 rep'-tans
Re-quier'-i
Re-quier'-i-a
 res-ec'-tum
 Res-o'-du
 Res-o-da'-cè-a
 re-si-na'-na
 re-si-no'-na
 Res-ty-a'-cè-a
 Res'-tô
Res-trep'-i-a
Re-ta'-na
Re-ta-mil'-i-a
Re-ta-nil'-la
Ret-em-ey-er-a'-num
 re-tic-ul-a'-ta
 Re-tin-a'-ri-a
 Re-tin'-i-a
 Re-ti-niph-yl'-lum
 Re-ti-nos'-por-a
 re-tor'-tu
 ro-tro-flex'-um
 rot-u'-sa
Retz'-i-a
Reu'-ter-i
 rev-er'-sa
 rev-ol-u'-tus
 Rex
Rex'-i
Rey-mon'-dt-i
 Rhab-doc-rin'-um
 Rhac-o'-na
 Rhad-in-oc-ar'-pus
 Rha-go'-di-a
 Rham'-nè-a
 rham-nif-ol'-i-a
 rham-nè-i'-des
 Rham'-nus
 Rhaph-id-oph'-or-a*
 Rhaph-yl-ol'-ep-is
 Rhaph-ith-am'-nus
 Rhap-id-oph-yl'-lum
 Rhap'-is
 Rha-pon'-tic-um
Rheed'-i-a
Rheed'-i-i
 Rhe'-um
 Rhex'-i-a
 Rhi-nac-an-tha'-cè-a
 Rhi-nac-an'-thus*
 Rhi-nan-tha'-cè-a
 Rhi-nan'-thus
 Rhi-nop-et'-al-um
 Rhi-pid-od-en'-dron*
 Rhi-pid-op'-tor-is
 Rhi-pod-en'-dron
 Rhi-pog'-on-um
 Rhip'-sal-is
 Rhi-zob-yl'-nè

Rhi-zob'-yl-us*
 Rhi-zob-ol'-è-æ
 Rhi-zob'-ol-us
 Rhi-zoc-ar'-pe-æ
 Rhi-zog-lès'-sum
 Rhi-zom-or'-pha
 Rhi-zoph'-or-a
 Rhi-zoph-or'-è-æ
 rhi-zoph-yl'-lum
 rhi-zoph'-yt-a
 rhod-ac'-rum
 Rhod-am'-ni-a
 rhod-an-on'-sis
 rhod-an'-tha
 Rhod-an'-the
Rho-dè-a'-na
 Rhod'-yl-ol-a
 Rhod-i'-tès
 rhod-oc-en'-trum
 rhod-och-i'-la
 Rhod-och'-it-on
 rhod-oc-inc'-ta
 Rhod-oc-is'-tus
 Rhod-oc'-om-a
 Rhod-od-en'-dron*
 Rhod-ol-ei'-a
 Rhod-om-yr'-tus
 rhod-on-eur'-um
rhod-op-en'-sis
 rhod-oph-thal'-mus
 rhod-op-leur'-on
 rhod-op-ter-yg'-i-um
 Rhod-o'-ra
 Rhod-orh-i'-za
 Rhod-os'-path-a
 Rhod-os'-tach-ys
 Rhod-os'-tom-a
 Rhod-oth-am'-nus
 Rhod-ot'-yp-os
 Rhos'-us
Rho'-e-o
 rho-if-lo'-ra
 rhom'-bè-a
 rhom-bif-ol'-i-a
 rhom-bè-i'-dul-is
 rhom-bè-i'-dè-um
Rho'-pal-a
 Rhop-al-oc'-er-a
 Rhop-al-os'-iph-um
 Rhop-al-os'-tig'-ma
 Rhop-al-os'-tyl-is
 Rhu-ac-oph'-il-a
 Rhus
 Rhyn-chad-e'-ni-a
 Rhyn-chan-the'-ra
 Rhyn-chi'tès
 Rhyn-chog-lès'-sum
 Rhyn-chop-e'-ra
 Rhyn-chop-et'-al-um
 Rhyn-choph'-or-a
 Rhyn-cho'-si-a
 Rhyn-chos-per'-mum
 Rhyn-chos'-tyl-is
 Rhyn-cho't'-sch-um
 Rhys-os-per'-mum

Rhyt-id-an'-dra*
 Rhyt-id-oph-yl'-lum
 Rhyt-ig-lès'-sa
 Rhyt-is'-ma
 ri-bè-a'-na
 Ri'-bes
 Ri-be'-si-cè-a
 Ri-be'-si-i
 ri-bif-ol'-i-a
 Ri'-bis
Ric-car-di-a'-nus
Ric-car-to'-ni
Ri-ce-a'-na
Rich-ard'-i-a
Rich-ards'-i
Rich-ards-yl-a'-na
Rich-ards-o'-ni
Rich-ards-o'-ni-a
Rich'-è-a
Rich'-è-i
 ric-in-if-ol'-i-um
 Ric'-in-us
 Ri-co'-ti-a
Rid-olf-yl-a'-na
Ric'-del-yl-a'-num
 Rig-id-el'-la
 rig-id'-ul-um
 rig'-id-um
 Ri'-ma
 rin'-gens
Rin'-go
Ri-oc-rene'-i-a
 ri-pa'-ri-um
 Ri-pid'-i-um
 Rip-og'-on-um
Ritch-ic'-a
Ritch-ic-a'-na
Ri'-tro
Ri-um-in-yl-a'-na
 ri-va'-le
Ri'-ve-a
 Rin-i-e'-ra
 Riv-i-e'-ri
Riv-i'-na
Riv-i-ny-a'-na
 ri-vul-a'-ris
 Ri-zo'-a
Ro-berg'-i-a
Ro-ber-ti-a'-num
Rob-erts'-i-a
Rob-erts'-i-i
Rob-erts-o'-ni-a
Rob-in'-i-a
rob-in-yl-æ-fol'-i-um
Rob-in-so'-ni
Rob-in-so'-ni-a'-na
Rob-i-que'-ti-a
 ro-bor-a'-ta
 Ro'-bur
 ro-bus'-tus
 Roc-col'-la
 Ro'-chè-a
 Ro-che'-li-a
Ro-che-yl-a'-na
 Ro-chen'-sis

Words derived from Latin and Greek (i.e., all except those in italics) to be pronounced as follows: ä as in äp-art'; a as in pea'-lmist; ä as in slèn'-dor; è as in ve'-ined; Y as in thèn; i as in mach'-i'-nist; ò as in röt'-ten; ò as in vò'-ter; ù as in pow'-er-ful; ù as in rù'-ler; ý as ý; ý as í; æ, œ, ei, as ai in pain; au as ou in house; g, c, and ch, always hard, as, for example, g in good, c in muscular, and ch in Christian. (For the old method, see page 276.)

This word is discussed at the end of the Pronouncing Dictionary.

Pronouncing Dictionary—continued.

Ro-dék-Y-a'-na
 Rod-ers'-Y-a
 Rod-i-w'-i
 Rod-y'-gas-i
 Rod-y-gas-Y-a'-na
 Rod-ri-gue'-zî-a
 Ro-el'-la
 Rø-me'-ri-a
 Rø-me-ri-a'-na
 Rø'-per-a
 Røss-le'-ri-a
 Røss-te'-li-a
 Røss'-li-a
 Røss-li-a'-na
 Røss'-li-i
 Røf'-fi-a
 Rog-ers'-Y-i
 Ro-gi-e'-ru
 Ro-gi-e'-ri
 Ro-han'-Y-i
 Roh'-dè-a
 Kohr'-Y-a
 Rohr'-Y-i
 Ro-land'-ra
 Rol-lis-o'-ni
 Ro-ma'-na
 Ro-man-zof'-fY-a
 Ro-man-zov-Y-a'-na
 Ro-man-zov'-Y-i
 Ro-maz-af-fY-a'-na
 Ro-me'-ri-a
 Rom'-ney-a
 Rom-ul-e'-n
 Ron-del-e'-fi-a
 Ronn-berg'-Y-a
 Ron-nou'-Y-a
 Roop'-er-i
 Rop'-al-a
 Ros'-a*
 ros-a'-cè-a
 Ros-a'-cè-w
 Ros'-w
 ros-w-flo'-ra
 ros-w-fol'-Y-us
 ros-a'-na
 Ro-san-ov'-Y-a
 ros-a'-ri-a
 Rosch-e'-ri-a
 Ros-co'-e-a
 Ros-co-e-a'-nu
 Ros'-sè-a
 Ros'-è-w
 Ros-eel'-si-i
 ros'-è-us
 ros-mar-i'-nif-ol'-Y-a
 ros-mar-i-nif-or'-mis
 Ros-mar-y'-nus
 Ross'-Y-i
 Ros-tel-la'-ri-a
 ros-tel-la'-ta
 ros-tra'-lis
 ros'-trans
 Ros-tra'-ri-a
 ros-tra'-ta
 ros-ul-a'-ris

Ro'-tang
 rot-a'-tus
 Roth-man'-ni-a
 roth-om-ag-en'-sis
 Rotha-child'-Y-a-num
 Rott-boel'-li-a
 Rott-le'-ra
 rot-un-da'-tum
 rot-un-dif-ol'-Y-a
 rot-un'-dum
 Rou-gi-e'-ri
 Rou'-ham-on
 Rou-li'-ni-a
 Rou'-pal-a
 Rou-pe'l'-li-a
 Rou'-re-a
 Rous-sø-w'-cè-w
 Rox-burgh'-Y-a
 Rox-burgh-Y-a'-cè-w
 Rox-burgh'-Y-i
 Roy-e'-na
 Roy-e'-ni
 Roy'-lè-a
 Roy-lè-a'-nns
 Roy'-lè-Y
 Rub'-è-w
 rub-el'-la
 rub'-ons
 rub'-er*
 rub-er'-rim-a
 rub-es'-cous
 Rub'-i
 Rub'-Y-a
 Rub-Y-a'-cè-w
 rub-Y-a-fol'-Y-a
 rub-ic-nu'-da
 rub'-id-a
 rub-Y-el'-la
 rub-if-lo'-ra
 ru-bi-gin-o'-sa
 Ru-bi-gin-o'-saw
 ru-bi-go-ve'-ra
 Rub'-i-I-da'-i
 rub-Y-è-i'-dès
 rub'-ra
 rub-ric-au'-la
 rub-rif-ol'-Y-a
 rub-roc-inc'-tum
 rub-ron-er'-vi-um
 rub-ron-o-dò-sum
 rub-ro'-rum
 rub-rov-e'-ni-a
 rub-rov-e-no'-sum
 rub'-rum
 Rub'-us*
 Ruck'-er-i
 Ruck-er-Y-a'-num
 Ruck-er'-Y-i
 Ruck'-Y-a
 Rud-berk'-Y-a
 Rud'-gè-a
 rud'-is
 Ru-dolph'-Y-a
 Ru-dolph-cø-me'-ri-a
 Ru-el'-li-a

ru-el-lè-i'-dès
 ru'-fa
 ru-fes'-cous
 Ruf'-fi-a
 ru-fic-ol'-lis
 ru-fic-or'-nis
 ru-fin-er'-vis
 ru-fin'-ni-a
 ru-foc-inc'-tus
 ru'-ful-um
 ru'-ga
 ru-gil'-ob-us
 ru-go'-su
 Ru-i'-zî-a
 Ru-i-yi-a'-na
 Ru'-lè-a
 Ru'-lè-i
 Ru-ling'-Y-a
 Rum'-ox
 Rum'-ic-is
 Rum-phY-a'-na
 Rum'-phi-i
 run-oi-nu'-tum
 Ru-pal-ley'-a
 ru-pes'-tro
 ru-pio-ap-ra'-ri-a
 ru-pio'-ol-a
 Rup'-pi-a
 Rup'-pi-i
 Ru-prech'-fi-i
 rus-cif-ol'-Y-a
 Rus'-ons
 Ru-si'-na
 Rus-sel'-i-a
 Rus-sel-li-a'-na
 Rus'-si
 Rus'-san-la
 rus'-tic-um
 Ru'-ta
 Ru-ta'-cè-w
 ru-ta-fol'-Y-us
 Ru'-ta-mu-ru'-ri-a
 ruth-e'-nic-um
 rut-id-ob-ul'-bon
 rut'-il-ans
 Ruysch'-Y-a
 Ruysch-Y-a'-num
 Ry-an'-Y-a
 Ry-man'-dra
 Rys-sop'-ter-ys
 ryt-id-ol-o'-ma
 ryt-id-oph-yl'-la
 Ryt-ig-in'-Y-a
 Sab-ad-il'-la
 Sa'-bal
 Sab-ba'-li-a
 Sa'-bi-a
 Sa-bi-a'-cè-w
 Sab-ic-e'-a
 Sab-i'-na
 Sab-i'-na
 Sab-i'-ne-a

Words derived from Latin and Greek (i.e., all except those in italics) to be pronounced as follows: ã as in ãp-art'; ä as in psä'-lmist; è as in slèn'-der; é as in vè'-ined; Ý as in thÿn; í as in mach-i'-nist; ò as in røt'-ten; ó as in vø'ter; ù as in pow'-er-fül; ü as in rü'-ler; ý as Ý; æ, œ, ei, as ai in pain; au as ou in house; g, c, and ch, always hard, as, for example, g in good, c in muscular, and ch in Christian. (For the old method, see page 276.)

* This word is discussed at the end of the Pronouncing Dictionary.

Pronouncing Dictionary—continued.

Sab-i'-ni
Sab-i-ni'-a-nus
Sab-i'-ni-i
sab-i'-nē-i'-dēs
sao-ca'-ta
sao-char-a'-ta
sao-char-if'-er-a
sao-char-in-um
Sao-char-om'-yo-dēs
Sao-char'-um
sao-cif'-er-a
Sao-coch-i'-lus
Sac-co-Ya'-na
Sac-ool-ab'-Y-nm
Sac-ool-o'-mu
sach-al-i-nen'-nē
Sac-og-lōt'-tis
Sad-ler'-Y-a
Sag-e'-ni-a
Sag-er-e'-ti-a
Sag-i'-na
sag-it-tē-fol'-Y-a
sag-it-ta'-lis
Sag-it-ta'-ri-a
sag-it-ta'-ta
sag-it-tif-ol'-Y-a
Sag-lō-o'-nis
Sa-go'-ne-a
Sa-grw'-a
Sa-gue'-rus
Sa'-gus
Sa-lac'-ca
sal-ac-con'-sis
Sal-a'-ci-a
Sal-dun'-lu
Sal-io-a'-ri-a
sal-io-a'-ri-m-fol'-Y-a
sal-io-if-ol'-Y-a
sal-ic'-in-a
Sal-io-in'-dē
sal'-io-is
Sal-io-or'-ni-a
sal-io-or-nō-i'-dēs
sal-ig'-na
Sa-lia-bu'-ri-a
Sa-lia'-Y-a
Sal'-ix
Sal'-mō-a
Sal'-mī-a
Sal'-mī-a'-na
Sal'-mī-i
Sal-pich-lw'-na
Sal-pich'-rō-a
Sal-pich-ro'-ma
Sal-pig-lōs'-sis
Sal-ping-an'-tha
Sal-pix-an'-tha
sal-sil'-lu
Sal'-sol-a
Sal-sol-a'-oē
sal-sol-ō-i'-dēs
sal-su-gin-o'-sus
sal'-sul-a
sal-ta-bun'-dum
sal-ta-to'-ri-a

sal-ta-to'-rum
Sal'-tio-us
Sal-va-dō'-ra
Sal-va-dō-ra'-cē-m
Sal'-vī-a
Sal'-vī-m
sal'-vī-m-fol'-Y-us
sal-vif-ol'-Y-a
Sal-vi'-ni-a
Sal-vi'-ni-ē-m
Salz-man'-ni
Sam'-ar-a
Sam'-bar
sam-bu-cif-ol'-Y-us
sam-bu'-cin-a
Sam-bu'-cus
Sam'-Y-a
Sa'-mol-us
Sa'-myd-a
Sa-myd-a'-oē-m
San-chō'-xi-a
San-co'-na
sano'-ta
Sano'-tē Cath-er-i'-m
San-dank'-wa
San-der-Y-a'-num
San-ders'-Y-i
San-der-so'-ni
San-der-so'-ni-a
Sand-ford'-Y-i
San-dō'-ric-um
sand-vic-en'-sē
sand-wic-en'-sē
San-guin-a'-ri-a
sanguin'-dē-um
sanguin-ol-en'-tus
San-guis-or'-ba
San-guis-or-ba'-oē-m
San-hil-a'-ri-a
San-sev-i-ol'-la
San-sev-i-e'-ra
San-tal-a'-oē-m
San'-tal-um
San-tol-i'-na
santol-i-nō-i'-dēs
San-vi-ta'-li-a
Sap'-an
Sa-per'-da
sap'-id-a
sap-y-en'-tum
Sap-in-da'-cē-m
Sap-in'-dē-m
Sap-in'-dus
Sap'-Y-um
sap-o-na'-oē-um
Sap-o-na'-ri-a
Sap-och-ni'-kwo-i
Sap-o'-ta
Sap-o-ta'-oē-m
Sap'-pan
sapph-i'-rin-a
Sap-rol-eg'-ni-a
Sar-a'-ca
Sa-ra'-cha
Sar-can'-thus

Sar-cin'-ul-a
Sar-cin'-ul-m
Sar-oc-ap'-nos
Sar-oc-ar'-pon
Sar-oc-au'-lon
Sar-oc-eph'-al-us
Sar-coch-i'-lus
Sar-oc-oc'-oa
Sar-oc-ol'-la
sar-co'-dēs
Sar-cog-lōt'-tis
Sar-cog'-on-um
Sar-ool'-ob-us
Sar-coph-yl'-lus
Sar-cop-od'-Y-um
Sar-cop'-tēs
Sar-cox-tem'-ma
Sar-i'-bus
sar-mat'-ic-a
sar-men-ta'-cō-a
sar-men-to'-sum
Sar-mi-en'-ta
sar-ni-en'-sis
Sar-o'-tēs
Sar-o'-thra
Sar-rao-e'-ni-a
Sar-rao-o-ni'-cō-a
Sar-sap-ar-il'-la
Sar-to'-ri-i
Sas-an'-gua
Sas'-saf-ras
sat-i'-va
Sat-ur-e'-Y-a
sat-ur-e'-Y-ō-i'-dēs
Sa-tur'-ni-a
Sat-yr'-Y-um
Sat-zu'-mi
Saun-ders'-Y-a
Saun-ders-Y-a'-na
Saun-ders'-Y-i
Sau-rau'-ja
sau-roc-eph'-al-a
Sau-rog-lōs'-sum
Sau-rom'-at-um
Sau'-rop-ūs
Sau-ru'-rō-m
Sau-ru'-rus
Saus-su'-ri-a
Saus-su'-ri-a
Sau'-ter-i
Sau-va-ge'-si-a
Sau-va-ge'-si-ē-m
Sau-as-ta'-na
Sav-ū-ō-a'-na
sax-a'-til-is
Saxe-goth'-ē-a
sax-ic'-ol-a
*Sax-if'-rag-a**
Sax-if-rag'-ē-m
Sax-of-rid-er-i'-cē-a
sca'-ber
scab-er'-ul-a
scab'-Y-oi
scab'-Y-ēs
Scab-Y-o'-sa

Words derived from Latin and Greek (i.e., all except those in italics) to be pronounced as follows: ã as in ãp-art'; ä as in psal-mist; ð as in sldn'-der; ð as in vð'-ined; Y as in thÿn; I as in mach-i'-nist; ð as in röt'-ten; ö as in vö'-ter; ù as in pow'-er-fül; ü as in rü'-ler; j as Y; j as I; æ, œ, ei, as ai in pain; au as ou in house; g, o, and ch, always hard, as, for example, g in good, o in muscular, and ch in Christian. (For the old method, see page 276.)

* This word is discussed at the end of the Pronouncing Dictionary.

Pronouncing Dictionary—continued.

scab-*l*-o-*s*m-fol'-*l*-a
 scab-*l*-o-sb-*l*'-dēs
 scab'-ra
 scab-rel'-*l*a
 scab-rid-a
 scab-rif-ol'-*l*-a
 scab-ril-in'-*g*us
 scab-ris-ca'-pa
 scab-ri-us'-oul-a
 Scā'-vol-a
 sca-la'-ria
 Scal'-*l*-a
 Scam-mo'-*n*l-a
 scan'-dens
 scap'-dic-a
 scaph'-a*
 scaph-ig'-er-a
 Scaph-*g*-lōt'-tis
 sca-po'-sus
 scar-*l*-o'-sum
 scar-lat-*l*'-nus
 Scel-och-*l*'-lus
 Scop-a'-cō-*s*
 Scop-as'-ma
 Scōp-tran'-thus
 scōp'-trum
 Schacht'-*l*-i
 Schaf-fer'-*l*-a
 Schaff-ner'-*l*-a
 Schaf'-ta
 Schau-er'-*l*-a
 Schau-er-*l*-a'-na*
 Schod-on'-or-us
 Schōe'-lā-a
 Schee'-ri-a
 Schee'-ri-i
 Schef-fer-i
 Schel-ham'-mer-a
 Schel-lōl'-ep-is
 Schel-ve'-ri-a
 Scher-em-e'-tiew-i
 Scher-zer-*l*-a'-num
 Scheuch-zē-ri
 Scheuch-zē-ri-a
 schid-ig'-er-a
 Schid-os-per'-mum
 Schie-dā'-num
 Schie'-dā-i
 Schil-ler-*l*-a'-num
 Schi'-ma
 Schim-ps'-ri
 Schi'-nus
 Schis-mat-og-lōt'-tis
 Schis'-mus
 Schi-ver-eck'-*l*-a
 Schiz-ā'-a
 Schiz-an'-dra
 Schiz-an'-drē-*s*
 schiz-anth'-a
 Schiz-anth'-ēs
 Schiz-anth'-us
 Schiz-ob'-as-is
 Schiz-oc-ō'-na
 Schiz-oc-ap'-na
 Schiz-oc-en'-tron

Schiz-o'-dī-um
 schiz'-od-on
 Schiz-ol-ob'-*l*-um
 Schiz-ol-o'-ma
 Schiz-om-er'-*l*-a
 Schiz-om-yo-et'-ēs
 Schiz-on-en'-ra
 Schiz-op-et'-al-on
 schiz-op-et'-al-um
 Schiz-oph-rag'-ma
 schiz-oph-yl'-*l*a
 Schiz-op-leu'-ra
 Schiz-op'-ter-is
 Schiz-os-tem'-ma
 Schiz-os'-tyl-is
 Schkuhr'-*l*-a
 Schkuhr'-*l*-i
 Schleich'-er-i
 Schleid-en-*l*-a'-na
 Schliep-er-*l*-a'-num
 Schlim'-*l*-i
 Schlim'-mī-a
 Schlum-ber-ger'-*l*-a
 Schlum-ber-ger-*l*-a'-na
 Schmid-el'-*l*-a
 Schmidt-*l*-a'-na
 Schmidt'-*l*-i
 Schmitz'-*l*-i
 Schnitt-spahn'-*l*-i
 Schoel'-ler-i
 Schœn-an'-thus
 Schœn'-*l*-a
 Schœn-op'-ras-um*
 Schœn-or'-chis
 Schœn'-us
 Schap'-*l*-a
 Scho-feld'-*l*-i
 schol-a'-ris
 Schol'-ler-a
 Schol'-*l*-a
 Schom-burgh'-*l*-i
 Schom-burgh'-*l*-a
 Schom-burgh-*l*-a'-nus
 Schom-burgh'-*l*-i
 Scho'-*l*-a
 Schol-*l*-a'-na
 Schol'-*l*-i
 Schous-bō'-na
 Schouw'-*l*-a
 Schra'-der-a
 Schranck'-*l*-a
 Schrank'-*l*-i
 Schre'-ber-a
 Schrenk'-*l*-i
 Schrenk-*l*-a'-na
 Schrō'-der-*s*
 Schrō-der-*l*-a'-na
 Schrō'-der-i
 Schrō-der-*l*-a'-num
 Schu-ber'-*l*-a
 Schul-te'-*l*-a
 Schults'-*l*-i
 Schwæ-gri-che'-*n*-a
 Schwan'-*n*-a
 Schwartz'-*l*-a

Schwed'-ler-i
 Schweig-ger'-*l*-a
 Schwenk-feld'-*l*-a
 Schwenk'-*l*-a
 Schwerl'-ler-i
 Schweyck-ert'-*l*-a
 Sei-ad-oc'-ul-*g**
 Sei-ad-oph-yl'-lum
 Sei-ad-op'-it-*g*s
 Sei-aph'-*l*-a
 Seil'-*l*-a
 seil-la'-ria
 seil-lā-i'-dēs
 Sein-dap'-sus
 sein-til'-lans
 Sei-od-aph-yl'-lum
 Sei-oph-yl'-*l*-a
 Seir'-pē-*s*
 Seir'-pus
 Sei-ta-min'-ē-*s*
 Sei-*u*'-ris
 Se-la'-rā-a
 Sele-ran'-thus*
 Sole'-ri-a
 sole-roo-ar'-pa
 Sole-ron-e'-ma
 sole-roph-yl'-*l*-a
 Sole-rop'-ter-is
 Sole-roth-am'-nus
 Sole-ro-tin'-*l*-a
 sole-ro-*l*-o'-rum
 sole-ro'-*l*-um
 Sole-rox'-yl-on
 Scol-*l*-os-o'-rus
 Soo-loch'-lā-a
 Scol-op-en'-dra
 scol-op-en-drif-ol'-*l*-um
 scol-op-en-dri'-na
 Scol-op-en'-dri-um
 Scol'-*g*-um
 Sco-lyt'-id-*s*
 Sco-lyt-us
 Sco'-pa
 sco'-pus
 Sco-pa'-ri-a
 Scop-o'-*l*-a
 Scop-o-*l*'-na
 scop-ul'-*l*-a
 Scoor'-dī-um
 Sco'-ri-*s*
 Soor-od-o'-*n*-a
 Soor-od-op'-ras-um
 scor-pl-ē-i'-dēs
 Scor-pl-*u*'-rus
 Scor-zon-e'-ra
 scor-zon-e-rā-fol'-*l*-a
 scor-zon-e-rif-ol'-*l*-um
 sco'-tio-a
 Scot'-lā-a
 Scot-*l*-a'-na
 Scou'-ler-i
 Scroph-ul-a'-ri-a
 scroph-ul-a-ri-*s*-fol'-*l*-um
 Scroph-ul-ar-in'-ē-*s*
 sculp'-tum

Words derived from Latin and Greek (i.e., all except those in italics) to be pronounced as follows: ā as in āp-art'; ä as in pād-*l*-mist; ē as in alēn'-der; ê as in vē'-ined; ĩ as in thĭn; ĩ as in mach-*l*-nist; ô as in rōt'-ten; ô as in vō'-ter; ū as in pow'-er-fūl; ū as in rŭ'-ler; ŷ as ĩ; ŷ as ĩ; æ, œ, ei, as ai in pain; au as ou in house; g, c, and ch, always hard, as, for example, g in good, c in muscular, and ch in Christian. (For the old method, see page 276.)

* This word is discussed at the end of the Pronouncing Dictionary.

Pronouncing Dictionary--continued.

seur'-ra
 Sen-tel-la'-rĭ-a
 sen-tel-la-rĭ-ĭ-ĭ'-dĕs
 sen-tel-la'-rĭs
 sen-tel-la'-ta
 Sen-tic-a'-rĭ-a
 seu-tif-ol'-ĭ-a
 Seut'-ul-a
 sen'-tum
 Scyph-an'-thus
 Scyph-ul-a'-rĭ-a
 Scyt'-al'-ĭ-a
 Scyt'-al-is
 Sey-tan'-thus
 Sea-farth'-ĭ-a
 Se-hæ'-a
 Se-hæ'-na
 Se-ber-te'-na
 se-bif'-er-a
 Sec-a'-le*
 Se'-cal-is
 Sec-am-o'-ne
 se-chel-lu'-rum
 Se'-chĭ-um
 sec-un'-da
 sec-un-dif-lo'-rum
 Sec-u-ri-da'-ca
 sec-u'-rig-er
 Sec-u-rig'-er-a
 Sec-u-rin'-eg-a
 Sed-e'-ni
 Sed-e-nĭ-a'-na
 Sed'-um*
 See-man'-ni
 See-man'-nĭ-a
 See-man'-nĭ-a'-na
 Seg'-eth-i
 seg-ob'-um
 Seg-ŭi-e'-rĭ-i
 Seg-ŭi'-ne
 Sel-ag-in'-ĭ-a
 Sel-a-gin-el'-la
 Sel-a-gin-el'-le-a
 sel-a-gin-ĭ-ĭ'-dĕs
 Sel-a'-go
 Sel-an'-drĭ-a
 Sel-a'-tĭ-um
 Sel-born-en'-sis
 Sel-e'-nĭ-a
 Sel-e-nip-ed'-ĭ-um
 Sel-ĭ'-num
 Sel-kirk'-ĭ-i
 sel-lig'-er-um
 Sel-lĭ'-guĕ'a
 Sel-lo'-a
 Sel-lo'-um
 Sel-lo-vĭ-a'-na
 Sel-lo-wĭ-a'-num
 Sel-o'-st-i
 Sel-sky-a'-num
 Se-man'-ĭ-i
 Se-me-car'-pus
 Se-mei-an'-dra
 Sem'-el-o
 Se-men-o'-st-i

Sem-en-ow'-ĭ-i
 se-mĭ-a-la'-ta*
 se-mio-lau'-sa
 se-mic-or-da'-tum
 se-mic-yl-in'-dric-a
 se-mid-ec-an'-drum
 se-mig-al-ĭ-a'-tum
 se-mil-ac'-er-um
 se-mip-in-na'-ta
 se-mis-or-ra'-ta
 sem-per-flo'-rens
 sem-per-vir'-ens
 sem-per-vi-vĭ-ĭ'-dĕs
 Sem-per-vĭ'-vum
 Se-na'-ci-a
 sen-ec-ĭ-if-ol'-ĭ-a
 Sen-ec-il'-lis
 Sen-ec'-ĭ-o*
 sen-ec-ĭ-ĭ-ĭ'-dĕs
 Sen-ec-ĭ-o'-nis
 Sen'-eg-a
 Sen'-eg-al
 sen-eg-al-en'-sis
 sen-ĭ'-le
 sen-sib'-il-is
 sen-sit'-ĭ-va
 se-pl-a'-rĭ-a
 se-pin'-col-a
 se'-pl-um
 sep-tang-ul-a'-re
 Sep'-tas
 sep-tem'-fid-a
 sep-tem'-lob-um
 sep-tem-punc-ta'-ta
 sep-tem-tri-o-en'-lĕ
 Sep-to'-rĭ-a
 sep-ul'-tum
 Seg-ŭoi'-a
 Ser-an-gĭ'-um
 Se-raph'-yt-a
 Ser-ap'-ĭ-us
 serb'-ic-a
 Ser-e-no'-a
 Ser-t-a'-na
 se-ric'-ĭ-a
 Se-ric-oc-ar'-pus
 Se-ric-og'-raph-is
 Ser-ing'-ĭ-a
 Ser-ĭ'-phĭ-um
 Ser-is'-sa
 Ser-ju'-nĭ-a
 ser-ju'-ĭ-æ-fol'-ĭ-a
 Ser'-lĭ-i
 se-ro'-tin-us
 ser'-pens
 Ser-pen-ta'-rĭ-a
 ser-pen-tĭ'-nus
 Ser-pic'-ul-a
 ser-pyl-lif-ol'-ĭ-um
 Ser-pyl-lop'-sis
 Ser-pyl-lum
 ser'-ra
 ser-ra'-ta
 ser-ra-tif-ol'-ĭ-a
 Ser-ra'-tul-a

ser-rul-a'-ta
 Ser-ru'-rĭ-a
 Ser-ru'-rĭ-æ
 Ser-sal'-ĭ-ĭ-a
 Ser-tif'-er-a
 se-sam-ĭ-ĭ'-dĕs
 Se'-sam-um
 Ses-han'-ĭ-a
 Ses'-el-i
 Se'-st-a
 Ses-le'-rĭ-a
 ses-quip-ed-a'-lis
 ses-sif-ol'-ĭ-um
 ses-sil-if-lo'-rĭ-a
 ses-sil-if-ol'-ĭ-us
 ses'-sil-is
 Ses-u'-vĭ-um
 se-ta'-cĕ-a*
 Se-ta'-rĭ-a
 Seth'-ĭ-a
 se-tif-ol'-ĭ-um
 se-tig'-er-a
 se-to'-sa
 se-tul-if'-er-um
 se-tul-o'-sum
 sev-e'-ra
 Sev-er'-ĭ-nĭ-a
 Sev-er-zow'-ĭ
 Sev-er-zow'-ĭ-a
 Sey-me'-rĭ-a
 Sey-mour'-ĭ-i
 Sha'-lon
 Shan-non-ĭ-a'-na
 Shaw'-ĭ-i
 Shay-lock'-ĭ-i
 Shep-herd'-ĭ
 Shep-herd'-ĭ-a
 Shep-herd'-ĭ-i
 Shep-herd'-ĭ-i
 Shep-pard'-ĭ
 Sher-rat'-ĭ-a'-na
 Short'-ĭ-i
 Shu-ter-ei'-a
 Shulle-worth'-ĭ-i
 si-am-en'-sis
 Sib-bald'-ĭ-a
 Sib-bald-ĭ-æ-fol'-ĭ-a
 Sib-ĭ-ræ'-a
 sib-ĭ'-ric-a
 Sib-thorp'-ĭ-a
 Sib-thorp'-ĭ-i
 Sic-ol'-ĭ-um
 sic'-ul-a
 Sic-ŷ-oc-ar'-pus
 sic-ŷ-ĭ-ĭ'-dĕs
 Sic-ŷ-os
 Si'-da
 Si-dal'-cĕ-a
 Sid-e-rĭ'-tis*
 Sid-e-rod-en'-dron
 sid-e-rox-yl-ĭ-ĭ'-dĕs
 Sid-e-rox-yl-ĭ-on
 si-dĭ-ĭ'-dĕs
 Sie'-ber-a
 Sie'-ber-i
 Sie-ber'-ĭ-a

Words derived from Latin and Greek (i.e., all except those in italics) to be pronounced as follows: ã as in ãp-art'; a as in psal'mist; ð as in slen'-der; è as in vĕ'-ined; ĭ as in thĭn; ĭ as in mach-ĭ'-nist; ð as in rĕt'-ten; ð as in vo'-ter; ù as in pow'-er-ful; ũ as in rã'-ler; ŷ as ĭ; ŷ as ĭ; æ, œ, ei, æ as ai in pain; au as ou in house; g, c, and ch, always hard, as, for example, g in good, c in muscular, and ch in Christian. (For the old method, see page 276.)

* This word is discussed at the end of the Pronouncing Dictionary.

Pronouncing Dictionary—continued.

Sis-bold' i
Sis-bold' i-a'-na
Sis-bold' i-i
Sis-ges-beck' i-a
Sis-vers' i-a
Sis-vers' i-i
Sig-il-la' ri-a
Sig-mat-os-tal y r
sig-na' ta
sik-kim-en' sis
si-la' if-ol' i-a
Si-la' na
Si-le' ne
si-le' nō-i'-dēs
Si-le-nop' sis
Sil-io-ul-o' sa
Sil' i-qua
Sil-i-quas' trum
Sil-i-quo' sa
Sil' pha
Sil' phum
sil-va' tic-a
Sil' yb-um
Sim-a' ba
Sim-ar-ou' ba
Sim-ar-u' ba
Sim-ar-u' bē-æ
Sim-e' this
Sim-monds' i-a
Si-mo' ni-i
Sim-ons' i-i
sim' plex
sim-plic-io-au' lis
sim-plic-if-ol' i-a
Sim-plic-if-ol' i-a
sim-plic' if-rons
sim-plic-is' sim-um
Simp' son-i
Sims' i-i
sim' ul-a
sim' ul-ans
Sin-a' pis
Sin-clav' i-a
sin-em-a-ri-en' sis
sin-en' nis
sing-ap-o-ren' sis
sin' io-um
Sin-ning' i-a
sin-u-a' ta
sin-u-o' sum
Siph'o' *
Siph-oc-am' pyl-os*
Siph-on-an' dra
Siph-on-an' tha
Siph-o' ni-a
Siph-o-ni-op' sis
Siph-o-noph' or-a
sip-yl-e' um
Si' rex
Si' ri-um
Siv-ot' estk
Sis' ar-um
Sis' soo
sis-ym-brif-if-ol' i-um
Sis-ym' brif-um

Sis-yr-in' ohum
sit-chen' sis
Si-toc-o' di-um*
Si-to' di-um
Si-tol-ob' i-um
Si-to' na
Si' um
Skim' mi-a
Skin' ner-i
Skin-ner' i-a
Ski-oph' il-a
Sla-ter' i-a
Sloa' ne-a
smar-ag' din-a
Smeath-man' ni-a
Smee-a' na
Smég-mad-er' moa
Sme-rin' thus
Smi-la' cō-æ
ami-lao-if-ol' i-a
Smi-lac' in-a
Smi' lax
Smith' i-a
Smith-i-a' na
Smith' i-i
Smyr' ni-um
sob-ol-if' er-a
Sob-ral' i-a
soo-i-a' lis
soc-ot-ra' na
So-crat-e' a
So-li' ro-i
So' ja
So-la-na' cō-æ
Sol-an' der-i
So-lan' dra
So-lan' dri
so-lan-drif-lo' rum
so-lu-nō-i' dēs
So-la' num
so-lu' re
Sol-a' ri-a
Sol-dan-el' la
sol-dan-el' læ-flu' ra
So' lō-a
So-le' na*
So-le-nach' ne
So-le-nan' dra
So-le-nan' tha
So-le-nan' thus
So-le-nid' i-um
So-le-nom' el-us
So-le-noph' or-a
So-le-nop' sis
sol' id-a
sol-id-a-gin' ð-na
Sol-id-a' go
so-lit-a' ri-a
Sol' ly-a
Som-mer-feldt' i-a
som-nic-ul-en' tum
som-nif' er-um
sonch-if-ol' i-a
sonch-ð-i' dēs
Sonch' us

Son-er-i' la
Son-ner-a' ti-a
son-o' ra
Soph' i-a*
Soph' or-a
soph-or-u-fol' i-a
soph-or-ð-i' dēs
Soph-ron-an' the
Soph-ron-i' tis
Sop-u' bi-a
So-ran' the
Sor-bu' ri-a
sor-bif-ol' i-um
Sor' bus
sor' did-a
So-re' ma
Sor' ghum
Sor-in-det' a
So-roc-eph' al-us*
So-rom' an-ēs
sor-o' ri-um
so-ros-por' ð-i'-dēs
So-ros-por' i-um
Sou-a' ri
Sou-lan-ge-a' na
Sou-lan-gi' a
Sou-rou-be' a
South-well' i-a
Sou' za
Sow-er-bō' a
Sow-er' bli
sra-di' cō-um
Spa-dos' tyl-ēs
Spar-ax' is
Spar-gan' i-um
Spar-man' ni-a
spar' sa
spar-sif-lo' ra
spar-sif-ol' i-a
spar' tō-a
Spar-ti-an' thus
Spar-ti' na
spar-ti-ð-i' dēs
Spar' ti-um
Spar-toth-am' nus
Spar' tum
Spat-al-an' thus
Spat-al' la
Spat-an' thus
spath-a' cō-a*
Spath-an' thē-um
Spath-eg-as' tōr
Spath-e' li-a
Spath-ic-ar' pa
Spath-iph-yl' lum
Spath' i-um
Spath-o' dē-a
Spath-og-lōt' tis
Spath-ot-ec-o' ma
spath-ul-a' tum
spath-ul-if-ol' i-um
spath-ul-i' num
Spath-y-e' ma
Spat-ul-a' ri-a
spec-i-o' sa

Words derived from Latin and Greek (i.e., all except those in italics) to be pronounced as follows: ð as in *ðp-art'*; ã as in *pa'i-lmist*; ð as in *alēn-der*; ē as in *ve'-ined*; Ƴ as in *thīn*; i as in *mach-i'-nist*; ð as in *rōt'-ten*; o as in *vō'-ter*; ũ as in *pow'-er-fūl*; ũ as in *rā'-ler*; Ƴ as Ƴ; ŷ as Ƴ; œ, œ, ei, as *ai* in *pain*; au as *ou* in *house*; g, o, and oh, always hard, as, for example, g in *good*, c in *muscular*, and oh in *Christian*. (For the old method, see page 276.)

* This word is discussed at the end of the Pronouncing Dictionary.

Pronouncing Dictionary—continued.

spec-y-o-nis'-sim-a
Speck-lē-nī-a
 spec-ta'-bil-is
 spec-tan'-dum
 spec-tril-in'-guis
 spec'-trum
 Spec-ul-a'-ri-a
 spec-ul-a'-trix
 Spec'-ul-um
 Speir-an'-thū
 Spel'-ta
 spe-lun'-ca
Speu-er-i-a'-na
 Sper'-gul-a
 Sper-gul-as'-trum
Sper-ling'-i-a
 Sper-mac-o'-ce*
 Sper-mad-ic'e-ty-on
 Sper-max'-yr-um
 sphæ-cl-a'-tum
 Sphæ-cl-e
 Sphæ-cl'-i-a
 Sphæ-ral'-ce-a
 Sphæ-ral'-la
 Sphæ-r'-i-a
 Sphæ-r-i-a'-ce-a
 sphæ-r'-ic-a
 Sphæ-r-oc-ar'-pus
 Sphæ-r-oc-ar'-y-a
 sphæ-r-oc-eph'-al-us
 Sphæ-r-och'-lō-a
 Sphæ-r-oc-y-on'-i-um
 Sphæ-r-og'-yn-e
 sphæ-r-ō-y'-dō-a
 Sphæ-r-ol-ob'-y-um
 Sphæ-r-o'-ma
 Sphæ-r-oph'-or-a
 Sphæ-r-oph-y'-na
 Sphæ-r-op-sid'-ē-a
 Sphæ-r-op'-sis
 Sphæ-r-op'-ter-is
 sphæ-r-ostach'-y-um
 Sphæ-r-ost'e'-ma
 Sphæ-r-ostoph'-an-os
 Sphæ-r-ostig'-ma
 Sphæ-r-oth-e'-ca
 Sphæ-r-oth-e'-le*
 Sphag-na'-cē-a
 Sphag'-num
 Sphe-nan'-dra*
 Sphe-nod-es'-ma
 Sphe-nog'-yn-e
 Sphe-not'-om-a
 Sphing'-id-a
 Sphing'-i'-na
 Sphinx
 sphon-dyl'-y-um
 Spi'-ca
Spī-cant
 spi-ca'-tu
Spī-cer-i-a'-num
 spi-cig'-or-a
 Spi-cil-la'-ri-a
Spī-el-man'-nī-a
 Spi-gel'-y-a

Spi-lan'-thēs*
 Spi-lan'-thus
 Spi-loc-ō'-a
 Spi-lon-o'-ta
 spi-lop'-ter-um
 Spi-los-o'-ma
 spi-na-Chris'-ti
 Spi-na'-ei-a
 spi-na'-rum
 Spi'-nif-ox
 spi-no'-sa
 spi-no-sis'-sim-um
 spi-nul-if'-er-a
 spi-nul-o'-sum
 Spi-ra'-a*
 Spi-ra'-ē-a
 spi-ra'-lis
 Spi-ran-the'-ra
 Spi-ran'-thēs
 spi-ran-thō-i'-des
 Spi-ra'-ri-a
 spi-rel'-la
 Spi-rid'-i-um
 Spi-roc-o'-nus
 Spi-ron-e'-ma
 Spi-ros-ic'-mon
 Spith-am-a'-us
Spī-tā'-na
 splach-nic-ar'-pa
 splen'-dens
 splen'-did-a
 splen-did-is'-sim-um
Spof-forth-i-a'-na
 Spon'-di-as
 spond-y-ō-i'-des
 Spon-dyl-oc-oc'-ea
Spon-ti'-ni
 spor-ad-oc-ar'-pum*
 Spor-id-oc'-m-um
 Spor-ob'-ol-us
Spra'-gve-a
Sprek-el'-i-a
Spreng-el'-i-a
Spreng-el'-y-i
spreng-el-y-ō-i'-des
Spring'-i-a
Spru-cē-a'-num
Spru-cē-i
 spu-ma'-ri-a
 spur'-y-a
 spu-ta'-tor
 Spyr-id'-i-um
 squa'-lens
 squa'-lid-a
 squa-ma'-ta
 Squa-mat-ax'-us
 squa'-mē-a
 squa-mif'-er-a
 squa-mo'-sa
 squa-mul-o'-sum
 squar-ro'-sa
 Squil'-la
Staab'-y-a
 Stach-y-op-o'-gōn*
 Stach'-ys

Stach-yt-ar'-pha
 Stach-yt-ar-phē'-ta
 Stach-y-u'-rus
Stack-hous'-i-a
Stack-hous'-i-ō-a
Stach-el'-i-na
 Stag-on-oc'-por-a
 Stal-ag-mi'-tēs
Stam-ford-y-a'-num
 sta-min'-ē-a
Stand-ish'-y-i
Stang-ē-a'-na
Stang-er'-y-a
Stan-ho'-pē-a
Stan-ho'-pē-as'-trum
*Stan'-ley-a**
Stan-ley-a'-na
 Stan'-nī-a
 stans
Stans-feld'-i-i
 Sta-pel'-i-a
Sta-pel'-i-a
sta-pel-i-a-for'-mis
sta-pel-i-ō-i'-des
 Staph-id-i-as'-trum
 Staph-il'-i-um
 Staph-yl-e'-a*
 Staph-yl-e'-a
 staph-yl-e-ō-i'-des
 Staph-yl-i'-mid-a
 Staph-yl-i'-nus
 Staph-ys-ag'-ri-a
 Star'-kē-a
 Stat'-ic-e
 stat-ic-if-ol'-i-us
Staur-to'-nī-a
 staur-oc-an'-thu
 Staur-oc-un'-thus
 Staur-an-the'-ra
 Staur-i'-tis
 Staur-og-lot'-tis
 staur-oph-yl'-lum
 Staur-op'-sis
 Staur-ostig'-ma
 Steel'-y-i
Steen-ham'-mer-a
 Steetz-y-a'-na
 Steg-nog-ram'-me
 steg-nog-ram-mō-i'-dēs
 Stog-o'-sī-a
Steiger-y-a'-na
 Steim'-y-i
 Stel-eph-u'-ros
 Stel'-is
 stel'-la
 Stel-la'-ri-a
 stel-la'-ris
 stel-la'-ta
 stel-la-ta'-rum
 stel-la-tif-ol'-i-um
 Stel-le'-ra
Stel-le'-ri
Stel-le-ri-a'-na
 stel-lig'-er-um
 stel-lul-a'-tum

Words derived from Latin and Greek (i.e., all except those in italics) to be pronounced as follows: ã as in ãp-art'; ä as in psä-lmist; ð as in slēn'-der; ē as in vē-ined; Ý as in thñ; í as in mach'-nist; ö as in röt'-ten; ô as in vò'-ter; ù as in pow'-er-fül; û as in ru'-ler; ý as í; ý as í; æ, œ, ei, as ai in pain; au as ou in house; g, c, and ch, always hard, as, for example, g in good, c in muscular, and ch in Christian. (For the old method, see page 276.)

* This word is discussed at the end of the Pronouncing Dictionary.

Pronouncing Dictionary—continued.

Stelzt'-ner-i
 Stem-ma'-rī-a
 Stem-mat'-y-um
 Ste-mo'-dī-a*
 Ste'-mon-a
 Ste-mon-ac-an'-thua
 Sten-ac'-tīs
 Sten-an'-drī-um
 Sten-an-the'-ra
 Sten-an'-thī-um
 Sten'-ī-a
 Sten-oc-ar'-pus*
 sten-oc-eph'-al-a
 sten-och-i'-lum
 Sten-och-i'-lus
 Sten-och-lō'-na
 Sten-oc-or'-yn-e
 Sten-og-as'-ter
 Sten-og-as'-tra
 Sten-og-lōs'-sum
 Sten-og-lōt'-tis
 sten-og'-yn-e
 Sten-ol-o'-ma
 Sten-om-es'-son
 sten-op-et'-al-a
 sten-oph-yl'-lum
 Sten-op'-ter-a
 Sten-orh-yn'-chus
 Sten-os-e'-mī-a
 sten-os-ep'-ul-us
 Sten-os-o-lō'-nī-um
 Sten-os-per-mat'-y-on
 Sten-os-te'-mum
 Sten-os'-tom-um
 Sten-ot-aph'-rum
 Steph-an-an'-drū*
 Steph-a'-nī-a
 Steph-an'-y-um
 Steph-an-oc'-om-a
 Steph-an-ol-i'-rī-on
 Steph-an-om-er'-ī-a
 Steph-an-oph'-or-um
 Steph-an-oph-y'-sum
 Steph-an-o'-tis
 Ster-cor-a'-rī-um
 Ster-cul'-y-a
 Ster-cul-y-a'-cē-a
 Ster-cul'-y-ē-a
 Ster-ē-os-an'-dra
 Ster-ē-ox'-yl-on
 Ster'-ē-u-um
 Ste-rig'-ma
 Ste-rig-mos-te'-mōn
 ster'-il-is
 Ster-iph-o'-ma
 Ste'-ria
 Stern-berg'-y-a
 Stern-berg'-y-i
 Steud'-el'-y-a
 Steud'-ner-a
 Ste-ve'-nī-a
 Ste-ve'-nī-i
 Ste-ven'-ē-i
 Ste-ven-so'-nī-a
 Ste'-vī-a

Stew-art'-y-a
 Stew-art'-y-i
 Stib-a'-sī-a
 Stich-on-eu'-ron
 Stick-man'-nī-a
 Stiff'-y-a
 Stig-maph-yl'-lon
 Stig-mar-o'-ta
 stig-mat'-ic-um
 stig-mo'-sum
 Stil-ag-in'-ē-a
 stil-a'-ta
 Stil'-bē-a
 Stil-ling-lee'-y-a
 Stil-ling'-y-a
 Sti'-pa
 sti-pit-a'-tum*
 stip-ul-a'-cē-a
 stip-ul-a'-ris
 stip-ul-a'-ta
 Stir-ling'-y-i
 Stiz-ol-ob'-y-um
 Stob-a'-a
 Stob-art-y-a'-na
 Stock'-y-i
 stoch'-ad-is
 Stoch'-as
 Stokes'-y-a*
 stol-o-nif'-er-a
 Sto'-nē-i
 Storck'-y-i
 Stor-i-e'-ri
 Sto'-ry-i
 Strach'-ey-i
 stra-min'-ē-a
 stra'-min-is
 Stram-o'-nī-um
 Stran'-gē-a
 stran-gul-a'-ta
 Strang-ways'-y-i
 Stran-viv'-sī-a
 Strat-y-o'-tēs
Strav-a-di-um
 Streb-lan-the'-ra
 Streb-lorh-i'-za
 Streb'-lus
 Strel-itz'-y-a
 Strep'-sī-a
 Strep-tan-the'-ra
 Strep-tan'-thus
 Strep'-tī-um
 Strep-toc-ar'-pus
 strep-top-et'-al-a
 strep-toph-yl'-la
 Strep'-top-us
 Strep-tos-o'-lōn
 stri-æ-for'-mis
 stri-a-tel'-lum
 stri-a'-tul-um
 stri-a'-tum
 stric'-ta
 stric-tif-lo'-ra
 Strig-il'-y-a
 strig-il-lo'-sa
 strig-o'-sa

strig-nl-o'-sum
 stri-ol'-a
 stri-ol-a'-tus
 Strob'-il-a*
 strob-il-a'-cē-a
 Strob-il-an'-thēs
 Strob-il-or'-ach-is
 Strob'-us
 Stro-man'-the
 Stro-mat-op'-ter-is
 Stroph-an'-thus
 Stroph-ol-i'-rī-on
Stru-ker'-y-a
 Stru-ma'-rī-a
 stru-ma'-rī-um
 stru-ma'-tum
 strup-if-ol'-y-a
 Stru'-thī-ol-a
 Stru-thī-op'-ter-is
 Stru'-thī-um
 Stryoh'-nos
Stu-art'-y-a
Stu-art'-i-a'-na
Stu-art'-y-i
 Sturm'-y-a
Stur-lev-auf'-y-i
 Sty-la'-go
 Sty-lan'-dra*
 Sty-lid'-y-ē-a
 Sty-lid'-y-um
 Sty-lim'-nus
 Sty'-lis
 Sty-loc-or'-yn-e
 Sty-log-lōs'-sum
 Sty-lol'-ep-is
 Sty-loph'-or-um
 sty-lo'-sa
 Sty-los-an'-thēs
 Sty-lu'-rus
 Sty-pan'-dra
 Styph-el'-y-a
 styph-el-y-ē-i'-dēs
 Styph-nol-ob'-y-um
 Styr-a'-cē-a
 styr-ac-if'-lū-a
 styr-ac-if-ol'-y-a
 Styr-an'-dra
 Styr'-ax
 Sun'-da
 sun'-vē
 sun'-vē-ol-ona
 sun-vis'-sim-um
 sub-ac-au'-lis
 sub-al-pī-nū
 sub-aur-ic-ul-a'-tūn
 sub-bif-lo'-ra
 sub-car-no'-sum
 sub-cor-da'-ta
 sub-cor-tic-a'-lis
 sub-cort-ic'-y-um
 sub-dī-aph-an-um
 sub-e-den-ta'-ta
 Su'-ber*
 su-ber-cul-a'-ta
 sub-e-rec'-ta

Words derived from Latin and Greek (i.e., all except those in italics) to be pronounced as follows; æ as in æp-art'; a as in pæ'-lmist; è as in alēn'-der; ē as in vē'-ined; y as in thīn; l as in mach-i'-nist; ð as in rðt'-ten; ò as in vò'-ter; ù as in pow'-er-fūl; ū as in rā'-ler; ŷ as y; ŷ as ī; æ, œ, ei, as ai in pain; au as ou in house; g, c, and ch, always hard, as, for example, g in good, c in muscular, and ch in Christian. (For the old method, see page 276.)

* This word is discussed at the end of the Pronouncing Dictionary.

Pronouncing Dictionary—continued.

su-ber-if-ol'-y-a
 su-ber-o'-sa*
 sub-e-ro'-sa*
 sub-fal-ca'-tum
 sub-glan'-ca
 sub-hir-tel'-la
 Sub-li'-mi-a
 sub-lu-na'-tum
 sub-mer'-sum
 sub-per-en'-nia
 sub-pet-yl-ol-a'-tum
 sub-pin-na-tif'-id-a
 sub-quin-quef'-id-um
 sub-rep-an'-dum
 sub'-seq-na
 sub-see'-sil-is
 sub-sin-u-a'-tum
 sub-ter-ra'-nè-um
 sub-tig-na'-tum
 sub-ti-lis'-sim-us
 sub-tu-ber-cul-a'-ta
 Su-bul-a'-ri-a
 su-bul-a'-tum
 sub-um-bel-la'-ta
 sub-vea-ti'-tum
 sub-vil-lo'-sa
 sub-vol-u'-bil-e
 suc-co-da'-nè-a
 suc-cir-ub'-ra
 Suc-ci'-sa
 suc-cot-ri'-na
 Suc-co'-vi-a
 suc-cul-on'-tum
 Suc-co'-ta
 sud-bur-y-en'-sis
 sue'-cio-a
 suf-fo-ca'-tum
 suf-frut-es'-cens
 suf-frut-ic-o'-sa
 suf-ful'-ta
 Su-ka'-na
 sul-ca'-tum
 sul-cio-ol'-lis
 Sul-liv-ant'-i
 sul-phur'-è-a
 Sul-ta'-ni
 su-ma-tra'-na
 Sum'-bul
 Sum-un'-li-a
 sun-da'-ic-a
 sund-en'-sè
 Su-ni'-pi-a
 sup-erb'-y-ens
 sup-erb'-um
 sup-er-cil-y-a'-rè
 sup-er'-flû-a
 sup-er-pò-o'-tic-us
 sup-ra-so-rif'-er-um
 sur-cu-lo'-sa
 su-rin-am-en'-sis
 Su-ring-ar'-y-i
 sur-rej-a'-num
 sur-ru-cuh-en'-sè
 Su-sar'-y-um
 su-si-a-na

sus-pen'-sa
 Suth-er-land'-i
 Suth-er-land'-y-a
 Su-tri'-na
 Sut-to'-ni-a
 su-tu-ra'-lis
 Su-wor-ow'-i
 Swain'-son-a
 Swam-mer-dam'-y-a
 Swan-Y-a'-na
 Swan-ny-a'-num
 Swartz'-y-a
 Swartz'-y-a'-na
 Swartz'-y-i
 Swert'-y-a
 swert'-y-æ-fol'-y-u
 Swert'-y-i
 Swiet-en'-y-a
 Sy-ag'-rus
 Syob-in'-y-um
 Sy-com-o'-rus
 Sy-kes'-y-a*
 syl-het-en'-sè
 syl-va'-tic-a
 Syl-ves'-très
 syl-ves'-tris
 syl-vio'-ol-a
 Sy'-mè-a
 Sy-mè-a'-na
 Sym-phach'-ne
 Sym-phor'-y-a
 Sym-phor-ic-ar'-pus
 Sym-phy-an'-dra
 Sym-phy-og-lòs'-sum
 Sym-phy-os-to'-môn
 Sym'-phyt-um
 Sym-pl-èz'-a
 Sym-ploc-ar'-pus
 Sym'-ploc-os
 Syn-ad-o'-ni-um
 Syn-an'-dra
 Syn-an-the'-rè-æ
 Syn-aph-leb'-y-um
 Syn-ar'-rhen-a*
 Syn-ech-an'-thus
 Syn-gen-es'-y-a
 Syn-gon'-y-um
 Syn-gram'-me
 Syn-net'-y-a
 Syn-not'-y-a
 Syn'-siph-ôn
 syp-hil-it'-ic-a
 syr'-y-ac-us
 Sy-ring'-a*
 sy-ring-æ-flo'-rum
 sy-ring-æ-fol'-y-a
 sy-ring-el'-la
 sy-ring-if-ol'-y-a
 Sy-ring-o'-dè-a
 sy-ring-oth-yr'-sia
 Syr'-phid-æ
 Syr'-phus
 Sys-treph'-y-a
 sys'-tyl-a
 Sys'-tyl-æ

Syz-yg'-y-um
 Szo-wit-ef-a'-num
 Szo-wit'-z-y-a

Tab-a'-cum
 Tab-eb-u'-i-a
 Tab-er-næ-mon-ta'-na
 Tab-er-næ-mon-ta'-ni
 tab-ul-a'-re
 tab-ul-if-or'-mis
 Tac'-ca
 Tac-ca'-cè-æ
 tac-cæ-fol'-y-um
 Tac-ca'-rum
 Ta'-chi-a
 Ta'-chi-ad-o'-nus
 Ta-chi-ga'-li-a
 Tach'-in-a
 Tac-so'-ni-a
 tæd-ig'-er-a
 Tæn-Y-oc-ar'-pum
 Tæn-Y-oph-yl'-lum
 Tæn-Y-op'-sis
 Tæn-i'-tis
 Tæt'-si-a
 Tag-e'-tès
 tag-e-tif-lo'-ra
 ta-hi-tèu'-sis
 Tain'-y-a
 Tal-au'-ma
 Tal-bot'-y-a
 Tal-i-e'-ra
 Ta-lig-a'-lè-a
 Tal-i'-num
 Tal-i'-st-a
 Tal'-pa
 tam-ar-in-dif-ol'-y-a
 Tam-ar-in'-dus
 tam-ar-is-cif-ol'-y-a
 Tam-ar-is-cin'-è-æ
 Tam'-ar-ix
 tam-nè-i'-dès
 Tam'-nus
 Tam-o'-nè-a
 Ta'-mus
 tan-ac-o'-tif-ol'-f-a
 Tan-ac-o'-tum
 Tan-ghin'-y-a
 Tank-er-vil'-lè-æ
 Tank-er-vil'-li-a
 Ta-on-a'-bo
 Tap-ei-on-i'-tès
 Taph-ri'-na
 Ta'-pi-a
 ta-pi-è-i'-dès
 Ta-pog-o'-mè-a
 tar-ax-ac-if-ol'-y-a
 Tar-ax'-ac-um
 Tar-chon-an'-thus
 tar-dif-lo'-rus
 tar-di'-va
 Tar-en'-na
 Tar-gi-o'-ni

Words derived from Latin and Greek (i.e., all except those in italics) to be pronounced as follows: ã as in ðp-art; å as in psã-lmíst; è as in eld'n-der; é as in vè'-ined; I as in thín; l as in mach-í'-nist; ò as in rðt'-ten; ó as in vò'-ter; ù as in pow'-er-fål; ù as in rú'-ler; ý as I; ý as I; æ, ç, ei, as ai in pain; au as ou in house; g, c, and ch, always hard, as, for example, g in good, c in muscular, and ch in Christian. (For the old method, see page 276.)

* This word is discussed at the end of the Pronouncing Dictionary.

Pronouncing Dictionary—continued.

tar-tar'-ë-a
 tar-tar'-ic-um
 Tar-ton-rai'-ra
 Tasch-en-berg'-y
 Tas-man'-ni-a
 ta-tar'-io-a
 Tat-ton-Y-a'-num
 Tat-u'-la
 taur'-io-a
 taur-i'-na
 Taus-ché'-ri-a
 Tav-er-ní'-e'-ra
 Tax-an'-them-a
 Tax'-ë-æ
 tax-if-ol'-Y-a
 Tax-o'-dý-ë-æ
 Tax-o'-dý-um
 tax-ö-i'-dës
 Tax'-us
 ta-yg-ét'-ë-a
 Tay'-lor-i
 Tas-ét'-ta
 Tchih-atsh-ew'-Y-i
 Tec-o'-ma
 Tec-oph-il-w'-a
 Tec'-ton-a
 teo-to'-rum
 teo'-tum
 Teed'-I-a
 Tees-da'-Y-a
 Te-gan'-Y-um
 te-hu-ac-en'-sis
 Tel-am-o'-ni-us
 Tel-an-the'-ra
 Tel-a'-ri-us
 Tel-ei-an-the'-ra
 Te-lek'-Y-a
 Te-lem'-ach-i
 Te-leph-Y-as'-trum
 te-leph-Y-ö-i'-dës
 Te-leph'-Y-um
 Tel-fair'-Y-a
 Te-lip-o'-gön
 Tel'-lim-a
 Tel-mat-ei'-a
 te-lon-en'-sis
 Te-lo'-pë-a
 Temple-ton'-Y-a
 te-mul-en'-tum
 ten-a-cis'-sim-a
 Ten-ag-ei'-a
 Te'-nar-is
 ten'-ax
 Ten-da'-na
 ten-eb-ric-o'-sus
 ten-eb-ro-sa'-na
 ten-ei'-la
 ten'-er-um
 Ten-o-ré'-a'-na
 Ten-o'-ri-i
 ten-ta-cul-a'-ta
 ten-ta'-cul-um
 Ten-thre-din'-id-æ
 ten-thre-din-if'-er-a
 Ten-thré'-do

ten'-ü-ë
 ten-ü-ic-an'-lis
 ten-ü-if-lo'-rum
 ten-ü-if-ol'-Y-um
 ten-ü-il'-ob-us
 ten'-ü-Y-or
 ten'-ü-is
 Tep-éj-il-o'-ts
 Teph-ri'-tis
 teph-ros-an'-thos
 Teph-ro'-si-a
 Ter-am'-nus
 Ter-at-oph-yl'-lum
 ter-eb-in-thif-ol'-Y-us
 ter-eb-in-thin-a'-cë-um
 Ter-eb-in'-thus
 ter'-ës
 ter-et-ic-au'-lis
 ter-et-if-ol'-Y-us
 Ter'-mës
 Ter-min-a'-li-a
 Ter-min-a'-lis
 ter-na'-ta
 Ter-na'-të-a
 ter-na-ten'-sis
 ter-na'-të-um
 Ter-nauz-Y-a'-na
 ter-nif-ol'-Y-a
 Tern-strem'-i-a
 Tern-strem-Y-a'-cë-um
 Terp-nan'-thus
 ter-res'-tris
 Tes-sa'-ri-a
 tes-sel-la'-tum
 Tes-ta-col'-la
 tes-ta'-cë-um
 tes-tic-ul-a'-tum
 Tes-tu-din-a'-ri-a
 Te'-ta
 tet-rac-an'-tha
 Tet-rac-ar'-pum
 Tet-rac'-er-a
 Tet'-rach-is
 tet-rac'-op-is
 Tet-rad-e'-ni-a
 Tet-rad'-Y-um
 Tet-rad-yn-am'-Y-a
 Tet-rag-as'-tris
 Tet-rag-o'-ni-a
 Tet-rag-o-ni-a'-cë-æ
 Tet-rag-o-nol'-ob-us
 Tet-rag-o'-noth-e'-ca
 tet-rag-o'-nus
 tet-rag'-yn-um
 Tet'-rah-it
 Tet-rah-i'-tum
 Tet'-ral-ix
 Tet-ram'-el-ës
 Tet-ram-er'-Y-um
 Tet-ram-i'-cra
 tet-ran'-dra
 Tet-ran-e'-ma
 Tet-ran-eu'-ra
 Tet-ran-the'-ra
 Tet-ran'-thus

Tet-ran-ych'-id-æ
 Tet-ran'-ych-us
 Tet-rap-as'-ma
 Tet-rap-el'-tis
 tet-raph-yl'-lum
 tet-rap'-la
 tet-rap-las'-Y-um
 Tet-rap-o'-gön
 tet-rap'-ter-a
 Tet-rap'-ter-ys
 tet-rä-quet'-ra
 tet-ras-per'-ma
 tet-ras'-pis
 Tot-rath-e'-ca
 Tet-raz-yg'-Y-a
 teou-ri-ö-i'-dës
 Teuc'-ri-um
 Teus'-cher-i
 Teu-ton'-Y-a
 tex-a'-na
 tex-en'-sis
 Tex'-tor-i
 Teys-man'-ni-a
 Teys-man'-ni-a'-na
 Thal-am'-Y-a
 Thal-a'-si-um
 thal-as'-sic-a
 Tha'-li-a
 Tha-li-a'-na
 thal-ic-trif-ol'-Y-a
 thal-ic-trö-i'-dës
 Thal-ic'-trum
 Tham'-në-a
 Tham-noch-or'-tus
 Tham-nop'-ter-is
 Thap'-si
 Thap'-si-a
 thap-sö-i'-dë-a
 Thap'-sus
 The'-a
 the-ba'-ic-a
 Thec'-a*
 The-coo-te'-le
 the-if'-er-a
 The'-la*
 The-leb'-ol-us
 The-em-an-ni-a'-na
 The-leph'-or-a
 The-los-per'-mu
 The-lig'-on-um
 The-lus-on'-Y-i
 The-lyg-on'-ë-w*
 The-lyg'-on-um
 The-lym-i'-tra
 The-lyp-o'-gön
 The-lyp'-ter-is
 the-lyp-ter-ö-i'-dës
 Them-is-toc-le'-si-a
 The-nar'-dý-a
 The-ob-ro'-ma
 the-ö-i'-dës
 Thë-oph-ras'-ta
 The'-ra
 The-re'-si-a
 ther-ma'-lis

Words derived from Latin and Greek (i.e., all except those in italics) to be pronounced as follows: ð as in ðp-art'; á as in psá-lmist; ë as in slén'-der; è as in vë-ined; Y as in thín; i as in mach-i'-nist; ö as in röt'-ten; ö as in vö'-ter; ü as in pow'-er-fäl; ú as in rá'-ler; ý as Y; ý as I; æ, œ, ei, as ai in pain; au as ou in house; g, o, and oh, always hard, as, for example, g in good, c in muscular, and ch in Christian. (For the old method, see page 276.)

* This word is discussed at the end of the Pronouncing Dictionary.

Pronouncing Dictionary—continued.

Ther'-mī-a
 Ther-mop'-ais
 Tho-rol-op'-ta
 Tho-ro-po'-gōn
 Tho'-si-um*
 Thes-pos'-y-a
 The-ve'-tī-a
 thi-an-schan'-io-a
 Thi-baud'-y-a
 Thi-baut'-y-a-na
 Thi-baut'-y-i
 Thie-baut'-y-u
 Thlad'-y-au'-tha
 Thlas'-pi
 Thom'-as-i
 Thom-as'-y-a
 Thom-as'-y-i
 Thomp-son'-ni
 Thomp-son'-ni-a-na
 Thom'-so-na
 Thom'-so-ni
 Thom-son'-ni-a
 Thom-son'-ni-a-num
 Thou-ars'-y-i
 Thou'-v'-ni
 Thou'-v'-ni-a
 Thri'-nax
 Thrin'-cī-a
 Thrips
 Thrix-sper'-mum
 Thry'-al'-lis
 Thryp-tom'-en-a
 Thu'-ja
 Thu-jop'-sis
 Thun-berg'-y-a
 Thun-berg'-y-a-num
 Thun-berg'-y-i
 Thun'-y-a
 Thu-re'-ti
 thu-rif'-er-a
 thu-rif-ra'-ga*
 Thuy'-a
 thuy-ō-i'-dēs
 Thuy-op'-sis
 Thwaites'-y-i
 Thy'-a-na
 Thy-lac-an'-tha
 Thy-lac-op'-ter-is
 Thym'-bra
 Thym-el-m'-a
 Thym-el-m'-a'-cō-a
 thym-if-ol'-y-a
 thym-ō-i'-dēs
 Thym'-us*
 Thyr-sac-an'-thus
 Thyr-san'-thus
 thyr-sif-lo'-rum
 thyr-sō-i'-dēs-a
 Thyr-sop'-ter-is
 Thyr'-sul-a
 thys-an-o'-dēs
 thys-an-o-tō-i'-dēs
 Thys-an-o'-tus
 thys-san-ol'-op-is
 Ti-a-rel'-la

Ti-a-rid'-y-um
 ti-bi'-cin-is
 Tib-ouch'-i'-na
 Ti-bour'-bou
 Tic-o'-rē-a
 Ti-ga'-rē-a
 Tig'-lī-um
 Tig-rid'-y-a
 tig-ril-la'-rī-a
 tig-ri'-num
 Til-e'-sī-a
 Til'-y-a
 Til-y-a'-cō-a
 til-y-a'-cō-um
 Til-i-a'-cor-a
 Til'-y-a
 til-y-a'-flo'-ra
 Til-lā'-a
 Til-land'-sī-a
 til-land-sī-ō-i'-dēs
 Til-le'-tī-a
 Tim'-mī-a
 Ti-nan'-tī-a
 tine-to'-rī-a
 tinc'-tum
 Tin'-ō-a
 Tin-ō-i'-na
 ting'-ens
 ting-it-a'-num
 ti-nif-ol'-y-a
 Tin'-ne-a
 Tī'-nus
 Tip'-ul-a
 Tip-ul-a'-rī-a
 Tip'-ul-id-a
 tip-ul-if-or'-mis
 Tis-che'-rī-a
 Ti-ta'-num
 Ti-tho'-nī-a
 tith-ym-al-ō-i'-dēs
 Tith-ym'-ul-us
 Tit-rag'-yn-e
 Tilt-man'-nī-a
 Tob-i'-ra
 tob-ol-ski'-a'-num
 Toc-o'-ca
 Toc-oy-e'-na
 Tod-ar-o'-a
 Tod-da'-lī-a
 To'-dō-a
 To-field'-y-a
 Tol-lī-a'-na
 Tol-mie'-a
 Tel'-pis
 Tol-u-if'-er-a
 to-men-tel'-la
 to-men-to'-sa
 To'-mex
 Tom-ic'-id-a
 Tom'-ic-us
 tom-y-ol'-oph-a
 Tom-mas-i'-ni-a'-na
 To-ne-lī-a'-na
 To-ne'-lī-i
 ton-kin-en'-sis

Ton-ning'-y-a
 Ton-sel'-la
 Ton-ta'-nō-a
 Ton-tel'-ō-a
 Too'-na
 To'-ra
 Tor-dyl'-y-um
 Tor-e'-ni-a
 Tor-ing'-o
 Tor-men-till'-la
 tor-min-a'-lis
 Tor-ne'-lī-a
 To'-ro
 Tor-re'-sī-a
 Tor-rey'-a
 Tor-rey'-i
 Tor-ru'-bī-a
 tor'-ta
 tor'-til-is
 Tor-tric'-id-a
 Tor-tric'-i'-na
 Tor'-trix
 Tor'-tul-a
 tor-tul-a'-ta
 tor-tū-o'-sa
 Tor'-ul-a
 tor-ul-o'-sa
 Tot-a'-ra
 Tot'-ta
 Tou'-mat-ou
 Tour-nef-or'-tī-a
 Tour-nef-or'-tī-i
 Tour-re'-tī-a
 to-va-ren'-sis
 To-va'-rī-a
 To-rom-i'-ta
 Towns'-hend-i
 tox-ic-a'-rī-a
 Tox-ic-od-en'-dron
 Tox-ic-oph-lā'-a
 tox'-ic-um
 tox-if'-er-a
 Tox-os-tig'-ma
 To'-za
 Tra-che'-a
 Trach-e-lī-ō-i'-dēs
 Trach-e'-lī-um
 Trach-e-los-per'-mum
 Tra-chyc-ar'-pus*
 Tra-chym'-en-e
 Tra-chyn-o'-tī-a
 Tra-chys-te'-mōn
 Tra-chyt-el'-la
 Trad-es-can'-tī
 Trad-es-can'-tī-a
 Trag-ac-an'-tha
 trag-ac-an'-thā
 Trag'-y-a*
 Trag'-y-um
 Trag-op-o'-gi-pra-ten'-sis
 Trag-op-o'-gōn
 Trag'-us
 Tra'-ma
 Tra'-met-ēs
 trans-pa'-rens

Words derived from Latin and Greek (i.e., all except those in italics) to be pronounced as follows: *ā* as in *āp-art'*; *ā* as in *psū-lmist*; *ē* as in *slēn'-der*; *ē* as in *vē-ined*; *ī* as in *thīn*; *ī* as in *mach-i'-nist*; *ō* as in *rōt'-ten*; *ō* as in *vō-ter*; *ū* as in *pow'-er-fūl*; *ū* as in *rū-ler*; *ŷ* as *ī*; *ŷ* as *ī*; *æ*, *œ*, *ei*, as *ai* in *pain*; *au* as *ou* in *house*; *g*, *c*, and *ch*, always hard, as, for example, *g* in *good*, *c* in *muscular*, and *ch* in *Christian*. (For the old method, see page 276.)

* This word is discussed at the end of the Pronouncing Dictionary.

Pronouncing Dictionary—continued.

Tra'-pa
 trap-e-sif-or'-mē
 trap-e-zif-or'-mīs
 trap-e-zī-δ-i'-dēs
Trat-ten-ik'-i-a
Traut-vel-ter'-i-a
 trav-an-co-ren'-sis
Trav-ers'-i-i
Tre-cu-lē-a'-na
Tre-cu'-li-a
 Treis'-i-a
 Tre-man'-dra
 Tre-man'-drē-w
 Tre-man'-thus
 Trem'-ex
 trem'-ul-a
 Trem'-ul-w
 trem-ul-if-or'-mīs
 trem-ul-δ-i'-dēs
Tren-tep-oh'-li-a
Trev-e'-si-a
Trev-ir-a'-na
Tre-vo'-a
Trew'-i-a
 trī-ac-an'-thus
 Trī-ach'-yr-um
 trī-ad-e'-nī-um
 Trī-ād'-ic-a
Tri-a'-mē
 trī-an'-dra
Tri-a'-nē-a
 tri-ang-ul-a'-ris
 trī-ang-ul-a'-ta
 trī-ang'-ul-um
 Trī-an'-them-a
 trī-ar-is-tol'-lu
 Trī-as
 Trib-lem'-ma
 Trib-ruch'-i-um
 Trib'-ul-us
 Tric-an'-tha
 tric-aud-a'-ta
 Tric-er-a'i'-a
 Trich-w'-ta
 Trich-w'-to
 Trich-an'-th-a*
 Trich'-ar-is
 Trich-il'-i-a
 Trich-in'-i-um
 Trich-i-os-o'-ma
 Trich-ob'-as-īs
 trich-oc-al-ye-i'-na
 Trich-oc-ar'-m
 Trich-oc-an'-lon
 Trich-oc-en'-trum
 Trich-oc-eph'-al-us
 Trich-oc'-er-os
 trich-oc'-lad-a
 trich-o'-dēs
 Trich-od-es'-ma
 Trich-o'-dī-um
 Trich-og-as'-trēs
 Trich-og-lōt'-tis
 trich-δ-i'-dē-um
 Trich-ol-ā'-na

trich-om'-an-e-fol'-i-um
 Trich-om'-an-ēs
 trich-om-an-δ-i'-dēs
 Trich-on-e'-ma
 Trich-op-et'-al-um
 Trich-oph'-or-um
 trich-oph-yl'-lum
 Trich-op-i'-li-a
 Trich-op'-ter-is
 Trich-os-ac'-me
 trich-os-an'-tha
 Trich-os-an'-thēs
 Trich-os'-ma
 Trich-os-o'-rus
 trich-os-per'-ma
 Trich-os'-por-um
 Trich-os-te'-ma
 trich-ot'-om-um
 Tric-lis'-sa
 tric-oc'-cum
 tric'-ol-or
 tric-ol-or'-um
 Tric-on'-dyl-us
 tric-or'-ne
 Tric-or'-yn-e
 Tric'-rat-us
 Tric-us-pid-a'-ri-a
 tric-us-pid-a'-ta
 Tric-us'-pis
 Tric-yr'-tis
 trid-ac'-tyl-a
 trid-ac-tyl-i'-tes
 Trī-dax
 Trid'-ens
 trid-en-ta'-tum
 Trid-en'-tē-a
 Trid'-i-a
 Trid'-ym-us
 Trī-en-ta'-lis
 trif-as-ci-a'-ta
 trif'id-a
 trif-lo'-rum
 trif-ol'-i-a
 trif-ol-y-a'-ta
 Trif-ol'-i-i
 Trif-ol'-i-um
 trif-ur-ca'-tum
 Trif-ur'-cī-a
 Trig-lo'-chin
 Trig-lōw'-sum
 Trig-o'-nel-la
 Trig-o'-nī-a
 Trig-o-nid'-i-um
 trig-o-noc-au'-lis
 Trig-o-noth-e'-ca
Tri-gue'-ra
 trig'-yn-um
 tril-i-nē-a'-ta
 tril-in'-guē
 Tril-i'-sa
 Tril-i'-sī-a
 Tril'-ix
 Tril-l-a'-cē-w
 Tril'-li-um
 tril'-ob-a

tril-ob-a'-tum
 tril'-ob-um
Tri-men-y-a'-nus
 Trim-er-is'-ma
 trim-es'-tris
 Trim-er'-i-a
 trin-or'-vi-a
 trin-er'-vis
Tri-nū-a
 trin-ot-a'-tus
 Trī-od'-i-a
 trī-oi-c'-us
 Trī-o'-len-a
 trī-on-if-lo'-ra
 Trī-on-um
 Trī-op'-tēr-ys
 trī-or-ni-thoph'-or-a
 Trī-os'-tē-um
 trip-ar-ti'-ta
 trip-et'-al-a
 Trip-et-al-oi'-a
 trip-et-al-δ-i'-dēs
 Trip-et-o'-lus
 Triph-w'-na
 Triph-as'-i-a
 Triph'-or-a
 Triph-rag'-mī-um
 triph-yl'-la
 Triph-y-en'-ri-a
 Trip-lad-e'-nī-a
 Trip-la'-ris
 Trip-leu'-ra
 trip-lin-er'-va
 trip-od-a'-lis
 Trip-ol'-i-um
 Trip'-sac-um
 trip'-ter-is
 trip'-ter-on
 Trip-ter-os-per'-mum
 Trip-ter-yg'-i-um
 Trip-til'-i-on
 trip-ud'-i-ans
 trip-unc-ta'-na
 trip-unc-ta'-ta
 tri-quet'-rum
 Tris-e'-tum
 Tris'-i-ol-a
 Tris-mer'-i-a
 Tris-tag'-ma
Tris-tan'-i-a
 tris'-tē
 Trit-el-ei'-a
 trit-er-na'-ta
 Trith-ri'-max
 Trī-tic-i
 Trī-tic-um
 Trit'-om-a*
 Trit-om-an'-the
 Trit-om'-i-um
 Tri-to'-nī-a
Tri-um-fel'-tu
 trī-um'-phans
 Trī-n-rid'-δ-w
 Trī-u'-ris
 triv-y-a'-lis

Words derived from Latin and Greek (i.e., all except those in italics) to be pronounced as follows: ä as in *äp-art'*; ä as in *psä-lmist*; ē as in *slēn'-der*; ē as in *vē'-ined*; ŷ as in *thūn*; i as in *mach-i'-nist*; ð as in *rōt'-ton*; ð as in *vō'-ter*; ū as in *pow'-er-fil*; ū as in *rū'-ler*; ŷ as ŷ; ŷ as i; w, æ, ei, as *ai* in *pain*; au as *ou* in *house*; g, c, and ch, always hard, as, for example, g in *good*, c in *muscular*, and ch in *Christian*. (For the old method, see page 276.)

* This word is discussed at the end of the Pronouncing Dictionary.

Pronouncing Dictionary—continued.

Trix-a-go
 Trix'-is
 Triz-eux'-is
 Tro-che'-ti-a
 Troch'-il-us
 Troch-is-can'-thēs
 Troch-oc-ar'-pa
 Troch-on-tig'-ma
 tro-glod'-it-ēs
 Trof'-il-us
 Tro-mot'-rich-e
 Trop-a'-ol-ē-sā
 Trop-ō'-ol-um*
 Troph-Y-un'-thus
 Troph'-is
 trop'-ic-us
 Trop-id'-i-a*
 Tros
 tros'-sul-a
 Trōx'-im-on
 trul-lif'-er-um
 Trun-ca'-ri-a
 trun-ca'-ta
 trun-ca-tel'-lum
 trun-ca'-tul-um
 Try-mal'-i-um
 Tryph-w'-na
 Tsi-a'-na
 tso-mo-en'-sis
 Tsu'-gu
 tub-a'-ta*
 Tu-bi'-a-nu
 Tu'-ber*
 Tu-ber-a'-cē-i
 Tu-ber-ci'-nū-a
 Tu-ber-cul-a'-ri-a
 tu-ber-cul-a'-ta
 tu-ber-cul-o'-sus
 tu-ber-o'-su
 tub-ic'-in-a
 tub-if'-er-a
 tub-if-lo'-rus
 tub-is'-path-a
 tub-ul-o'-su
 Tuck'-er-i
 Tuck-er-man'-nū-a
 tu-cu'-man-on'-sis
 Tul-ba'-gh-i-a
 Tu'-lip-a
 Tu'-lip-w
 tu-lip-if'-er-a
 tu-lip-if-ol'-i-a
 tu-lip-if-or'-mis
 Tum'-bo-a
 tum'-id-a
 Tu'-na
 tun-bridg-en'-sā
 Tun'-ga
 Tun'-ic-a
 Tu'-pa
 Tup-id-an'-thus
 Tu-pis'-tra
 tu-pis-trō-i'-dēs
 tur-bin-a'-ta
 tur-bin-el'-lus

tur'-io-a
 tur'-gid-a
 Tur-go'-sā-a
 Tu-ri-al'-nā
 tu'-ri-o
 tu-ri-o-na'-na
 turk-es-lā'-nic-a
 Turn-bul'-li-i
 Tur'-ner-a
 Tur-ner-a'-cē-w
 Tur'-ner-i
 Tur-pin'-i-a
 Tur-pin'-i-i
 Tur-rō'-a
 Tur-ri'-tis
 Tus-sā'-ca
 Tus-sā'-ci-a
 Tus-sil-a'-gin-is
 Tus-sil-a'-go
 Tweed'-i-a
 Tweed'-i-a'-na
 Tweed'-ie-i
 Ty'-che-a
 Ty'-chy-us
 Ty-dā'-a
 Ty-er-man'-ni
 Tyl-en'-chus
 Tyl-och-i'-lus*
 Tyl-og-lōs'-su
 Tyl-oph'-or-a
 Tym-pan-an'-the
 Ty'-pha
 Ty-pha-cē-w
 ty'-phin-a
 Typh-loc-y'-ba
 Ty-pho'-ni-um
 Ty'-phul-a
 typ'-ic-a
 typ-og'-raph-us
 tyr-Y-an'-thin-a
 tyr-o-len'-sis
 Ty-ton'-i-a

U-cri-a'-na
 Ud-o'-ra
 U-ge'-na
 Ug'-ni
 U'-lex
 u-lic'-in-a
 u-li-gin-o'-sum
 Ul-lo'-a
 Ul-lu'-cus
 ul-mā'-ri-us
 Ul'-mē-w
 Ul'-mi
 ul-mif-ol'-i-a
 Ul'-mus
 U-los'-tom-a
 Ul-uz'-i-a
 um-bel-la'-tum
 Um-bel-lif'-er-w
 Um-bel-lul-a'-ri-a
 um-bil-i'-cō-i'-dēs

Um-bil-i'-cus*
 um-bo-na'-tum
 um-bra-cul-if'-er-a
 Um-brel'-la
 um-bro'-sa
 U-na-nū'-z-a
 Un-ca'-ri-a
 un'-ci-a
 Un-cif'-er-a
 un-ci-nū'-ta
 un-ci-nif-ol'-i-a
 Un-ci'-nul-a
 un-da'-ta
 un-dec-im-punc-ta'-tu
 un-dul-s-fol'-i-a
 un-dul-a-tif-ol'-i-a
 un-dul-a'-tum
 U'-ned-o*
 Ung'-er-i
 Ung-nū'-dī-a
 Un-gua'-cha
 un-guic-ul-a'-ris
 un-guic-ul-a'-ta
 un-guip-et'-al-a
 un-gul-if-ol'-i-a
 u-nic'-ol-or
 u-nic-or'-nē
 u-nid-en-ta'-tum
 u-nif-lo'-ra
 u-nil-at-er-a'-le
 U'-ni-ol-a
 U-nis-o'-ma
 u-ni'-tum
 u-niv-it-tū'-ta
 U-no'-na
 U-ral'-ep-is
 U-ral-ep'-sis
 u'-ral-um
 U-ran-an'-thus
 U-ran'-i-a
 Ur-a'-ri-a
 Ur-cē-ol-a'-ri-a
 ur-cē-ol-a'-tus
 Ur-cē-ol-Y'-na
 ur-cē-ol-o'-rum
 U-rech-i'-tēs
 U-re-din'-ē-sā
 U-ro'-do
 Ur-e'-na
 u'-rens
 u-ren-tis'-sim-a
 Urg-in'-ē-a
 U-roo-ys'-tis*
 U-rom'-yc-ēs
 U-rop-ed'-i-um
 U-rop-et'-al-um
 u-roph-yl'-la
 U-rō-Skin'-ner-a
 U-rō-Skin'-ner-i
 U-ros'-path-a
 U-ros-per'-mum
 u-ros-tach'-y-a
 Ur-si'-ni-a
 ur-si'-num
 Ur-ti'-ca*

Words derived from Latin and Greek (i.e., all except those in italics) to be pronounced as follows: ð as in ðp-art'; á as in psá-lmist; ð as in slēn'-der; è as in vē'-ined; Ý as in thín; í as in mach-i'-nist; ò as in rōt'-ten; ô as in vō'-ter; ù as in pow'-er-fūl; ū as in rā'-ler; ý as í; ý as i; æ, œ, ei, as ai in pain; au as ou in house; g, c, and ch, always hard, as, for example, g in good, c in muscular, and ch in Christian. (For the old method, see page 276.)

* This word is discussed at the end of the Pronouncing Dictionary.

Pronouncing Dictionary—continued.

Ur-ti-ca'-cē-æ
 Ur-ti'-cæ
 ur-ti-cæ-fol'-i-a
 ur-ti-ca'-rī-a
 Ur-ti'-cē-æ
 ur-ti-cif-ol'-i-a
 Ur-vil'-lā-a
 u-sit-a-tis'-sim-um
 us-ne-ō-i'-dēs
 Us-pal-la-ten'-sis
 us-su-ri-en'-sis
 Us-te'-rī-a
 Us-til-a-gin'-ō-i
 Us-til-a'-go
 us-tul-a'-ja
 u-tah-en'-sis
 U-ta'-nī-a
 u'-til-e
 u-til-is'-sim-a
 U-tric-ul-a'-rī-a
 U-tric-ul-a'-rī-ō-æ
 u-tric-ul-a-rī-ō-i'-dēs
 u-tric-ul-a'-ta
 u-tric-ul-o'-sa
 U'-va
 U-va'-rī-a
 U'-va-ur'-si
 Uve-da'-lī-a
 u-vif'-er-a
 U-vul-a'-rī-a

Vac-ca'-rī-a
 Vac-ci-nī-a'-cē-æ
 Vac-ci-nī-el'-la
 vac-ci-nif-ol'-i-um
 vac-ci-nī-if-ol'-i-um
 Vac-ci'-nī-um*
 Va-chel'-lī-i
 vac-il'-lans
 vag'-ans*
 va-gi-na'-lis
 va-gi-na'-tum
 Va-gi-nul-a'-rī-a
 Val-lan'-lī-a
 Val-an'-tī-a
 val-don'-sis
 Val-de'-sī-a
 Val-dī-vī-a
 val-dī-vī-a'-na
 val-dī-vī-en'-sis
 val-en-tī'-na
 Val-en-tī'-ni
 Val-er-an'-dī
 Val-er-ī-a'-na
 Val-er-ī-a'-nē-æ
 Val-er-ī-a-nel'-la
 val'id-um
 Val-la'-ris
 Val-le'-sī-a
 val-le'-sī-ō-a
 Val-lis-nē'-rī-a
 val-lis-ne-rī-ō-fol'-i-a
 Val-lo'-ta

Van-a'-rī-a
 Van'-da
 van-da'-rum
 Van'-dō-æ
 Van-del'-lī-a
 Van-der-donck'-ī-i
 Van-der-meers'-chī-i
 Van-de'-sī-a
 Van-es'-sā
 Van-gue'-rī-a
 Van-gui-e'-ra
 Van-hout'-tē-a
 Van-hout-tē-a'-num
 Van-hout'-tē-ī
 Van-il'-la
 Van-ta'-nē-a
 Van-Volz-em'-ī-i
 vap-o-ra'-rī-us
 Var-ga'-sī-a
 var-ī-a'-bil-is
 var'-ī-ans
 var-ī-a'-ta
 va-ric-o'-sum
 var-ī-eg-a'-na
 var-ī-eg-a'-ta
 var-ī-if-or'-mis
 var-ī-ol-a'-ris
 var-ī-ol-a'-tum
 var-ī-ol-o'-sū
 var'-ī-um
 Va-ro'-nī-a
 Vas-co'-a
 Vas-con-cel'-lā-a
 vas'-ic-a
 vas-tu'-trix
 Van-an'-thūs
 Va-na'-ga
 Va-nang'-a
 veg'-et-a
 Veitch'-ī-a
 Veitch-ī-a'-num
 Veitch'-ī-i
 Ve-la'-ga
 ve-la'-ta
 Vel-as-gua'-zī-a
 Vel-e'-zī-a
 Vel'-la
 Vel-lei'-a
 vel'-lē-um
 Vel-lo'-zī-a
 Vel-lo-zī-a'-num
 Vel-lo'-zī-ō-æ
 Vel-theim'-ī-a
 vel-u-tī'-na
 Ven-a'-na
 ven-e-na'-ta
 ven-e-nif'-er-a
 ven-e-no'-sum
 ve'-nī-a
 Ve-nid'-ī-um
 ve-no'-sū
 Ven-len-a'-lī-a
 ven'-tī
 ven-til-a'-brum
 Ven-tīl-a'-go

ven-tric-o'-sum
 ve-nul-o'-sum
 ven-us'-ta
 Vep'-ris
 ve'-ra
 Ve-rat-ax'-us
 ve-ra-trif-ol'-ī-a
 Ve-ra'-trum
 ver-ba-nen'-sis
 Ver-bas'-cō-æ
 ver-bas-cif-ol'-ī-a
 Ver-bas'-cum
 Ver-be'-na
 Ver-be-na'-cæ
 Ver-be-na'-cē-æ
 Ver-bes-ī'-na
 vor-e-cun'-dum
 Ve-vei'-a
 ve'-ris
 Ver-lo'-tī
 ver-mio-ul-a'-ris
 ver-mio-ul-a'-ta
 Ver-mif'-ug-a
 ver'-na
 ver-na'-lis
 ver-nic-if'-er-a
 ver-nic-o'-sū
 vor'-nīx
 ver-nix'-ī-um
 Ver-non'-ī-a
 Ver-on-ī'-cæ*
 vor-ru-cif'-er-a
 ver-ru-co'-sū
 Ver-schaf-fel'-lī-a
 Ver-schaf-fel-lī-a'-n
 Ver-schaf-fel'-lī-i
 ver-sic-ol-or
 ver-tic-il-la'-ris
 ver-tic-il-la'-tus
 Ver-tic-il'-lī-um
 Ver-tic-or'-dī-a
 Ver-ul-a'-mī-a
 ve'-rum
 Ver-vū-nē-a'-na
 vos'-cæ
 Ve-si-en'-rī-a*
 ve-si-ca'-rī-us
 ve-si-ca'-tor
 ve-si-ca-to'-rī-a
 ve-si-ca'-trix
 ve-si-cul-o'-sum
 Ves-ling'-ī-a
 Ves'-pa
 ves-per-tī'-lī-o
 Vos-per-tī-lī-o'-nis
 ves-per-tī'-na
 ves-pif'-er-a
 ves-pif-or'-mī-a
 Ves-pūc'-cī-a
 ves-tā'-lis
 Vest'-ī-a
 ves-tī'-ta
 vex'-ans
 vex-a-tī'-vum
 vex-il-la'-rī-um

Words derived from Latin and Greek (i.e., all except those in italics) to be pronounced as follows: ã as in ãp-urt'; ä as in psä'-lmist; ð as in slēn'-der; è as in vē'-ined; ÿ as in thÿn; ÿ as in mach-ī'-nist; ö as in röt'-ten; ö as in vō'-ter; ü as in pow'-er-fül; u as in rü'-ler; ý as Ý; ý as Í; æ, œ, ei, as ai in pain; au as ou in house; g, o, and ch, always hard, as, for example, g in good, c in muscular, and ch in Christian. (For the old method, see page 276.)

* This word is discussed at the end of the Pronouncing Dictionary.

Pronouncing Dictionary—continued.

Vi-borg'-y-a
vi-bur-nif-lo'-ra
vi-bur-nō-i'-dēs
Vi-bur'-num
Vic'-y-a
Vic'-y-æ
Vic'-tor
Vic-to'-ri-a
Vic-to'-ri-æ-*Re-gi'*-nū
Vic-to-ri-a'-lis
Vic-tor-ip-er-ro'-a
Vid-a'-li-i
Vieil-lard''-y-i
Viel-lard''-y-i
Vieus-seus'-y-a
Vig-i-e'-ra
Vig-i-e'-ri
Vign'-a
Vig-nald''-y-a
Vig-ui-a'-ra
Vil'-fa
Vil-lan-ov'-a
Vil-la-re'-si-a
Vil-lar''-y-a
Vil-lar''-si-a
Vil-lar-si-a'-na
Vil-lar-si-i'
vil'-lic-a
vil-lif'-er-a
vil-lo'-sa
Vil-lo'-sū
vil-lo'-sul-us
Vil-mor-i'-nī-a
Vil-mor-i-nī-a'-nū
vi-min-a'-lis
Vi-min-a'-ri-a
vi-min'-ŕ-um
Vin'-ea
vin-cē-flo-ri-a
vin-cē-ū'-nus
Vin-cet-ox'-ic-um
vi-nō-a'-le
vi-nif'-er-a
vi-no'-sa
VY-ol-a
vī-ol-a'-cō-a
VY-ol-æ
vī-ol-æ-fol'-y-um
vī-ol-æ-ŕ-i'-dēs
Vī-ol-a'-ri-ŕ-æ
vī-ol-æ'-cēns
Vi-or'-na
Vi-pa'-ni
Vi-ray'-a
vir'-ens
vir-æ'-cēns
Vi-rey'-a
vir-ga'-ta
Vir-gau'-rē-a
Vir-gil''-y-a
vir-gin-a'-le
vir-gin'-ŕ-us
vir-gin-y-a'-na
vir-gin'-ic-a
vir-gin-y-en'-sis

Vir-gul-a'-ri-a
vir-gul-a'-tum
vir-id-a'-na
vir-id-ic-ol'-lis
vir-id-if-lo'-ra
vir-id-if-ol''-y-a
vir'-id-is
vir-id-is'-sim-a
vir-id'-ul-a
Vī-rol-a
Vis-æ'-ri-a
vis'-cid-a
vis-cid'-ul-a
vis-co'-sa
vis-oo-sis'-sim-a
Vis'-cum
Vis-i-a'-nī-a
Vism''-y-a
Vis-na''-ga
Vism''-ŕ-a
Vi-tal''-ba
Vī-tal-i-a'-na
Vit-el-la''-ri-a
vit-el-li'-num
vit-el-li'-num
Vi-tex
Vi-tic-æ'-trum
Vi-tic-el''-la
vi-tic'-ol-a
vi-tic-ul-o'-sa
vi-ti-on'-sis
vi-tif-ol''-y-us
Vī-tis
vi-tis-a'-na
Vi-tis-I-dæ'-a
vit-tæ-for'-mō
Vit-ta'-ri-a
vit-ta'-ta
vit-tig'-er-a
Vit-man''-nī-a
Viv-i-a'-nī-a
Viv-i-a'-nī-ŕ-æ
vī'-vic-ans
vi-vip'-ar-i
vi-vip'-ar-um
Vo-aud-zei''-a
Voch-y''-si-a
Voch'-y-a
Voch-y''-si-a
Voch-y-si-n''-cō-ŕ-æ
Vo-gel-y-a'-na
Vo-gel''-y-i
Vo-gel''-li
Vo-hi''-ri-a
vol-g-en'-sis
Volk-ka-mer''-y-a
Volk-man''-nī-a
Vol-tai-re-a'-num
vol-u'-bil-is
Vol-uo-el''-la
vol-up'-tum
Vou-a''-pa
Vou-ay
Voy-ri-a
Free-land''-i

Vries'-y-a
From''-y-i
vul-ca'-nic-a
vul-ga'-ris
vul-ga'-tum
Vul-ner-a'-ri-a
vul-pu''-ri-a
Vul'-pi-a
vul-pi'-nus
Vuyl-stek-y-a'-na

Wach-en-dorf''-y-a
Wäg-en-er-i
Wäg-en-er-y-a'-na
*Wäg'-ner-i**
Wäg-ner-y-a'-num
Wahl-bom''-y-a
Wahl-en-berg''-y-a
Wailes''-y-a
Wailles-y-a'-num
Wail''-zi-a
Wake-ley-a'-num
Walck-en-er''-a
Wald-schmid''-y-a
Wald-stein''-y-a
Wald-stein-y-a'-na
Walk'-er-æ
Walk'-er-i
Walk-er-y-a'-na
Wal-lu''-cō-i
Wal-lich''-y-a
Wal-lich-y-a'-na
Wal-lich''-y-i
Wal-tis''-y-a
Wal-tis''-y-i
Wall-roth''-y-a
Wal-su''-ra
Wal-ter-i
Wal-tho''-ri-a
Wal-u-ŕ-æ''-i
Wal-u-ŕ-æ''-i
Wam'-pi
Wan'-ner-i
War-cēw-ic''-zi-y
War-czew-ic''-zi-y
Ward-y-a'-num
Ward''-y-i
Wa-rē-a'-na
War-el-y-a'-na
War-ming-y-a'-na
War-ming''-y-i
War'-ner-i
War-ner-y-a'-num
War-ner''-y-i
War-o-que-a'-num
War'-rē-a
War-rē-a'-na
War-ren''-y-i
War-scew-ic-zel''-la
War-szew-ic-zel''-y-a
War-scew-ic''-zi-y
War-szew-ic-zel''-la
Wash-ing-to-ni-a

Words derived from Latin and Greek (i.e., all except those in italics) to be pronounced as follows: ð as in *þp-art'*; æ as in *psu'-lmist*; ð as in *slēn'-der*; ē as in *vē'-ined*; ŷ as in *thīn*; ī as in *mach'-nist*; ō as in *rōt'-ten*; ō as in *vō'-ter*; ū as in *pow'-er-fūl*; ū as in *rā'-ler*; ŷ as ŷ; ŷ as ī; æ, œ, ei, as æ in *paūn*; au as ou in *house*; g, c, and ch, always hard, as, for example, g in *good*, c in *muscular*, and ch in *Christian*. (For the old method, see page 276.)

* This word is discussed at the end of the Pronouncing Dictionary.

Pronouncing Dictionary—continued.

Wash-ing-to'-ni-a'-num
 Wa'-ter-er-i
 Wa-ter-y-a'-na
 Wat-er'-ni-a
 Wat'-ti-i
 Wa-va'-ri-a
 Waw-ra'-nè-a
 Weath-er-il'-li
 Web-ber-y-a'-na
 Web'-bi-a
 Web-bi-a'-na
 Web'-bi-i
 We'-ber-a
 We-ber-y-a'-na
 Wed-del-i-a'-na
 Wed-e'-li-a
 Weig-e'-lu
 Weig-e'-li-a
 Weig-e'-li-a'-na
 Wein-man'-ni-a
 Wein-man-ni-a'-num
 Weir'-y-i
 Weis-man'-ni
 Wel'-den-i
 Welf'-y-a
 Wel-ling-to'-ni-a
 Wel'-ton-i
 Wel-ton-y-en'-sis
 Wel-wil'-sch'i-a
 Wel-wil'-sch'i-i
 Wend-land'-i-a
 Wend-land'-i-a'-na
 Wend-land'-y-i
 Wen'-sè-a
 Went-worth'-i
 Went-worth-y-a'-num
 Wer-ne'-ri-a
 West-pha-ling'-i-a
 West-ring'-y-a
 Whip'-plè-i
 White-head'-i-a
 Whi'-tè-i
 Whit-field'-i-a
 Whit-lu'-vi-a
 Whit'-ley-a
 Whit'-ley-i
 Whit'-ney-i
 Whit'-tak-er-i
 Whit-ting-ton-en'-sis
 Why'-tè-i
 Wi-borg'-y-a
 Wid-dring-to'-ni-a
 Wiers-beck'-i-i
 Wig-and'-y-a
 wig-and-y-i-i'-des
 Wight-y-a'-na
 Wight'-y-i
 Wik-atriim'-i-a
 Wilck-è-a'-num
 Wil-den-ow'-y-i
 Wil-dor'-y-i
 Wild'-y-a'-na
 Wiles-y-a'-num
 Wil-ford'-y-i
 Wilkes-y-a'-na

Will-den-o'-ri-a
 Will-den-o'-y-i
 Will-den-ow'-y-a
 Wil-lem-e'-ti-a
 Will'-iams-i
 Will-iams-y-a'-num
 Will-iams'-y-i
 Will-iams-on'-y-i
 Will-iams-on'-y-i
 Will-inck'-y-i
 Will-kom'-mè-i
 Will-sè-a'-na
 Wil-lug-bè'-ya
 Wil-lugh-bei'-u
 Wil-mo-rè-a'-na
 Wil'-son-i
 Wil'-son-i-i
 Wind'-sor-i
 Winn-y-a'-na
 Win'-ter-a
 Win-ter-a'-na
 Win'-ter-i
 Wi-o'-ti
 Wis-liz-e'-ni
 Wis-la'-ri-a
 With-er-ing'-y-a
 Wit-èe'-ni-a
 Wit-te-a'-num
 Wit-tels-bach'-y-a
 Witt-man-ni-a'-na
 Wolf'-fy-a
 wol-ga'-ric-a
 Wol-las-ton-i
 Wol-las-ton'-y-a
 Wol-sten-holm'-æ
 Wood-ford'-y-a
 Wood-ford'-y-i
 Wood'-si-a
 Wood'-si-i
 Wood-ward'-y-a
 Wool-gar-i-a'-na
 Wool-las-ton-i
 Worm'-y-a
 Worm-ski-old'-y-a
 Worm-ski-old'-y-i
 Wrang-el-y-a'-na
 Wray'-æ
 Wray'-y-i
 Wright'-y-a
 Wright'-y-a'-na
 Wright'-y-i
 Wrig-ley-a'-na
 Wulf'-en-i
 Wulf-en'-y-a
 Wulf-en-y-a'-na
 Wulf'-fy-a
 Wull-schlæg-el'-y-a
 Wurm'-bè-a
 Wùrth'-y-a
 Wy-al'-ti-a'-na
 Wy-eth'-y-a

Xal-ap-en'-sis
 xanth-ac-an'-tha

xanth'-in-um
 Xanth-is'-ma
 Xanth'-y-um
 xanth-oc'-al-yx
 xanth-oc-ar'-pum
 Xanth-oc-eph'-a-lum
 Xanth-oc'-er-as
 Xanth-och-y'-mus
 Xanth-oc'-om-a
 Xanth-oc-rom'-y-on
 xanth-od-ac'-tyl-a
 xanth'-od-ou
 xanth-og-lòs'-sum
 xanth-ol-eu'-ca
 xanth-oph-leb'-i-um
 xanth-oph-thal'-ma
 xanth-oph-yl'-lus
 Xanth-orh-i'-za
 Xanth-or-rho'-a
 Xanth-o'-si-a
 Xanth-os-o'-ma
 Xanth-ox'-yl-on
 Xanth-ox'-yl-um
 Xen-i-a'-trum
 Xen-oc-ar'-pus
 Xen-oph-on'-tu
 Xe-ran'-dra*
 Xe-ran'-them-um
 Xe-ron-e'-na
 Xe-ro-ph-yl'-lum
 Xe-ro-ph-yl'-a
 Xe-ro'-tes
 Xim-en-e'-si-a
 Xim-en'-y-a
 Xiph-id'-i-um*
 xiph-i-i'-des
 Xiph'-i-on
 Xiph-op'-ter-is
 xiph-ox'-tach-ys
 xu'-tha
 xyl-ac-an'-thu*
 Xyl-a'-ri-a
 Xyl-eb'-or-us
 Xyl-ob'-i-um
 xyl-oc-ar'-pum
 Xyl-om-e'-lum
 Xyl-oph-yl'-la
 xyl-oph-yl-lò-i'-des
 Xyl-o'-pè-a
 Xyl-op-ic'-rou
 Xyl-os'-tè-um
 xyl-ot'-rich-a
 Xyr-id'-e-a
 Xyr'-is
 Xys-mal-ob'-i-um
 xyt-ri-oph'-or-a

 Yc-col'-li
 yed-o-en'-sis
 Young'-y
 Young'-y-æ
 Young'-y-a'-num
 Young'-y-i
 Yp-ou-om-eu'-ta

Words derived from Latin and Greek (i.e., all except those in italics) to be pronounced as follows: ð as in ðp-art'; a as in psè-umist; è as in slèn-der; é as in vè-ined; y as in thín; i as in mach-i'-nist; ó as in röt'-ten; o as in vö'-ter; ü as in pow'-er-fül; ü as in rü'-ler; ý as y; ý as i; æ, œ, ei, as ai in pain; au as ou in house; g, c, and ch, always hard, as, for example, g in good, o in muscular, and oh in Christian. (For the old method, see page 276.)

* This word is discussed at the end of the Pronouncing Dictionary.

Pronouncing Dictionary—continued.

Yuc'-ca
yuc-cæ-fol'-y-a
yuc-cê-i'-dēs

Zab-uc-a'-jo
Zac-iz'-tha
Zahn'-i-i
Zal-ac'-ca
Zal-u-xa'-nŷ-a
Zal-u-xi-an'-skl-a
Za'-ml-a*
za-mŷ-æ-fol'-y-um
Za-mŷ-oc-ul'-cas
za-mor-en'-sis
Zan-nich-el'-ll-a
Zan-ted-esch'-t-a
Zanth-orh-i'-za
Zanth-ox-yl'-ê-æ
Zanth-ox-yl-um
zan-zib-a-ren'-sis
Zap-a'-nl-a
Za'-ra
Za-rab-el'-ll-a

Zausch-ner'-y-a
Zav-i-a'-num
Ze'-a
Ze-bri'-na
Zed-o-a'-rŷ-a
Zeh-ner'-y-a
ze-if-ol'-y-a
Ze-nob'-y-a
Zeph-yr-an'-thŷs
Ze-rum'-bet
Zeux-i'-na
Zex-me'-nl-a
Zey'-her-i
zey-lan'-ic-um
zib-eth-i'-nus
Zi'-chy-a
Zier'-y-a
Zie-le'-nl-a
Zig-a-de'-nus
Zil'-la
Zi-map-a'-ni
Zing'-ib-er
Zing-ib-er'-ê-u
Zin'-nl-a
Zi-zan'-y-a
Zis'-y-a

Zi-ziph'-or-a
Zi'-zyph-us
Zo-mic-ar'-pa
Zo-mic-ar-pel'-la
zo-na'-le
zo-na'-ta
Zo-og-læ'-a
Zorn'-y-u
Zo-ste'-ra*
zo-ste-ræ-fol'-y-a
Zo-ste'-rê-æ
Zo-ste-ros'-tyl-is
Zoy'-i-i
Zuc-cagn'-y-a
Zuc-car-i-nŷ-a'-na
Zwing'-er-a
Zyg-ad-e'-nus*
Zyg'-is
Zyg-og-lôs'-sum
Zyg-om'-en-ês
Zyg-om'-er-is
Zyg-op-et'-al-um
Zyg-oph-yl'-ê-a
Zyg-oph-yl'-lum
Zyg-os-ep'-al-um
Zyg-os'-ta-tŷs

Words derived from Latin and Greek (i.e., all except those in italics) to be pronounced as follows: ä as in äp-art'; ä as in pœt'-lmist; ê as in slŷn'-der; ê as in vŷ-ined; ŷ as in thŷn; i as in mach-i'-nist; ê as in rŷt'-ten; ô as in vŷ-ter; ü as in pow'-er-fŷl; ŷ as in rŷ-ler; ŷ as i; y as i; æ, œ, ei, as ai in pain; au as ou in house; g, c, and ch, always hard, as, for example, g in good, c in muscular, and ch in Christian. (For the old method, see page 276.)

* This word is discussed at the end of the Pronouncing Dictionary.

The following Notes to the preceding alphabetical list deal, for the most part, with three classes of words.

I. Attention is drawn to those names of plants which are most frequently mispronounced in ordinary conversation. It will be as well to guard the reader against the supposition that there exists at present, for botanical names, any recognised standard of pronunciation, from which he may imagine that this Dictionary often presumes to depart. The fact is, that there is no such established standard: in many cases the common text-books are utterly at variance; and the usage, not only of good gardeners, but of educated botanists, is often hopelessly divergent. The aim of the present work, instead of being revolutionary, is eminently conservative, in that it seeks to revive and preserve good old ways that have partially fallen into disuse. At the same time it must be admitted that it is thoroughly radical, inasmuch as it insists on going to the root of matters. The combination of these two characteristics would substitute for a capricious anarchy a system of pronunciation founded upon antiquity and rational principles. This is chiefly apparent in two kinds of names.

In words of classical origin the ultimate criterion must be the manner in which such words were pronounced by the ancient Greeks and Romans. If they said, for example, *Anemō'-nē* (ἀνεμώνη), we must speak of *Anemō'-nē fulgens* and *Anemō'-nē nemorosa*; since in using these expressions we are simply giving the Latin phrases equivalent to the English "Shining Windflower" and "Wood Windflower." It is necessary, however, to bear in mind that the word "Anemone" has also passed into the English language, and in so doing shifted its accent and changed the sound of its vowels, as in so many similar instances. In this way, one might

Pronouncing Dictionary—continued.

quite correctly speak of "a wood anem'-ōnĕ," or "anem'-ōny," as it is sometimes written. The case is quite parallel to the Latin "orātor," which is in English "orator." It would be just as gross a blunder to say "orator" in a Latin quotation, as "orator" when conversing in English. Mistakes frequently occur from forgetfulness of the simple fact that the generic and specific names of plants are Latin, not English, and are to be carefully distinguished from English words which may happen to be spelt in the same way and mean the same thing. The Latin *Al'-ō-ē* (from Greek, ἀλόη) in three syllables, and the English *Al'-oe* in two, give a good instance of this; and it may be well to add that *Sisymbrium Soph'-ia* is the correct pronunciation, in spite of the fact that the Vicar of Wakefield's lovely daughter was Soph'-a Primrose. Of course, these remarks refer as well to the modern Latin compounds formed on classic analogy as to the words from the scientific vocabulary of the ancient writers which have survived unaltered in our own—e.g., *anemōnifōlius* is governed by the analogy of *Anemōne* and *fōlium*; and must not be called (as it generally is) *anemōnefōlius*, because we happen to be familiar with the English words "anemone" and "foliage."

Again, in words commemorative of the names of men, it surely is well to pronounce each word as nearly as possible in the way in which the name to be commemorated was sounded. The opposite habit often causes the plant-name to be quite disassociated from the person in whose honour it was given. Mr. Britten ("Catholic Press," i., p. 440) puts this very pleasantly: "We all know something about dahlias and fuchsias, and have so far popularised each name as to mispronounce it; but who has heard of the Swedish botanist Dahl, or the German, Rembert Fuchs, in honour of whom the plants were named? Who thinks of Father Kamel, the Moravian Jesuit traveller of the seventeenth century, when he pins a camellia into his buttonhole? No one, surely, or we shouldn't almost always call it a camee'-lya." A few comments on the three well-known plant-names mentioned in this quotation will bring out the chief points concerning commemorative names which require notice. (a) *Dahlia*: In this case, the popular error is all the more unpardonable, as there is another plant, the Dalea (called after Dr. Samuel Dale), which ought to be pronounced exactly as the Dahlia too commonly is. (b) *Fuchsia*: Even the most accurate writers may sometimes make a slip—*quandoque bonus dormitat Homerus*. Plumier, the author of this name, associates it with "Leonartus Fuchsius" ("Plant. Americ. Genera," p. 14); Linnæus ("Critica Botanica," p. 92) gives Leonhard as the Christian name; and Hallam ("Literary History," i., p. 471) speaks of "Leonard Fuchs, who has secured a verdant immortality in the well-known Fuchsia." The other Fuchs was *Remacle*, a contemporary of *Rembert Dodoens*; and of him Mr. Boulger ("Natural History Notes," ii., p. 161) makes the Fuchsia commemorative. But if Plumier intended to keep green the memory of Leonhard, it is hardly fair that the honour should be appropriated by Remacle or another. This example shows how hard it is, even for writers well versed in botanical nomenclature, to be perfectly accurate when dealing with this difficult subject; and it may serve to excuse some of the errors which occur in these pages. (c) *Camellia*: It will be observed that the plant-name is not Kamelia, although it is called after Kamel. The reason of this is that the generic names are taken in many cases, not directly from the real names of the men after whom they were called, but from a Latinised or Græcised form of these names, which was commonly used at a time when Latin was the ordinary language for almost all scientific and theological works. The

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theologian Melancthon, whose Græcised appellation has almost entirely superseded his true name, Schwartzerd (black earth), is a familiar example. Among botanists, Dodoens becomes Dodonæus, and so fathers the *Dodonæa*; Kamel becomes Camellus, and is remembered (or, according to Mr. Britten, forgotten) in the *Camellia*; Jerome Bock (the he-goat) was considered to have such a hopelessly vulgar name that it was metamorphosed into Hieronymus Tragus, and from him the *Tragia* takes its name. It is strange indeed that so much of Fuchs is preserved in his name (as written, even if not as pronounced), since Fuchs (the fox) would naturally have become Alōpēx (αλώπηξ) or Vulpes, and produced *Alopecia* or *Vulpia*—forms which, as it happens, did afterwards occur. In fact, when Cornarius, a rival of Fuchs, published an attack upon him, he gave it the title of *Vulpecula excoriata*, "The foxling flayed." The instances adduced show that in the older names the Latinised form of the personal title was usually taken as the basis of the plant-name; but does it follow that the same operation ought to be performed at the present day, when men are quite content with their everyday patronymics, and never think of clothing them in classic garb? The pronunciation of ordinary modern names in such pedantic fashion often entirely obliterates (in sound) the connection between the man and the plant called after him. Why, for instance, should the modern Englishman, Dr. Stokes, be first transformed into the Roman *Stō-kē-sī-us*, and handed down to posterity in the *Stō-kē-sī-a*, when his memory would be much more fitly embalmed in the homely *Stokes-ŷ-a*, with three syllables instead of four? The same remark would apply to Mr. Sykes, a plant-collector commemorated by Walker-Arnott in the *Sykesia*. *Colquhoun-ia*, if pronounced as the proper name is in ordinary speech, is easy enough; but one trembles at the terrible combination which has to be uttered if it is supposed to have passed through a Latin stage, and each vowel must be assigned a separate value. The principle of preserving as much as possible the original sounds of proper names has been kept in view in the construction of this Pronouncing Dictionary. It has often given much difficulty in application, and led perhaps to inconsistent results; but it was felt that if "a verdant immortality" were to be conferred upon Dahl and Fuchs, there was no reason why it should be withheld from Sykes and Stokes. Besides *Sykesia*, *Stokesia*, and *Colquhounia*, other examples occur in the Notes, such as *Abelia*, *Aitonia*, *Listera*, and *Stanleya*.

II. Anyone who has run his eye down a botanical index, or even a garden catalogue, must have noticed what a very large proportion of the names are compounded from a few frequently recurring roots. It has been thought well to give a list of these Root-words, with examples appended. By a careful examination of this list, it will be possible for a person who has no acquaintance with Latin or Greek to pronounce correctly most of the names of classical derivation which he encounters, without having recourse to a Dictionary; since the same root often appears in a very large number of derivations, and when its sound has once been accurately ascertained, there can be no difficulty with the words of which it forms part. See, for example, in this Dictionary, the frequent repetition of the Prefixes *cālo-*, *chrŷso-*, *ērŷo-*, *mācro-*, and the Suffixes *-lēpis*, *-lōma*, *-nēma*, &c. Only those root-words have been given in the list which are likely to be mispronounced. There are, for instance, a large number of words beginning in *crypto-* and ending in *-antha*; but it is not probable that

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any one would in such cases vary from the correct pronunciation. References in the notes to the Greek root-words run as follows: "AC-ANTH-OC'-OM-A. See Cômô (hair)."

III. A few of the slips made in passing the sheets through the press have been corrected. In a work of this kind, for which so many references have to be made, and in which the result of considerable research is often expressed merely by altering the place of a single letter, it is impossible that errors difficult of detection should not creep in; especially as the task had to be done in the greatest haste. Indeed three times the period occupied would not have been too much, in which to carry out the design with the care and industry required for such an undertaking. The derivation of nearly fifteen thousand words had to be ascertained, where possible, in order to fix their pronunciation; and though that of the majority was obvious enough, occasionally a single word would require an amount of investigation entirely incommensurate with the apparent result. Since the Publisher was most anxious to keep faith with the public as to the date on which the parts should appear, each sheet, as soon as ever it was finished, was hastily carried off by the printers to be stereotyped, while it still would have much benefited by further revision. Doubtless some errors still remain; but it is hoped that they are not of sufficient importance to interfere with the value of the work as a standard of reference.

AB-A'-MA. One of the very puzzling names given by Michel Adanson; they are generally quite meaningless. *Ab-a'-ma* is given in ordinary type as a word of classical derivation, because it has been referred to a (â) not, and *bûma* (Bûma) food (so also *Fedia*, which see, below); but most of Adanson's names will be found in italics, as barbarous, e.g., *Tolpis* and *Vilfa*.

AB-EL'-I-A. Very frequently pronounced *Ab-e'-li-a*; but, as it is called after Dr. Clarke Abel, the pronunciation given much more nearly represents the sound of the name which ought to be embodied in it.

AB-ROT'-AN-IF-OL'-I-UM. The termination *-folium* is by many persons sound *fo'-li-um*, although the Latin word for a leaf is *fol'-i-um*.

AB-ROT'-AN-Ô-I'-DÊS. *-oides* at the end of botanical names is very commonly pronounced "oydes," in two syllables—a gross mistake, as it is merely a reproduction of the Greek *ô-i-dês* (οειδης). See *Eidôs* or *idôs* (appearance). The termination *ês* (ης) in an adjective (specific name) becomes *ês* (es) when the substantive (generic name), with which it agrees, is neuter.

AC-ANTH-OC'-OM-A. See Cômô (hair).

AC-ANTH-O'-DÊS. The termination *-oides* (οειδης) is a contraction of *ô-i-dês*, which has been dealt with under *abrotanoides*, above.

AC-ANTH-OL'-Y'-MÔN. See *Leimôn* or *limôn*, *limônôs* (a meadow).

AC-ANTH-ORH-I'-ZA. See *Rhiza* (a root).

AC-ANTH-OST-ACH'-Y-UM. See *Stächys*, *stächyôs* (an ear of corn).

AC-EPH'-AL-A. See *Céphalê* (a head).

AC'-ER. *Acer*, a Maple, has the *a* short—*Acer*; but in *acer*, sharp, pointed, the *a* is long—*acer*. (Compare *a'-erê*, below.) Hence the old memorial line: "Est *acer* in *syllabis*, *equus acer Olympia vincit*."

AC-IN-E'-TA. Read *Ac-i-ne'-ta* (*ἀκίνητος*, unmoved).

AC-IN-O'-TUS. See *Acis* (a point) and *Nôtôs* (a back).

AC-IPH'-YL'-LA. Words ending in *-phyllus*, *a*, *um*, are to be carefully distinguished in pronunciation from those in *-philus*, *a*, *um*: the former are always to be accented on the last syllable but one, as *ac-iph'-yl'-la*, the latter on the last syllable but two, as *Æg-iph'-i'-a*.

AC-IS-AN-THE'-RA. See *Anthêra* (an anther).

AC-ON-I-OP'-TER-IS. See *Ptêris*, *ptêridôs* (a fern).

A'-CRE. The *a* long for *acer*, sharp, pointed. See *Ac'-or*, above.

AC-ROC'-LAD-ON. See *Cladôs* (a branch).

AC-ROC-LI'-NI-UM. See *Clînê* (a couch).

AC-ROP-E'-RA. See *Pêrâ* (a wallet).

AC-ROPH'-OR-US. See *Phêrôs* (bearing, producing).

AC-ROH'-TICH-UM. See *Stichôs* (a row, line).

AC-ROT'-RICH-E. See *Phrix*, *trichôs* (hair).

AC'-TI-NOL'-EP-IS. See *Lêpls*, *lêplidôs* (a scale).

AC'-TI-NOM'-ER-IS. See *Mêris*, *mêridôs* (a part).

AC-TI'-NON-E'-MA. See *Nêmâ*, *nômâtôs* (a thread).

AC-U'-TIF-LO'-RA. The termination *-florus*, *a*, *um* (from *flus*, *floris*, a flower), ought to have the *o* always long; although it is given as *-florus* by the same class of authorities which advocate the pronunciation *-folius*. See *abrotanifolium*, above.

AC-U-TIL'-OB-A. See *Lôbôs* (a lobe).

AD-E'-LOB-OT'-RYS. See *Bôtrys*, *bôtrÿôs* (a cluster).

AD-EN'-I-UM. From *Aden* in Arabia, hence with the *a* long, and so distinguished from the compounds of *âden* (*âdên*), a gland.

AD-E-NOP-OT'-I-A. The compounds of *âden*, *âdenôs* (*âdên*, *âdénos*), a gland, have been given throughout this Pronouncing Dictionary with the *e* long, in accordance with general usage; but it would be more correct to pronounce the *e* short, as the stem is *âden*, as seen in *âdénos*.

AD-E-NORT'-OM-A. See *Stômâ*, *stômâtôs* (the mouth).

ÆG-IPH'-IL-A. See *Phyllôs* (food); and compare *Aciphylla*, above.

AG-A'-VE. Often mispronounced as a dissyllable, *A-gave*; but it has three syllables, as the equivalent of the Greek *ag-au-e* (ἀγανή), illustrious.

AG-E'-RAT-UM. Most people talk of an "Aj-er-ay'-tum," but the word is the Greek *Agêrâton* (ἀγῆρατον).

AG-ROP-Y'-EUM. See *Pfÿrôs* (Wheat).

AG-RO'-STIS. The *o* is long, as the word is a reproduction of the Greek *Agrostis* (ἀγρωστis).

AI-TO'-NI-A. The *o* would perhaps be better short, as coming from *Aitôn*. See discussion on preceding page.

A-I-ZO'-ON. This word has four syllables, since it is a compound of the Greek *a-i* or *a-ci* (ἀί), always, and *zô-on* (ζώον), living.

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- AR-U'-GA.** Given by Lindley and others as *Ar-ug-a*; but the old Latin word is *Ar-u'-ga*. See *White and Kiddle*, also *Lewis and Short*, *sub voc.*
- AL-BO-SPI'-CA.** The Latin word *spica*, a spike, an ear of corn, frequently recurs in botanical names.
- AL-BO-STI'-PES.** From the Latin word *stipes*, *stipilis*, a trunk. *stipitatum* has the same derivation.
- AL-EC-TOR-OL'-OPH-US.** See *Lophos* (a crest).
- ALL-OS-O'-RUM.** See *Sorbus* (a heap).
- AL'-O-E.** The word comes from the Greek *Al-δ-ε* (*άλγη*); so that each of the three syllables is to be pronounced distinctly, not as in the English aloe, which has only two syllables. See p. 347.
- AM-BLY'-OD-ON.** See *Odous*, *odontos* (a tooth).
- AM-MOB'-I-UM.** See *Bios* (life).
- AM-MOCH'-AR-IS.** See *Charis*, *charitos* (grace, beauty).
- AM-MOG-E'-TON.** See *Geiton* or *geton* (a neighbour).
- AM-PHIL-OU'-I-UM.** See *Lobos* (a lobe).
- AM-PHOS-YE'-MON.** See *Stemon*, *stemons* (the warp, a stamen).
- AN-CYC-LOG'-YN-E.** See *Gynē* (a woman).
- AN-DROP-O'-GON.** See *Pogon*, *pogonos* (a beard).
- AN-DBOS'-AC-E.** The termination *sac-e*, from Greek *sacōs* (*σάκος*), a shield, should not be pronounced like the English "sake," as it sometimes is.
- AN-DBOS-YEPH'-I-UM.** See *Stēphōs* (a crown).
- AN'-E-MI-A.** This word, coming from the Greek *aneimōn* (*ἀνεμῶν*), naked, has the *e* long; so that, with its compounds, it is to be distinguished from *Anēmōne*, and the compounds of that word.
- AN-EM-O'-NE.** In Greek *Anēmōnē* (*ἀνεμώνη*). See p. 346.
- AN-IS-ANTH'-US.** From *anisos* (*ἄνισος*), unequal, to be distinguished from *anisōn* (*ἄνισον*), Anise, which appears in *Anisum* and *anisata*.
- AN-IS-OG-O'-NI-UM.** See *Gōnia* (an angle).
- AN-IS-SUM.** From the Greek *Anisōn* (*ἄνισον*), Anise. Compare *Anisanthus*, above.
- AN-OC'-TOCH-I'-LUS.** See *Cheilos*, or *ohilos* (a lip).
- AN-OM-ATH-E'-CA.** See *Theōs* (a case, sheath).
- AN-OP-LOPH'-YT-UM.** See *Phytōn* (a plant).
- ANTH'-EM-IS.** The Greek *Anthēnis* (*ἀνθεμῖς*), and therefore not to be pronounced "An-thee-mis," as given in a treatise on plant-names.
- ANTH-OL-O'-MA.** See *Lōmā*, *lōmatōs* (a border, fringe).
- AN-PIG-O'-NON.** Endlicher's *Antigonon* is the same as A. Jussieu's *Antigonium*, from *gōnia* (*γωνία*), an angle.
- AP'-I-UM.** The first syllable is short, though very frequently pronounced long. The correct quantity is shown in the line of Horace: "*Neu vivax ἄπιυμ, neu breve lilium.*"
- AP-OC'-YN-UM.** See *Cyōn*, *cyōs* (a dog).
- AR'-AB-IS.** The medial *a* is short, and is generally pronounced so, in spite of the "Ar-ray-bis" given in one book on plant-names.
- AR-A-NIP'-ER-A.** The very frequently recurring Latin termination *-era*, bearing or producing, has the *e* short. Compare *Phōros* (*φωρός*).
- AR'-BUR-US.** Very often mispronounced *Arbūsus*; but the *u* is certainly short, as in Virgil's line, "*Dulce sativ humor, depulsis arbūsus hœdis.*"
- ARC-TOS-TAPH'-YL-OS.** See *Stēphylē* (a cluster of grapes).
- AR-GERM-O'-NE.** Not *Argemōus*, but *Argemōns* (*ἀργεμώνη*), the name used by Dioscorides.
- AR-GOS'-PATH-A.** See *Spāthē* (a blade, flower-sheath).
- AR-IS'-TOL-OCH'-I-A.** Although this word is often pronounced *Aristolōchia*, the last *o* is short, as it comes from the Greek *Aristolōchia* (*ἀριστολοχία*).
- AR-IST-OT'-EL-A.** Not *Aristolēla*, as often given, since it comes from the Greek *Aristotēlas* (*Ἀριστοτέλης*), Aristotle.
- AR-O-NI'-CUM.** Altered from *Doronium* (which see), therefore with the *o* and *i* long.
- ARTH-ROF-OD'-I-UM.** This word and those of similar termination should not be pronounced as if they ended

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- in *-pos-di-um*, but *-pōdium*. See *Pous* or *pūs*, *pōds* (a foot).
- AR-VIC'-OL-A.** The Latin termination *-cola*, an inhabitant, has the *o* short, as in *Viti-cola*, *Eremi-cola*.
- AS-CAR-IC'-ID-A.** This word and *An-guic'-id-a* ought to have been given as *As-car-ic-i'-da* and *An-guic-i'-da*, as the Latin termination *-cida*, a slayer, has the *i* long, e.g., *homicida*.
- AS-COM-YC-E'-TĒS.** See *Mycēs*, *mycētōs* (a mushroom).
- AS-PHOD'-EL-US.** Often mispronounced *Asphodēlus*; it comes from the Greek *Asphōdēlōs* (*ἀσφόδηλος*).
- AS'-TĒR.** Delete the long mark over the *e*. The word is the Greek *Asēr* (*ἀσθήρ*); but in Latin it becomes *Aster*, with the *e* doubtful.
- AS-TROC-AR'-Y-UM.** See *Caryōn* (a nut, fruit-stone).
- AS-TROL-OB'-I-UM.** See *Lōbōs* (a lobe).
- AS-TROPH'-YT-UM.** See *Phytōn* (a plant).
- ATH-E-RU'-RUS.** See *Oura* or *ūra* (the tail).
- AU'-CUB-A.** Wittstein and Glaser give *Aucūba*, which seems to be the sound expressed in the "Cuba" of many gardeners; but Lindley (in Paxton) gives *Aucūba*, as the word is now generally pronounced.
- AZ-AL'-E-A.** Although generally pronounced *Azalea*, the medial *a* is short, as coming from the Greek *Azālēōs* (*ἀζαλέος*), dry. Lindley gives it correctly.
- BEL-OP-ER'-ON-E.** See *Bēlōs* (a dart).
- BI'-OT-A.** From the Greek *Biotē* (*βιοτή*), life, and given with the *o* short by Glaser, &c.; but generally pronounced *biōta*.
- BLEPH'-AR-IG-LŌT-TIS.** See *Blēpharīs* (an eyelash).
- BRACH-YCH'-I-TON.** See *Brachys* (short) and *Chitōn*, *chitōns* (a tunic).
- BRACH-YE'-MA.** See *Brachys* (short) also *Sēma* and *Sēmeiōn* (a mark).
- BRACH-YE'-PATH-A.** See *Brachys* (short) and *Spāthē*, (a blade, flower-sheath).
- BREV-IS-CA'-PA.** The Latin word from which the termination is derived is *scāpus*, a trunk, the same as the Greek *scāpōs* (*σκάπος*).
- BREV-IS-E'-TA.** The Latin *seta*, a bristle, has the *e* long, as in *setacea*, *setigera*, *setosa*, &c.
- BROM'-US.** The Greek name of this Grass is *Brōmos* (*βρόμος*); but the generic name is often pronounced *Bromus*, as if from *broma* (*βρώμα*), food.
- BRY'-A.** Read *Bry'-a*—the first syllable long—as a name commemorating De Bry, and therefore to be pronounced differently from *Brjanthus*, &c., from the Greek *brýō* (*βρύω*), I grow.
- BU-GLŌS'-SUM.** See *Būs* (an ox, a bull) and *Glōssa* (a tongue).
- BUL-BOS'-TYL-IS.** See *Stylōs* (a pillar, style), and compare the note on *Stylandra*, below.
- BU'-TOM-US.** See *Būs* (an ox, a bull) and *Tōmē* (a ot).
- CAL'-E-A.** See *Cālōs* (beautiful).
- CAL-LE-A'-NA.** To be distinguished from *Cālea*. The first *a* is long, as the word is derived from the proper name *Caley*.
- CAL-IPH-RU'-RI-A.** The *u* is long, as the word is derived from *phrūra* (*φρουρά*), a guard.
- CAL-LICH'-BŌ-A.** See *Chrōk* (colour).
- CAL-LIP-BO'-BA.** The *o* long, from *prōra* (*πρόρα*), a prow.
- CAL-LIP-SY'-CHE.** See *P-yōhē* (the soul, a butterfly).
- CAL-LIS-TEM'-MA.** See *Stemma*, *stēmmatōs* (a wreath).
- CAL-LIS-TE'-MŌN.** Words derived from *Stēma* and *Stēmōn* (a stamen) are to be distinguished from those derived from *Stēmma*. Compare *Calli-temma*, above.
- CAL-OD-IC'-TY-ON.** See *Dietyōn* (a net).
- CAL-OD'-RAC-ON.** See *Dracōn*, *dracōntōs* (a dragon).
- CAL-OG-LŌS'-SA.** See *Glōssa* (a tongue).
- CAL-OPH'-AC-A.** The *a* short, from *phacē* (*φακή*), a lentil; not *phaca*, as given by McNeill and Glaser.
- CAL-YC-OT'-ON-K.** See *Calyx*, *calyōs* (a covering, calyx), and *Tōmē* (a ot).

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CAL-YP-TROC'-AL-YX. See *Cályx*, *cályceōs* (a covering, calyx).
 CAL-YP-TRON'-OM-A. See *Cályptra* (a veil).
 CAL-Y8-TEG'-I-A. See *Stégē* (a covering).
 CAL-YX'-HY-MEN'-I-A. See *Hýmén*, *hýménōs* (marriage).
 CAM-EL'-LI-A. A word subject, in the matter of pronunciation, to very hard usage, which sometimes goes so far as to give it the sound of "Camilla." It is fully discussed on pp. 347-8.
 CAM-E-LO'-RUM. The long *e*, which is often wrongly introduced into *Camellia*, properly belongs to this word, from Latin *camelus* (Greek *kámēlos*), a camel.
 CAP-ROX'-YL-ON. See *Xýlon* (wood).
 CAR-PI'-NUS. The *i* ought not to be pronounced short, as it often is.
 CAS-SUM-U'-NAR. This word should be italicised.
 CAS-TAN'-Ē-A. The medial *a* short, from Greek *Castāna*, (*κάστανα*); yet the pronunciation is given in one book as "Kas-tay-né-ah."
 CĒD'-RUS. The *e* better short, from the Greek *Cēdrōs* (*κέδρος*), although in Latin the quantity of the vowel is doubtful.
 CĒ-LAS'-TRUS. The *e* long, from the Greek *Cēlastrōs* (*κῆλαστρος*).
 CĒ-LO'-SI-A. Long *e*, from the Greek *cēleos* (*κῆλεος*), dry, burned.
 CĒPH-AL-AN-THE'-RA. See *Anthēra* (an anther).
 CĒR-AT'-I-OL-A. The *o* is short, as the word is a diminutive from *Ceratia*. Compare *Gladiolus*, below.
 CĒR-AT-OD-AC'-TYL-IS. See *Cērās*, *cērītōs* (a horn), and *Dactylōs* (a finger).
 CĒR-COS'-TOR-A. See *Spōra* (a seed).
 CĒ-RE-US. A Latin word of three syllables, meaning waxen; often pronounced "Sear-use," in two syllables.
 CHAM-X-BAT'-I-A. See *Chāma* (on the ground, dwarf).
 CHEIL-ANTH'-ĒS. See *Cheilōs* or *chilōs* (a lip). Compare also *Chilognatha*, below, for the other form of the prefix.
 CHEIR-ANTH'-US. See *Choir* or *chir*, *chirōs* (a hand), and compare *Chironyces*, below, for the other form of the prefix.
 CHEIR-OG-IŌR'-SA. See *Glossa* (a tongue).
 CHEL-I-DON'-I-UM. The Greek word for this plant is *Chelidōnion* (*χελιδόνιον*), from *chelidon*, *cheldōnos* (*χελιδόν*, *χελιδόνος*), a swallow.
 CHEL-O'-NE. The Greek *chēlone* (*χελώνη*), a tortoise.
 CHE-NOP-OD'-I-UM. From *chen* (*χην*), a goose, and *Pous*, *pōdōs* (a foot), which see.
 CHIL-EN'-SE. The *ch* to be pronounced soft, and the *i* short (from *Chilē*), and so distinguished from *chil*, with hard *ch* and long *i*, in classical compounds.
 CHIL-I-AN'-DRA. Read *Chi-li-an'-dra*; also *Chi-li-ophyl'-lum*. The words come from *Chilioi* (*χίλιοι*), a thousand.
 CHIL-O'-DI-A. Read *Chi-lo'-di-a*. Same derivation as *CHI'-LOG-NATH'-A*. See *Cheilōs* or *chilōs* (a lip).
 CHIM'-R-BA. *Chimera* (*χίμαιρα*), a she-goat, has the first syllable short, and so is to be distinguished from the compounds of *chima*, such as the word which follows.
 CHI-MAPH'-IL-A. See *Chieima* or *chima*, *chimatōs* (cold, winter).
 CHI-MON-ANTH'-US. Read *Chi-mo-nanth'-us*, as it comes from *chimon*, *chimonos* (*χίμων*, *χιμῶνος*), winter.
 CHI-O-NANTH'-US. Read *Chi-on-anth'-us*. See *Chion*, *chiōnōs* (snow).
 CHI-ROM'-YC-ĒS. See *Choir* or *chir*, *chirōs* (a hand), and *Mycēs*, *mycētōs* (a mushroom).
 CHIT-O'-NI-A. See *Chiton*, *chitonōs* (a tunic).
 CHLAM-YD'-I-A. See *Chlāmēs*, *chlāmēdōs* (a cloak).
 CHLO-ANTH'-ĒS. See *Chlōā* (grass).
 CHLO'-BA. See *Chlōrōs* (green).
 CHEO-MAT-EL'-LA. See *Chromā*, *chrōmātōs* (colour).
 CHEI-SANTH'-EM-UM. See *Chryās* (gold) and *Anthēmōn* (a flower).
 CHRY-SOB-AL'-AN-US. See *Bilānōs* (an acorn).

Pronouncing Dictionary—continued.

CHRY-SOG'-ON-UM. See *Gōnōs* (offspring).
 CHRY-SOM'-EL-AS. See *Mōlīs*, *mōlīnōs* (black).
 CHRY-SOS-TEPH'-AN-A. See *Stēphōs* and *Stēphānō* (a crown).
 CIL-I-A'-RI-A. From the Latin *cilium*, an eyelash.
 CLAD'-I-US. See *Clādōs* (a branch).
 CLE'-MAT-IS. Often called *Clem-a'-tis*, sometimes *Clem'-at-is*; but the true pronunciation is plainly that given here, since the word is the Greek *Clēmātis* (*κληματίς*).
 CLI-NOP-OD'-I-UM. The Greek word is *Clindōpōdion* (*κλινωπόδιον*). See *Clīnē* (a couch) and *Pous* or *pūs*, *pōdōs* (a foot).
 CNE-MI'-DI-A. From *cnēmis*, *cnēmidos* (*κνημίς*, *κνημίδος*), a legging. See *Cnēmē* (the leg).
 CNI'-DI-UM. From *Cnidē* (*κνίδη*), a Nettle. Compare *Eu-oni'-de*, below.
 CO-DO'-NI-UM. See *Cōdōn*, *cōdōnōs* (a bell).
 COL'-Ē-US. A word of three syllables (the first short), from the Greek *colēos* (*κολέος*), a sheath—not to be pronounced, as it often is, "Coal-ue."
 COLQU-HOUN'-I-A. The name Colquhoun is pronounced "Cohoon." This word is discussed on p. 348.
 CO-NAN'-DRON. See *Cōnōs* (a cone).
 CO-NI'-UM. From the Greek *Cōnion* or *Concion* (*κόνειον*), Hemlock.
 COR-YN-OC-AI'-PUS. See *Cōrync* (a club).
 CRAS-PED-A'-RI-A. From the Greek *craspedon* (*κράσπεδον*), a fringe.
 CRE'-PIS. The *e* is long, as the word is the same as the Greek *crepis* (*κρηπίς*), a boot. The Greek stem is *crēpēd* (*κρηπηδ*); but in Latin the quantity of both syllables is changed, and we have *crēpida*, a slipper.
 CRI-NI'-ER-A. This, and the two words which follow on p. 293, come from the Latin *crinis*, hair, and are distinguished by the length of the first syllable from the compounds of *Criuo*.
 CRIN-OD-EN'-DRON. From *Crīnōn* (*κρίνον*), a Lily.
 CROC'-US. The Latin *Crocus* of Virgil: "*Et glaucus salices, casiamque, cricumque rubentem.*" The Greek (*crōcos* (*κρόκος*)) of Homer: "*Διπλὸν δ' ἐρήμεια ἰδὲ κρόκον ἦδ' ἰάκινθον.*"
 CROT'-ON. The Greek *crōton* (*κροτῶν*), a tick.
 CRUC-I-AN-EL'-LA. This and other compounds of *cruc*, *crucis*, have the *u* short.
 CRYP-TOC'-OP-IS. The second part of the compound is the Greek *cōpis* (*κόπις*), a knife.
 CUS-CU'-TA. The authorities are much divided as to the pronunciation of this word; but the *Cuscuta* of Alcock, (Glaser, and "Index to English Botany," seems nearer to the Arabic *chasuth* or *kechout* than the *Cuscita* of many others.
 CY-AM-US. The Greek *cýamos* (*κύαμος*), a bean. Compare *Hyoscyamus*, below.
 CY-AN'-US. See *Cýanōs* (dark blue).
 CY-ATH'-E-A. See *Cýthōs* (a cup).
 CY'-CLAM-EN. The quantity of the *y* in the Greek *cyclos* (*κύκλος*), a circle, is doubtful; so that the common gardener's abbreviation "Sykes," for *Cyclamen*, has just as much authority as the "Sickly-men" of others.
 CYN-ANCH'-IC-A. See *Cýon*, *cýnōs* (a dog).
 CYN-OC'-TON-UM. See *Cýnōs* (a murder).
 CYP'-E-RUS. Often pronounced *Cýppērus*, which has the authority of the form given by Herodotus, *Cýppēros* (*κύπερος*), but more correctly *Cýperus*, from the ordinary form *Cýpeiros* (*κύπεiros*).
 CY'-PHI-A. See *Cýphōs* (bent, round).
 CYP-RIP-ED'-I-UM. Pronounced by most people *Cýppi-pēdium*; but the termination coming from the Greek *pēdion* (*πέδιον*) or *pōdion* (*πόδιον*), the *e* ought to be short.
 DAC'-TYL-IC-AP'-NOR. See *Dactylōs* (a finger).
 DAI'-LI-A. This word ought to have the first syllable sounded like the English "ah," not as "day," since it is commemorative of Dahl. See p. 347.

Pronouncing Dictionary—continued.

DA'-LĒ-A. The *a* to be pronounced as in "day," as the genus is called after Dr. Samuel Dale. See p. 347.

DA'-NĀ-A. This word, called after Dana, has the first syllable long; but *Dan'-ā-ā*, after the Greek heroine of that name, has the same syllable short.

DAS-Y-ANTH'-A. See *Dāsýs* (thick, hairy).

DEC-AB-EL'-ON-E. See *Děckā* (ten).

DEC-US-SA'-TA. The first syllable is short, as containing the stem of *decem*; while the neighbouring words *decumbens*, *decurrens*, &c., have the same syllable long, since it is formed from the preposition *de*.

DEL-PHI'-NI-UM. The Greek *Delphinion* (*Δελφίνιον*), from *delphis*, *delphinus* (*δελφίς*, *δελφίνος*), a dolphin.

DEN-DROM-E'-CÓN. See *Měcón*, *měcónōs* (a poppy).

DICH-X'-A. See *Dichā* (in two, asunder).

DIC-LYT'-RA. In reality a misprint for *Dicentra*; but it is best pronounced after the analogy of *Dielytra*, a genus-etymology, which is generally substituted for it.

DIC-TY-OU-RAM'-MĒ. See *Dictýōn* (a net).

DID-YM-OC-AR'-PUS. See *Didýmōs* (twin).

DI-EL-YT'-RA. From *elytron* (*ἐλκτρον*), a sheath. See *Dielytra*, above.

DIG-IT'-A'-LIS. From the frequently recurring *digitus*, with the same meaning as the Greek *dactylos*.

DI-OS'-PYR-OS, of Pliny, a rendering of the Greek *διόσπυρος* of Theophrastus, is given in the dictionaries *Diospyros*; but see *Pýrōs* (Wheat), and compare *Agropyrum*, above.

DIPH-Y'-SA. See *Pýsa* (a bladder, bellows). Lindley (in Paxton) incorrectly gives it as *Diphýsa*.

DIS-AR'-REN-UM. See *Arrhēn*, *arrhēnōs* or *arrēnōs* (a male).

DO-DEC-AN'-DRA. From *dōdeka* (*δώδεκα*), twelve. See *Děckā* (ten).

DOL-ICH-OC-EN'-TRA. See *Dōlichōs* (long).

DO-RO-NI'-CUM. The word comes from the Arabic *doroniği*; but Linnæus gives the pronunciation by deriving it from *dōron* (*δώρον*), a gift, and *nice* (*νίκη*), victory. Glaser and others give it *Doronicum*; Lindley rightly makes the *i* long.

DOR-Y-ANTH'-ĒS. From *dōry* (*δῆρυ*), a spear.

DRAC'-O. See *Dracōn*, *dracōntōs* (a dragon).

DREP-AN-OC-AR'-PUS. From *drepānē* (*δρεπάνη*), a sickle.

DRI'-MI-A. From *driμis* (*δριμύς*), sharp, keen.

DRU-PA'-CĒ-A. This and the three following words on p. 297 from the Latin *drupa*, a kind of fruit.

DRY-OB-AL'-AN-ŌPS. See *Drýs*, *drýōs* (an oak).

ĒCH-I-NANTH'-US. See *Ēchinōs* (a hedgehog).

ĒCH-I-O-GLŌN'-SUM. The *o* in *echýd-* ought to be short. See *Ēchis*, *ēchīōs* (a viper, an adder).

ĒL-AT-I'-NĒS. From the Greek *Ēlatine* (*ἐλατίνη*).

E-LĀ'-TĪ-OR. The Latin *Ēlātus*, lofty; note the difference from the preceding in the first two syllables.

ER-E'-MI-A. See *Ērēmōs* (desert, solitary).

ER'-I-A. See *Ērīōn* (wool).

ER'-CA. Generally pronounced *Ertea*; but it ought certainly to have the second syllable long, as it comes from the Greek *Ēricē*, or *Ēricēē* (*ἐρείκη*).

E-RIĀ'-ER-ŌN. The Greek *Ērigéron* (*ἡριγερον*), from *eri* (*ἔρι*), early, and *gērōn* (*γέρων*), old.

E-RIN-A'-CĒ-A. The Latin *Ērinaceus*, a hedgehog. To be distinguished from the next by the quantity of its first two syllables.

ER-I'-NĒ-UM. From *Ērīneos* (*ἐρινεός*), a wild Fig-tree.

ER-YE-I'-PHE. Compare *Er-is-y'-phe*: both words are forms of the Greek *Ēryside* (*ἐρυσίδη*), mildew.

ER-YTH-ROK'-ACH-IS. See *Ērythros* (red).

EU-CHRO'-MA. See *Chrōmā*, *chrōmātōs* (colour).

EU-CNI'-DE. From *Cnidē* (*κνίδη*), a Nettle. Compare *Cni'-dium*.

EU-O'-NYM-US. The Greek *eusōnymōs* (*εὐώνυμος*), lucky.

EU-PHELE'-I-A. See *Phlēps*, *phlēbōs* (a vein).

EU'-SCAPH-IS. See *Scaphē* or *Scāphis* (a boat, skiff).

Pronouncing Dictionary—continued.

EX-O-GON'-I-UM. The *o* short, in accordance with the derivation from *gōnōs* (*γόνος*), begetting; not as *Anisogōnium*, from *Gōnia* (an angle), which see.

FE'-DI-A. One of Adanson's names (see note on *Abama*, above). The present word has been supposed to come from *fēdus*, an old form of the Latin *hædus*, a kid.

FIL'-IC-ĒS. The compounds of *filix*, *filicis*, a fern, are to be distinguished from those of *filum*, a thread.

FI-LIF-OL'-I-UM. The first syllable long, as the word means "thread-leaved," to be distinguished from *filicifolia*, fern-leaved.

FLA-BEL-LĀ'-TA. From *flābellum*, a fan.

FLAG-EL-LĀ'-RIS. The first syllable is short, from *flāgellum*, a whip.

FLĀ'-VA. This and several words following have the first syllable long, coming from *flāvus*, yellow.

FLO'-RID-A. The Latin *flōridus*, blooming, from *flōs*, *flōris*. See note on *acutiflorus*, above.

FLOR-ID-A'-NUM. The first syllable not to be pronounced as in *flō'-ri-da*, since this word is derived from Florida, one of the United States.

FOL'-I-I. See note on *abrotanifolium*, above.

FRA-GĀ'-RI-A. From the Latin *frāga*, a strawberry, akin to *frāgrans*.

FROL-O'-RI-A. Delete: a misprint for the following word, *Frolovia*.

FRUT-ES'-CA. The first syllable in this and the five words which follow on p. 301 is short, though often pronounced long—*frūtex*, not *frūtez*, &c.

FUCH'-SI-A. See p. 347. The part of the word in italics ought to be pronounced like the German word *fuchs*, a fox. Those to whom this does not convey much information may sound the word rather as "Fook'-si-a" than "Few-shah," as we generally hear it. The evil effect of the mispronunciation is seen in the very frequent mis-spelling of the word. Nine times out of ten, people write it *Fuchia*, and compositors frequently set it up in the same way.

FU-SIF-OR'-MIS. The first syllable long, from the Latin *fūsus*, a spindle.

GAL-AC'-TĪ-A. See *Gālā*, *gālactōs* (milk).

GAL-E'-DUP-A. This word should be italicised.

GAL-PHI'-MI-A. An anagram of *Mai-pi'-ghī-a*, and to be pronounced in a similar way.

GER-IN-A'-TA. From Latin *gērīnus*, with the same meaning as Greek *didýmōs* (twin).

GER-AN'-I-UM. The second syllable is short. The Greek is *Gērānikon* (*γεράνικον*), from *gērānōs* (*γέρανος*), a crane.

GER-OP-O'-GŌN. From *gērōn gērōntōs* (*γέρων*, *γερωντος*), an old man, and *Pōgōn* (a beard), which see.

GES-NE'-RA. So Lindley, Wittstein, Glaser, Lennis, &c. The word is frequently pronounced *Gesnēra*.

GLAB-EL'-LA. The first syllable short, from Latin *glāber* (bald).

GLAD'-I-OL-US. This word used to be pronounced *Glad-y'-ol-us*; lately the "fashionable" pronunciation has been *Glad-y'-ol-us*, which is quite as incorrect as the former. *Glad'-i-ol-us* is the Latin name used by Pliny, and is a regularly formed diminutive from *gladius* (a sword).

GLŌS-SAN'-THUS. See *Glōssa* (a tongue).

GLYC-YR-RHI'-ZA. See *Glycēs* (sweet) and *Rhiza* (a root).

GRA-NA'-TUM. The first syllable is long (from Latin *grānum*, grain), and the word is to be distinguished from *gran-a-ten'-se*, a geographical name, which precedes it.

GUN-NE'-RA. So Lindley, Wittstein, Glaser, &c. *Gunnēra* is the common pronunciation.

GYN-AN-DROP'-SIS. See *Gynē*, *gýnaikos* (a woman).

GY-RAN'-DRA. See *Gýrōs* (curved, round).

HE-BE-AN'-DRA. See *Hēbē* (youth).

HE'-DŪ-A. See *Hēdýs* (sweet).

HEL-I-AM'-PHOR-A. This word, which comes from the same root as *Hēlicōdea*, &c., is not to be confused with *Hēlianthemum* and others coming from *hēlios*.

Pronouncing Dictionary—continued.

HE-LI-ANTH'-US. See *Hēlīōs* (the sun).
HEL-LES'-OR-US. The Greek form is *Ἡλλήσπρος* (*Ἰλλήσπρος*). A modern book, which professes to teach the pronunciation of English plant-names, gives the sound as "Helle-boar-us"!
HE-MER-OB-I-EL'-LA. See *Hēmērā* (the day).
HE-MI-AND'-BA. See *Hēmī* (half).
HES-PER-AN'-THA. See *Hēspērōs* (evening).
HET-ER-AC-AN'-THA. See *Hētērōs* (another, different).
HET-ER-OPH-LEB'-I-UM. See *Phlēps*, *phlēbōs* (a vein).
HI-MA-LAY-A'-NA. The correct pronunciation of the mountains popularly known as *Himālaya* is given by the best authorities (e.g., Sir W. W. Hunter) as *Himalāya* (= *Himāchāl*, snow-mountain).
HOL-OC-RY'-SUM. See *Hōlōs* (whole, perfect).
HOM-AL-ANTH'-US. See *Hōmālōs* (even, smooth).
HOM-AL-OM-E'-NA. An altered form of *Homalonēma*, and therefore to be pronounced in a similar manner.
HY-BER-NI-A. From *hýbernus* (better *hibernus*), winter. *Hibernicus* (Irish) has the first syllable short.
HYD-RAN'-GĒ-A. The quantity of the first syllable is doubtful, and the *e* of the penultimate would, in strict accuracy, be long, as coming from the Root-word *Angein*, or *Angion* (a vessel), which see.
HYD-ROC-OT'-YL-E. See *Hýdōr*, *hýdātōs* (water).
HYM-EN-E'-A. See *Hýmēnōs*, *hýmēnōs* (marriage).
HY-OS'-CY-AM-US. See note on *Cýamus* and the root-word *Hýs*, *hýōs* (a pig). The word means Hog's-bean.
HYP-ER-ANTH'-E'-RA. See *Hýpēr* (above, superior).
HYP-ER'-IC-UM. The Greek form, as found in Dioscorides, is *Hypericon* (*ὑπερικόν*). So Pliny's *Hýpēricum* (Lewis and Short); White and Riddle, *Hýpēricon*. Lindley gives *i*; Glaser, &c., *i*. On the whole, *i* has more authority, though *s* has almost universal usage on its side.
HYP-OC-AI-UM'-MA. See *Hýpō* (beneath, inferior).
HYS-TER-I-A'-CĒ-I. See *Hýstērōs* (later, lower).
IB-E'-NIS. The Greek *Íberis* (*Ἰβήρις*), of Dioscorides; one often hears it called "Eye-bēr-is."
IM-PAT'-I-ENS. To be pronounced, if accuracy is attempted, with four syllables as here given, not "Im-pay-shuns," as we often hear it.
I-NOC-AR'-PUS. The first syllable is long, being derived from *is*, *inōs* (*is*, *ivōs*), a fibre—to be distinguished in sound from the prefix of such words as *in-od-o'-ra*, coming from the Latin preposition *in*.
I-O-NAN'-THA. Read *I-on-an'-tha*; and for *I-O-NE'-MA* read *I-on-o'-ma*. See *lōn* (a violet).
I-SAT-IS. The Greek *Ísatis* (*ἰσάτις*), reproduced in Latin with same quantity, &c.; *Ísatis* according to Lindley, Hooker, Alook, &c. Leunis-Frank and Glaser give it correctly.
JAS-I-O-NE. The *Iasiōne* (*ιασιώνη*) of Pliny and Theophrastus. Leunis-Frank and Lindley (in Paxton) give it correctly; Hooker, Lindley (in Loudon), &c., *Jasiōne*.
JAS-MIN-OD-O'-RA. The Latin adjective *ōdōrus*, which forms the termination of this word, is often mispronounced *ōdōrus*, after the analogy of the English word "ōdorous."
KAL-OS-ANTH'-ĒS. *Kalos* here is another form of *CLōs* (*καλός*), beautiful (which see).
LĀG-O'-PUS. See *Lāgōs* (a hare).
LAS-I-AN'-DRA. See *Lāsīōs* (rough, hairy).
LAT-ER-IP-LO'-RA. Words formed from *lātus*, *lātēris*, a side, are to be distinguished from those which come from *lātus*, broad, such as
LA-TIP-OL'-I-A, broad-leaved.
LE'-CYTH-IS. The first syllable long, as the name comes from the Greek *lēcythos* (*λήκυθος*), a flask. Wittstein, Glaser, Lindley, &c., give it wrongly, *Lecythis*.
LE'-JIC-A. This word ought to be italicised.
LE-MO'-NI-A. First two syllables are long, from *leimōn* (*λεῖμῶν*), a meadow; to be distinguished from *Lemoniana*.
LE-O-NO'-TIS. See *Lēōn*, *lēōntōs* (a lion), and *Ous*, *ōtōs* (an ear).

Pronouncing Dictionary—continued.

LEP-ID-AG'-ATH-IS. See *Lēpis*, *lēpidōs* (a scale), and *Āgāthōs* (good).
LI-LA'-CIS. This and the kindred words ought to have the "lilac" in italic, coming, as it does, from *Lilias*, the Persian name of the Indigo-plant.
LI-LI-UM. The first syllable is long, as proved by Virgil's line: "*Lilia, verbenasque premens, vesicatumque papaver*"; but the analogy of the English "lily" leads many to mispronounce the Latin word. It is connected with *Leirōn* or *Lirōn* (*λείριον*), a Lily (which see).
LI-MET'-TA, LI-MO'-NI-A, and **LI-MO'-NUM** to be italicised, as they are derived from the Persian *lī'-mūn*, a lemon.
LI-MO-NI-AS'-TRUM. See *Leimōn* or *Līmōn* (a meadow).
LOB-E'-SIA. Read *Lo-be-si-a*, from *lōbesis* (*λάβησις*), injury.
LO-MAG-RAM'-ME. See *Lōmā*, *lōmātōs* (a border, fringe).
LOPH-ANTH'-US. See *Lōphōs* (a crest).
LO-RANTH'-US. See *Lōrōn* (a thong).
LOR-IN-SE-RI-A. The "Lorinser" to be italicised; the name is commemorative of Dr. Gustave Lorinser.
LYC-OP-OD'-I-UM. See *Lýcōs* (a wolf) and *Pous* or *pūs*, *pōdōs* (a foot). Lindley gives rightly *Lycopodium*; Hooker, McNICOLL, &c., *Lycopodium*.
MAC-ROC-NE'-MUM. See *Mācōrōs* (long), and *Cnēmē* (the leg).
MAL'-Ē-OL-ENS. The first syllable is short, from *mālus* (bad); the compounds of which are to be distinguished from those of *Mālus* (an Apple-tree), whence comes *MA'-LI*.
ME-CO-NOP'-SIS. See *Mēcōn*, *mēcōnōs* (a poppy).
ME'-DIC-A. The first syllable long, from the Greek *Mēdicōs* (*μηδικός*), Median. To be distinguished from *mādicus* (curative), and from the commemorative *MED-I'-CI-A*.
MĒG-AP-OT-AM'-IC-US. See *Mēgās*, *mēgālōs* (big). The "Big River" commemorated in the Rio Grande.
MEL-AL-EU'-CA. See *Mēlās*, *mēlānōs* (black).
MEL-AN-ORH'-OD-A. See *Mēlās*, *mēlānōs* (black), and *Rhōdōn* (a rose).
MEL-IL-O'-TUS. See *Mēlī*, *mēlītōs* (honey).
ME'-LO. See *Mēlōn* (an apple).
MEL-OL-ONTH'-A. Read *Mē-loi-onth'-a*; it is the Greek *Mēlōlōnthē* (*μηλόλονθη*) mentioned by Aristotle.
ME-NIS-PER'-MUM. From *mēn*, *mēnos* (*μήν*, *μηρός*), a month, the moon, "Moonseed."
MES-ĒM-BRY-ANTH'-EM-UM. From *mesēmbria* (*μεσημβρία*), mid-day. Linnæus gives as the derivation *mēnōs* (*μέσος*), middle, and *ēmbryōn* (*ἐμβρυον*), an embryo.
MI-CRAN'-DRA. See *Micrōs* (little).
MI'-MUL-US. Latin *Mimulus*, a diminutive of Greek *mīmos* (*μῖμος*), an actor. Pliny has *Mimulus*, a doubtful plant-name. Rightly Lindley; *Mim'-ūl-ūs*, Hooker, &c.
MOL'-LĒ. To be distinguished from the preceding *Mol'-le*, a Peruvian name, and from the next word marked with an asterisk,
MO'-LY, the Greek *Mōly* (*μῶλυ*) mentioned by Homer.
MON-AC-ANTH'-A. See *Mōnōs* (alone, solitary). Some readers may think it unnecessary to point out that the first syllable is short; but those who have heard a late eminent Professor of Botany invariably speaking in his lectures of "Moan-O-Cotyledons" (as if he were calling upon the cotyledons to lament), will acknowledge that it is possible to make a mistake in the matter.
MON-OD'-OR-A. In accordance with the derivation from *Mōnōs* and *ōra* (*ὄρα*), a skin. Note the difference from *in-od-o'-ra* and *jas-min-od-o'-ra*.
MY-OS-O'-TIS. See *Mýs*, *mýōs* (a mouse).
MY-RI-AC-ANTH'-A. See *Myrios*.
MYR-OB-AL'-AN-US. See *Mýrōn* (sweet ointment) and *Bālānōs* (an acorn).
NEC-TAN'-DRA. Words derived from *nēctar* (*νέκταρ*) ought not to be confused with those which come from *nēctris* (*νήκτρις*), a swimmer, such as *Nēctria*, *Nēctris*.
NE-MAC-O'-NI-A. See *Nēmā*, *nēmātōs* (a thread).
NEM-OPH'-IL-A. From *nēmōs* (*νέμος*), a glade, and *Phīlōs* (*φῶν*), which see.

Pronouncing Dictionary—continued.

NEP'-ET-A. Pliny's name. Lindley gives *Nepēta*, which is the commoner pronunciation.
NEPH-RAN'-DEA. See *Nēphrōs* (a kidney).
NI'-BUNG. This word should be italicized.
NOT-EL-Ē'-A. See *Nōtōs* (vōros), the South, to be distinguished from the compounds of *Nōtōs* (vōros), the back.
OAKEE'-I-A. See discussion of *Stokes'-I-a*, &c., p. 348.
O-CHREAN'-THE. The first syllable long, as the word is derived from *ōchros* (ōchros), pale.
OD-ON-TAD-E'-NI-A. See *Ōdous*, *ōdōntōs* (a tooth).
OD-O'-RA. Compare the note on *jasminodora*, above.
ŒN-OTH-E'-RA. Often pronounced *Œn-oth'-ēr-a*. It is the Greek *Oinothēras* (oinothēras) of Theophrastus.
OL-IG-AN'-THA. See *Ōllgōs* (littile).
OM-PHAL-AN'-DRI-A. See *Ōmphālōs* (the navel).
ON-CID'-I-UM. From *oncos* (ōykos), a tumour, and *Eidōs* or *idōs* (appearance), which see. Words so derived ought strictly to have their termination pronounced *-idium*. But there are many words in *-idium* which have not this derivation, such as *Aspidium* (from *aspis*, *aspidōs*), *Gloetidium* (from *glottis*, *glottidōs*), *Leptidium* (from *lepis*, *lēpidōs*), *Xiphidium*, &c.
ON-OS'-ER-IS. See *Ōnōs* (an ash) and *Sōris* (Succory).
ON-YCH'-I-UM. See *Ōnyx*, *ōnychōs* (a claw).
OPH-I-OG-LŌS'-SUM. See *Ōphis*, *ōphis* (a snake).
OP-OP'-ON-AX. The more correct spelling from an etymological point of view is *Opopanax*. See *Pānax*, *pānākōs* (all-heal, panacea).
OR-I'-GAN-UM. Often pronounced *Orly'-an-um*; but the Greek form is *Oreiganon* (ōpelayon), Mountain-pride.
OR-NI-THOG'-AL-UM. See *Ōrnīs*, *ōrnithōs* (a bird).
OX-Y-AC-AN'-THA. See *Ōxys* (sharp, acid).
PACH-Y-AN'-THA. See *Pāchyas* (thick).
PAR-AC-AR'-Y-UM. See *Pār'yōn* (a nut, fruit-stone).
FED-I-LAN'-THUS. See *Pēdilon* (a shoe).
PER-I-AC-AN'-THUS. See *Pērī* (round).
PER-IP'-LOC-A. See *Pērī* (round) and *Plōcō* (a twining).
PER-ON-OS'-POR-A. From *pērōne* (περὼν), a buckle. Compare *Bolo-pērōne*, above.
PET-AL-AC'-TE. See *Pētālōn* (a leaf, petal).
PHIL-AD-EL'-PHUS. See *Phlōs* (fond).
PHIL-AG-E'-RI-A. This word is partly of classical derivation and partly commemorative, as it is a compound of the names *Phileia* and *Lapageria*—one meaning affection, the other called after the Empress Josephine.
PHLEB-IG-O'-NI-UM. See *Phlēps*, *phlēbōs* (a vein).
PHYL-LACH'-NE. See *Phyllōn* (a leaf) and the note on *Ac-iph-y'l-la*.
PHY-SAL-IS. See *Physa* (a bladder, bellows), which comes from the same root.
PHYT-EL'-EPH-AS. See *Phytōn* (a plant).
PI'-LĒ-A. See *Pilōs* (a hat).
PIL-IF'-ER-UM. Words formed from the Latin *pilus*, a hair (e.g., *piliferum*, *Pilosella*, &c.), or from the Latin *pila*, a ball (*Pilularia*, *pilulifera*), are to be distinguished from those which come from the Greek *pilos* (πίλος), a hat (*Pilo-carpus*, *Pilo-phora*).
PIP'-ER. Commonly pronounced as if it were connected with bagpipes; but both the Greek form *Pēpērī* (πέπερι) and the Latin *Piper* have the first syllable short. Compare *Pep-er-id'-i-um* and *Pep-er-o'-mi-a*.
PLAG-I-AN'-THUS. See *Plāgyōs* (oblique).
PLAT-YC-AN'-THA. See *Plātys* (broad).
PLEC-TŌB-EPH'-AL-US. See *Plēctōs* (twisted).
PLĒC-TRAN'-THUS. See *Plēctrōn* (a spur). The length of the first syllable distinguishes this word from the compounds of *Plēctōs* (twisted).
PLOC-OG-LŌT'-TIS. See *Plōcō* (a twining).
PO-GŌG'-YN-E. See *Pōgōn*, *pōgōnōs* (a beard), and *Gyne* (a woman).
POL-Y-AC-AN'-THA. See *Pōlys* (much, many).
PO'-FUL-US. The first syllable is long, though generally pronounced short, as in *pōpulus* (a people). Virgil has

Pronouncing Dictionary—continued.

"*Pōpulus in fluvio, abies in montibus altis*," and the old memorial line runs—"Sunt cives urbis pōpulus, sed pōpulus arbor."
FOR-PHYR-AN'-THA. See *Pōrphyrōs* (purple).
FRAS-AN'-THĒ-A. See *Prāsōn* (a leek).
PRĪ'-MUL-A. Generally pronounced "Prīm-mula"; but the first syllable is long, from the Latin *primus* (first). Lindley and Hooker give it correctly.
PRUM-NŌF'-IT-Y-S. See *Pītys*, *Pītys* (a Pine-tree).
PSI'-LA. See *Psilōs* (bare).
PSY'-CHE. See *Psychē* (the soul, a butterfly).
PTER-OC-AR'-PUS. See *Ptērōn* (a feather, leaf).
PTIL-OC-NE'-MA. See *Ptīlōn* (a feather).
PYR-AC-AN'-THA. See *Pyr*, *pyrōs* (a fire).
PY-RE'-NA. This word is not a generic name, but a technical term. For generic names from the same root, see *Pyrēn*, *pyrēnōs* (a kernel, fruit-stone).
PYR-ETH'-BUM. See *Pyr*, *pyrōs* (a fire). Lindley, Hooker, &c., give *Pyrēthrum*; Glaser rightly, *Pyrēthrum*, from Greek *Pyrēthron* (πυρῆθρον).
PYE'-US. The true Latin form is *Pirus*. Lindley gives it correctly; Hooker and Alcock wrongly, *Py'-rus*.
QUEL'-TI-A. *Quell* should be italicized.
RACH-IRH-I'-ZON. See *Rāchis* or *rāchīs*, *rāchōs* (the back).
RA-DI'-CANS. Generally pronounced like the English "radical"; but the first two syllables are long, from *rādix*, *rādīcis* (a root).
RAD'-I-OL-A. This word, a diminutive of *rādīus*, has had much the same fate as *Glūt'-iōlus*, a diminutive of *glūdīus*. It is often called *Rādīō'-la*, sometimes *Rādī-ōla*; and by very few correctly, *Rād'iōla*, with all the syllables short. One book actually prints it "Ray-di-ō-lah," Hooker has *Rādī'ola*; Alcock gives that and the correct form.
RA-NUN'-CUL-US. First syllable long, from *rāna* (a frog).
RAPH-ID-AC-AN'-THA. See *Rāphis* or *rūphis*, *rāphidōs* (a needle).
RHAPH-ID-OPH'-OR-A. In this word we have a more correct spelling of *Raphidophora*. See the remarks at the beginning of List of Root-words.
RHI-NAC-AN'-THUS. See *Rhis*, *rhinōs* (the nose).
RHI-PID-OD-EN'-DRON. See *Rīpis* or *rhipis*, *rhipidōs* (a fan).
RHI-ZOB'-I-US. See *Rhiza* (a root).
RHOD-OD-EN'-DRON. See *Rhōdōn* (a rose). The first syllable is short.
RHYT-ID-AN'-DRA. The first two syllables are short from *Rhytis*, *rhytidōs* (wrinkles, wrinkles), a wrinkle.
ROS'-A. Although the English word "Rose" and the girl's name "Rosa" are pronounced with the o long, the Latin *Rōsa* has it short. It is connected with *Rhōdōn*, just as *Lilium* is connected with *Lirion*. Lindley (in Paxton, 1840) gives it correctly; Lindley (in Loudon 1829), Hooker, Alcock, and the rest, wrongly, *Rō-sa*.
RUB'-ER, and its derivative (See *Vaniček*, p. 14).
RUB'-US, have the first syllable short: "*Mella suant illi, ferat et rābus asper amomum*." Virgil. The textbooks are divided, as in the case of *Rosa*.
SAX-IF-RAG-A. "The Stone-breaker." Compare *os-sif-rag-um* (bone-breaking). All authorities of any worth, either in English or German, give this word correctly *Sax-if'-rāg-a*; but a book which seems to aim at being a handy little compendium of every vulgar error in pronunciation (and, indeed, has a certain amount of usefulness in that way), prints it "Sax-i-frā-gah." This sound is, unfortunately, often heard.
SCAPH'-A. See *Scāphē* (a boat, skiff).
SCHEN-OF-RAS-UM. See *Prāsōn* (a leek). Alcock gives it wrongly *-pra-sum*, and the "authority" mentioned under *Saxifraga* boldly writes "Skee-nō-pray-sum"! All others correctly.
SCI-AD-OC'-AL-YX. See *Sciās*, *sciādōs* (a shade, an umbrella).

Pronouncing Dictionary—continued.

SCLA'-BĒ-A. This word is a late Latin one, occurring in the work of Walafrid Strabo, and should therefore not be italicised.

SCLĒ-RAN'-THUS. The first syllable long, from the Greek *σκληρός* (*sklēros*) hard.

SEC-A'-LE. The Latin *Sēcale*: it is sometimes wrongly pronounced *Sec'-ūl-e*, and sometimes in two syllables exactly like the English sea-kale.

SĒD'-UM. The first syllable is almost always sounded with a long *e*, and is so given in many books; but the Latin word used by Pliny is *Sēdum*.

SE-MĪ-A-LA'-TA. The Latin *sēmī*, half, like the corresponding Greek *Hēmī* (which see among the Root-words), has the first syllable long.

SEN-EC'-I-O. This is an old Latin word used by Pliny, and has the second syllable short.

SE-TA'-CĒ-A. This and several words beginning with the same letters come from the Latin *sēta* (a bristle). Compare *brevisēta*.

SID-E-RI'-TIS. See *Sīdērōs* (iron).

SIPH'-O. See *Siphōn*, *siphōnōs* (a reed, tube).

SIPH-OC-AM'-PYL-OS. See *Siphōn*, *siphōnōs* (a reed, tube) and *Campylōs* (curved).

SI-TOC-O'-DI-UM. See *Sitōs* (Wheat).

SO-LE'-NA. See *Sōlēs* (a pipe).

SOPH'-I-A. See p. 347. This is the Greek *σόφια* (*sōphia*), wisdom. Lindley and Hooker give *Soph'-i-a* wrongly; but Alcock corrects the form into *Soph'-ia* in his "Additions and Corrections."

SO-ROC-EPH'-AL-US. See *Sōrōs* (a heap).

SPATH-A'-CĒ-A. See *Spāthē* (a blade, flower-sheath).

SPER-MAC-O'-CĒ. From *σπέρμα* (*akwōn*). Compare *Ac-o'-kan-the'-ra*, p. 277.

SPHER-OTH-E'-LE. See *Thēlē* (a teat).

SPHER-NAN'-DRA. See *Sphēr*, *sphērōs* (a wedge).

SPI-LAN'-THĒS. See *Spīlōs* (a spot).

SPI-RE'-A. See *Spira* or *spēira* (a coil).

SPOR-AD-OC-AR'-PUM. From the Greek *σπώρας*, *spōrādōs* (*σποράς*, *sporados*), scattered. See *Spōrā* (a seed).

STACH-Y-OP-O'-GŌN. See *Stachyōs*, *stachyōs* (an ear of corn).

STAN'-LEY-A. Lindley thus gives the pronunciation of this name, in accordance with that of the surname from which it comes; but Wittstein and others, erroneously, *Stan-ley-a*. See p. 348.

STAPH-YL-E'-A. See *Stāphylē* (a cluster of grapes).

STEM-O'-DI-A. See *Stēmōn* (the warp, a stamen).

STEN-OC-AR'-PUS. See *Stēnōs* (narrow).

STEPH-AN-AN'-DRA. See *Stēphōs* and *Stēphānē* (a crown).

STI-PIT-A'-TUM. See note on *albo-stipes*.

STOKES'-I-A. Even Lindley gives this *Stokēsā*. For a full discussion of the word, see p. 348.

STROB'-IL-A. See *Strōbillōs* (a fir-cone).

STY-LAN'-DRA. See *Stylōs* (a pillar, style). The termination *-stilis*, has been given as short all through the Pronouncing Dictionary, since the authors of the names in which it occurs held the old belief that the Latin *stylus* was the representative of the Greek *στῦλος* (*stūlos*). This etymology has now been proved quite groundless, as *stylus* is a mistake for *stilus*, coming from the root *stīg* (compare *Vaniēk*, Lewis and Short, &c., *sub voc.*): in strict accuracy, therefore, the termination ought to be *-stīlis*.

SU'-BER, cork, has the first syllable long, the second short; from it comes

SU-BER-O'-SA, corky, which is pronounced similarly, and which differs completely from

SUB-E-RO'-SA, slightly indented; this has the first syllable short, the second long. See Martyn, *sub voc.*

SY-RES'-I-A. Delete the first hyphen. See also discussion of the word on p. 348.

SYN-AR'-RHEN-A. See *Arrhēn*, *arrhēnōs* or *arrēnōs* (a male).

SY-RING'-A. See *Syrīnx*, *syrīngōs* (a pipe).

THEC'-A. This generic name comes from the Malabar

Pronouncing Dictionary—continued.

thēka or *tekka*, which is also seen in *Tec'-ton-a*; it is to be carefully distinguished from the Latin *thēca*, Greek *Thēcē* (*θήκη*), which see.

THE'-LA. See *Thēlē* (a teat).

THE-LYG-ON'-Ē-X. See *Thēlyōs* (female).

THE'-SL-UM. Better *The-sl'-um*. It is the *Thēseidōn* (*θήσειδων*) of Theophrastus, Pliny's *Thēsion* (Lewis and Short). White and Riddle give *Thēsium*, Withering, Lindley, and others, *Thēsium*.

THU-RIF-RA'-GA. This word, meaning odoriferous, is not connected with the *-frāga* in *Saxifrāga*.

THYM'-US. The Greek *Thymos* (*θύμος*), Thyme, has the first syllable short, and is thereby distinguished from *thymos* (*θυμός*), the soul. Although the quantity appears plainly in a well-known line of the *Æneid*: "*Fervet opus, redolentique thymo fragrantia mella.*" Lindley and his followers all mistake the pronunciation of the word.

TRA-CHYC-AR'-PUS. See *Trāchys* (rough).

TRAG'-I-A. See *Trāgōs* (a he-goat). The name is really commemorative of Jerome Boek. See p. 348.

TRICH-AN'-THA. See *Trīchōs* (hair).

TRI'-TIC-UM. The third syllable long (compare Alcock, "Additions and Corrections"), to be distinguished from *Tri'-om-a*.

TRIT-OM-A, the Greek *trītōmos* (*τρίτομος*), thrice-cut. See *Tōmē* (a cut). Lindley, followed by McNicoll, gives *Trītōma*; Wittstein and Glaser rightly *Tritōma*.

TROP-Æ'-OL-UM. A vulgar rendering is *Trop-a-o'-lum*.

TROP-ID'-YA. See *Trōpīs*, *trōpīlōs* (a keel).

TUB-A'-TA. The *u* in *tūba* (a trumpet) is short, and the words which contain *tūba* should be pronounced differently from those formed from

TU'-BER, which has the first syllable long.

TYL-OC-H-I'-LUS. See *Tylōs* (a knot).

UM-BIL-I'-CUS. Often pronounced as if it were "Um-billy-cus."

U'-NED-o. Few words could present less difficulty as to pronunciation. It comes from *ūnus* (one) and *ēdo* (I eat)—since no one had the courage to eat a second—and the word *Unēdo* itself is found in Pliny. Withering, who took much pains about pronunciation, gives it correctly; but Lindley, followed as usual by Alcock, Hooker, &c., have *Unēdo*, and they have succeeded in making people say, "You-need-oh."

U-ROC-Y'S-TIS. See *Ourā* (a tail).

UR-TI'-CA. Often wrongly pronounced *Ur-tic-a*. It is so given by Lindley (in Paxton), and by Alcock, who afterwards corrected it.

VAC-CI'-NI-UM. The second syllable is long, as in Virgil's "*Alba ligustra cadunt, vaccinia nigra leguntur.*"

VAG'-ANS. The first syllable is short, while the similar combination of letters in *vaginalis*, &c., is long.

VER-ON-I'-CA. This mediæval word is probably a Latin form of the Greek *Bērōnikē* (*Βερωνίκη*). (See Karl Pearson's "Die Fronica.") Many other derivations have been ascribed, such as the Arabic *virōo nikoo* (beautiful remembrance)! Withering says quaintly, "In *Veronīca* the *Ni* is to be the accented syllable, and not the *Ro*, which is a common error." Alcock, who adopts the derivation, *hiera eicon* (*ἱερά εἰκών*), sacred image, follows him in this; Lindley, Hooker, &c., persist in the "common error."

VE-SI-CA'-BI-A. The first two syllables in this and the five following words on p. 343 are long. They are very frequently pronounced as if short.

WAG'-NER-I. Delete the long mark over a in this and three following words on p. 344. The *w* in words derived from German proper names is generally sounded as our *v*.

XE-RAN'-DRA. See *Xērōs* (dry).

XIPH-ID'-I-UM. See *Xiphōs* (a sword).

XYL-AC-AN'-THA. See *Xylōn* (wood).

ZA'-MI-A. See *Zēmia* (loas).

ZO-STE'-EA. See *Zōstēr* (a belt).

ZYG-AD-E'-NUS. See *Zygōn* (a yoke).

Pronouncing Dictionary—continued.

LIST OF GREEK ROOT-WORDS.

From which a large number of Botanical Names are derived.

The words given in the original Greek characters are often very helpful in showing what is the correct pronunciation, as the Greek alphabet has different letters for long and short vowels: $\epsilon = \check{e}$, as *ἀνθεμίς* = anthēmīś; $\eta = \bar{e}$, as *ἀνθήρα* = anthēra; $\omicron = \delta$, as *βρόμος* = brōmos; $\omega = \bar{o}$, as *βρώμα* = brōma. When Greek words are written in Latin characters, *ei* is often represented by *i*, as *χειλος* = cheilos or chilos; *ou* by *ū*, as *οὐρά* = oura or ūra; *ai* by *æ*, as *χάμαί* = chamæ. The Greek *υ* is generally represented by the Latin *y*, and the terminations *-os* and *-on* are frequently written in Latin as *-us* and *-um*; e.g., *βρύον*, moss, appears in botanical nomenclature as *Bryum*, as well as *Bryon*. Of the consonants, the Greek κ becomes in Latin *c*, χ is represented by *ch*, and $\gamma\gamma$ by *ng*: *καλός* = calos, *χρυσός* = chrysos, *ἀγγεῖον* = angion. The aspirate, or rough breathing [$\text{'}\text{}$] ought to be represented by *h*; but this is sometimes incorrectly omitted in botanical names: for instance, from *ἀρρῆν* (arrhēn) we find *arrenum* as well as *arrhena*; and *ῥαφίς* (rhapīs) produces *Raphidophora* as well as the more correct *Rhaphidophora*. In this list, words in which the root appears as a prefix are divided by a colon from words in which it appears as a postfix; the semicolons separate the different forms of the prefixes or postfixes. The words themselves are divided internally by hyphens in accordance with their etymology, not as in the body of the Pronouncing Dictionary.

ROOT-WORD.

EXAMPLES OF DERIVATIVES.

Ἄchyrōn (ἄχυρον), chaff	Ἀchyr-anthes, Ἀchyr-acantha; Ἀchyrō-nia, Ἀchyrō-pappus.
Ἄcis, ἄcidōs (ἄκίς, ἰκίδος), a point	Ἀci-notus, Ἀci-phylla; Ἀci-d-andra; Ἀci-santhera.
Ἄctis, actinōs (ἄκτις, ακτίνος), a ray	Actino-carpus, Actino-lepis, Actino-meris, Actino-nema.
Ἄdēu, adēnōs (ἀδήν, ἀδένας), a gland	Ἄdēn-andra, Ἄdēn-anthera; Ἄdēno-carpus, Ἄdēno-phora; Dipl-ādēnia, Gymn-ādēnia; Myri-ādēnus, Tachi-ādēnus.
Ἄgāthōs (ἀγαθός), good	Ἄgāth-a, Ἄgāth-is; Ἄgāthō-meris, Ἄgāthō-phyllum; Lepid- agāthis, Phyll-agāthis.
Ampēlōs (ἄμπελος), a vine	Ampēl-opsis; ampēlō-phagum, Ampēlō-sicyos; Ciss- ampēlōs.
Angeiōn or Angiōn (ἀγγεῖον), a vessel	Angi-anthus; Angiō-pteris; Anceot-angium.
Anthēmōn (ἀνθεμῶν), a flower	Chrys-anthēmum, Heli-anthēmum, Leuc-anthēmum, Mesembry-anthēmum.
Anthēra (ἀνθήρα), an anther	Acis-anthēra, Cephal-anthēra, Cyrt-anthēra, Plat-anthēra.
Argyros (ἄργυρος), silver	Argyr-eia, Argyrō-chæta, Argyrō-phyton, argyrō-stigma.
Arrhēn, arrhēnōs or arrēnōs (ἄρρην, ἄρρηνος) a male	Gloss-arrhēn; Odont-arrhēna, Syn-arrhēna; Dis-arrēnum.
Bālānōs (βάλανος), an acorn	Bālān-ites; Bālānō-ptoris; Chryso-bālānūs, Myro-bālānūs.
Bāryś (βαρύς), heavy	Bāry-andra, Bāry-oma, bāry-stachys, Bāry-xylon.
Bēlōs (βέλος), a dart	Bēlō-perone, bēlō-phorus, bēlō-phyllum.
Bīōs (βίος), life	Biō-phytum, Biō-rhiza; Ammo-bium, Dendro-bium, Petro- bium. [blēphāria]
Blēphāris (βλεφαρίς), an eyelash	Blēphāris, blēphāri-glottis; Calli-blēphāris, Carpi- blēphārō-phylla; Octo-blēphārōn.
Blēphārōn (βλέφαρον), an eyelid	Bōtrŷs; Bōtrŷ-anthus; Bōtrŷō-dendron; Poly-bōtrŷs; Adelo-bōtrŷs, Lenco-bōtrŷs, macro-bōtrŷs.
Bōtrŷs, bōtrŷōs (βότρυς, βότρυος), a cluster	Brāchŷ-chiton, Brāchŷ-come, Brāchŷ-loma, Brāchŷ- rhynchos, Brāchŷ-sema.
Brāchŷs (βραχύς), short	Bu-brōma (Bulls' Food), Ono-brōma (Asses' Food), Theo- brōma (the Gods' Food), Hippo-brōmus (Horses' Food).
Brōma (βρώμα), food	Bū-ceras (Bull's Horn), Bū-cephalon (Bull's Head), Bū- glossum (Bull's Tongue, "Oxtongue")
Būs (βούς), an ox, a bull	

Pronouncing Dictionary—continued.

ROOT-WORD.

EXAMPLES OF DERIVATIVES.

Cälös (καλός), beautiful	Cäl-anthe; Cäl- <i>ea</i> , Cälö-chilus, Cälö-dendron, Cälö-pogon.
Cälÿpträ (καλίπτρα), a veil	Cälÿptr-anthos, Cälÿptr-ion; Cälÿptro-calyx, Cälÿptro-gyne, Cälÿptro-noma.
Cälÿx, cälÿcös (κάλυξ, κάλυκος), a covering, calyx	Cälÿo-anthus, Cälÿo-ium; Cälÿö-stemma, Cälÿö-tome; Physo-cälÿoium Calÿptro-cälÿx, Macro-cälÿx.
Cämpÿlös (καμπύλος), curved	Cämpÿl-anthera; Cämpÿlö-botrys, Cämpÿlö-centron, Cämpÿlö-neuron; Siphö-cämpÿlös.
Cärÿöñ (κάρυον), a nut, fruit-stone	Cärÿ-a; Cärÿö-phyllus, Cärÿö-pteris, Cärÿö-taxus; Lepido-cärÿa, Ptero-cärÿa; Astro-cärÿum, Para-cärÿum.
Cöphälé (κεφαλή), a head	Cöphäl-anthera, Cöphäl-otus: a-cöphälä; Bu-cöphälön; Dasy-cöphälum; Dracoöcephalus; Cerato-cöphälus.
Cörä's, öörätös (κέρας, κέρατος), a horn	Cörä's-tium; Cöratö-cephalus, Cöratö-chilus, Cöratö-daetylis; Brachy-cörä's, Bu-cörä's, Lepto-cörä's.
Chämæ (χαμαι), on the ground, dwarf	Chämæ-batia, Chämæ-buxus, Chämæ-cerasus, Chämæ-cistus.
Chäris, chärütös (χάρις, χάριτος), grace, beauty	Chäri-anthus, Chäri- <i>eia</i> : Ammo-chäris, Eu-obäris, Hydro-chäris, Limno-chäris, Oreö-chäris.
Cheilös or chilös (χείλος), a lip	Cheil-anthes; Cheilös-andra; Chilö-gnatha: Anæcto-chilus, Crypto-chilus; chloro-chilum, macro-chilum.
Cheima or chîma, chimütös (χείμα, χειματος) cold, winter	Chimä- <i>phila</i> ; Cheimätö- <i>bia</i> ; Chimon-anthus (from chimön, chimönos = winter). [myces.
Cheir or chir, chirös (χείρ, χειρός), a hand	Choir-anthus; Cheirö-glossa, Cheirö-stemon; Chirö-
Chîön, chîönös (χιών, χιονος), snow	Chîön-anthus, Chîön-aspis; Chîönö-doxa, Chîönö-graphis.
Chîtön, chîtönös (χιταν, χιτώνος), a tunic	Chîtön- <i>ia</i> : Diplo-chîta; Brachy-chîtön, Rhodo-chîtön.
Chlämÿs, chlämÿdös (χλαμÿς, χλαμÿδος), a cloak	Chlämÿd- <i>ia</i> ; Chlämÿdö-stylis; Chlämÿ- <i>sporium</i> : Allo-chlämÿs, Diplo-chlämÿs.
Chlöä (χλοά), grass	Chlö-anthes, Chlö-opsis: Echino-chlöä; Hiero-chlöä.
Chlörös (χλωρός), green	Chlör-a, Chlör-antha; Chlörö-galum, Chlörö- <i>phytum</i> .
Chróä (χροά), colour	Calli-chróä, Di-chróä, Eu-chróä, Salpi-chróä.
Chrómä, chrómätös (χρώμα, χρώματος), colour	chrómät- <i>ella</i> : Di-chróma, Eu-chróma, penta-chrómun.
Chrysös (χρυσός), gold	Chrys-anthemum, Chrys-urus; Chrysö-balanus, Chrysö-gonum; Eli-chrysum, Heli-chrysum, holo-chrysum.
Clädös (κλάδος), a branch	Cläd- <i>ius</i> ; Clädö-bium, Clädö- <i>sporium</i> : acro-clädön, ptero-clädön; Macro-clädus, Phyllo-clädus; Como-clädia; tricho-cläda.
Clinë (κλίνη), a couch	Clinë-podium, Clinë-stylis: Eury-clinë; Acro-clinium, Coma-clinium, Mega-clinium; Platy-clinis.
Cnëmë (κνήμη), the leg	Erio-cnëma, Ptilo-cnëma; Macro-cnëmun, Poly-cnëmun.
Cödön, cödönös (κώδων, κωδώνος), a bell	Cödön- <i>ium</i> ; Cödönö-phora: Phæno-cödön, Platy-cödön.
Cömë (κόμη), hair	Cöma-clinium; Cöme-sperma: acantho-cöma, Calli-cöma, Chryso-cöma; Amphi-cöme, Brachy-cöme.
Cöñös (κώνος), a cone	Cön-andron, Cönö-carpus, Cönö-clinium, Cönö-spernum.
Cörÿs, cörÿthös (κόρυς, κόρυθος), a helmet	Cörÿ-anthes; Cörÿs-anthera, Cörÿth-acanthus.
Cörÿñë (κορύνη), a club	Cörÿñë-um; Cörÿñö-carpus; Crypto-cörÿne.
Ctöñös (κτονος), a murder	Cyno-ctönum (dog-slaying), lyeo-ctönum (wolf-slaying), melo-ctönnum (badger-slaying).
Cÿänös (κύανος), dark blue	Cÿän-anthus, Cÿän- <i>ella</i> , Cÿän- <i>otis</i> , Cÿän- <i>us</i> ; öÿänö-carpus, Cÿänö-phyllum.
Cÿäthös (κύαθος), a cup	Cÿäth- <i>ea</i> , Cÿäth- <i>odes</i> ; Cÿäthö-coma, Cÿäthö-phora.
Cÿön, cÿñös (κύων, κύνος), a dog	cÿn-anchia, Cÿn-anchum, Cÿn-odon; Cÿñö-crambe, Cÿñö-ctonum: Apo-cÿnum.
Cÿphös (κυφός), bent, round	Cÿph- <i>ia</i> , Cÿph-iella; Cÿphö-kontia, Cÿphö-sperma.
Däctÿlös (δάκτυλος), a finger	Däctÿli-carpus; Däctÿlö-ctenium; Cerato-daetylis, Penta-däctÿlis; Poly-däctÿla; Lepto-däctÿlöu.
Däsÿs (δασύς), thick, hairy	däsÿ-antha, Däsÿ-chira, Däsÿ-lirion, däsÿ-phylla.
Dëcä (δέκα), ten	dëcö-andra; Dëcö-belone, Dëcö-spernum, Dëcö-spora.
Dërma, dërmätös (δέρμα, δερματος), skin	Dërmätö-phora, Dërmätö-carpon: Peri-dërmium; Lepto-dërmis; Caly-dërmos.
Dichä (δίγα), in two, asunder	Dich- <i>es</i> , Dich-opsis; Dichö-sëma, Dichö-toma.
Dictÿön (δικτυον), a net	Dictÿ-anthus; Dictÿö-gramme, Dictÿö-pteris, Dictÿö-sperma: Calo-dictÿön; Hemi-dictÿum.
Dídÿmös (δίδυμος), twin	Dídÿmö-carpus, Dídÿmö-chlöna, Dídÿmö-sperma.
Dölichös (δολιχός), long	Dölichös, Dölichö-gyne, dölichö-centra, dölichö-rhiza.
Dörön (δώρον), a gift	Dör- <i>ema</i> : Geo-dörum, Hæmo-dörum, Limo-dörum.
Dörÿ, dörätös (δάρυ, δώρατος), a spear	Dörÿ-anthes; Dörÿö-pteris; Dörät-anthera; Dörätö-lepia.

Pronouncing Dictionary—continued.

ROOT-WORD.

Drácōn, drácōntōs (δράκων, δράκοντος), a dragon
 Drŷs, drŷōs (δρŷς, δρŷός), an oak
 Ēchīs, ēchīōs (ἔχιδας, ἔχιδας), a viper, an adder
 Ēchīnōs (ἐχίνος), a hedgehog
 Eidōs or idōs (εἶδος), appearance
 Ērēmōs (ἐρήμος), desert, solitary
 Ērīōn (ἔριον), wool
 Ērŷthrōs (ἐρυθρός), red
 Gālā, gālāctōs (γάλα, γάλακτος), milk
 Gālēō (γαλέη), a weasel
 Geitōn or gētōn, (γείτων) a neighbour
 Glōssa (γλῶσσα), a tongue
 Glōttīs, glōttīdōs (γλωττίς, γλωττίδος), a mouth-piece
 Glŷcŷs (γλυκύς), sweet
 Gōnīa (γωνία), an angle
 Gōnōs (γόνος), offspring
 Gōnŷ, gōnītōs (γόνυ, γόνατος), the knee
 Gŷnē, gŷnaikōs (γυνή, γυναικός), a woman
 Gŷrōs (γυρός), curved, round
 Hēbō (ἡβη), youth
 Hēdŷs (ἡδύς), sweet
 Hēlīōs (ἥλιος), the sun
 Hēmērā (ἡμέρα), the day
 Hēmī (ἡμί), half
 Hēsperōs (ἑσπερος), evening
 Hētērōs (ἕτερος), another, different
 Hōlōs (ὅλος), whole, perfect
 Hōmālōs (ὁμαλός), even, smooth
 Hŷdōr, hŷdātōs (ὕδωρ, ὕδατος), water; in compounds, hŷdrō (ὕδρον)
 Hŷmēn, hŷmēnōs (ὕμην, ὑμένος), marriage; y short in Latin
 Hŷpēr (ὑπέρ), above, superior
 Hŷpō (ὑπό), beneath, inferior
 Hŷs, hŷōs (ὕς, ὕος), a pig
 Hŷstērōs (ὕστερος), later, lower; hystera (ὕστερα), matrix
 Iōn (ἴον), a violet
 Iāgōs (λαγώς), a hare
 Lāsīōs (λάσιος), rough, hairy
 Lēcānō (λεκάνη), a dish
 Lēcŷthōs (λήκυθος), an oil-flask
 Leimōn or limōn, limōnōs (λειμών, λειμώνος), a meadow
 Leirīōn or lirīōn (λειρίον), a lily
 Lēōn, lēōntōs (λέων, λέοντος), a lion
 Lēpīs, lēpīdōs (λεπίς, λεπίδος), a scale

EXAMPLES OF DERIVATIVES.

Drāc-ōna; Drācō-cephalum; Drācōnt-ium: Calo-drācōn; Pseudo-drācōntium.
 Drŷō-balanops, Drŷō-pteria, Drŷō-stachyum: Chamādrys, Chamæ-drŷōn.
 Ēchī-nūm, Ēchī-opsis; Ēchīō-glossum, Ēchīō-ides.
 Ēchin-anthus; Ēchinō-caactus, Ēchinō-spermum.
 asphodelo-īdēs, asparago-īdēs, asaro-īdēs, dactylo-īdēs, Echīo-īdēs; Ion-īdium, Ionops-īdium.
 Ērēm-ia, Ērēm-urus; Ērēmī-cōla; Ērēmō-phila, Ērēmō-stachys.
 Ērī-a, Ērī-opsis; Ērīō-botrya, Ērīō-chilus, Ērīō-pappus.
 Ērŷth-ea; Ērŷthr-ina, ērŷthrō-rachis; Ērŷthrō-xylon.
 Gāl-anthus; Gālact-ia, Gālact-ites; Gālactō-dendron: Poly-gāla, Ornitho-gālum.
 Gālō-opsis; Gālō-bdolon, Gālōō-glossum.
 Ammo-gētōn, Apono-gētōn, Potamo-gētōn.
 Glōss-anthus; Glōssō-comia, glōssō-mystax: Cheiro-glōssa Rhyti-glōssa; Bu-glōssum, Ophio-glōssum.
 Glōttīd-ium; Blephari-glōttīs, Dasy-glōttīs, Hexa-glōttīs Lepto-glōttīs, Sarco-glōttīs, Tricho-glōttīs.
 Glŷc-ine, Glŷc-osmia; glŷcŷ-phyllōs, Glŷcŷr-rhiza.
 Gōnīō-phlebium, Gōnīō-pteria; Gōnō-calyx, Gōnō-stemon Tri-gōnla, Tetra-gōnla; Aniso-gōnium, Oxy-gōnium Chryso-gōnum, Poly-gōnum (?), Thely-gōnum.
 Gōnŷ-anthes; Gōnāt-anthus, gōnāt-odes; Gōnātō-pus.
 Gŷn-andropsis; Gŷnō-cephala: Ancycolo-gŷnē, Calo-gŷnē Pleuro-gŷnē; Cerato-gŷnum; andro-gŷnus.
 Gŷr-andra; gŷrō-bulbon, Gŷrō-stachys, Gŷrō-theoa.
 Hēbē-andra, hēbē-carpum, Hēbē-cladus, Hēbē-clinium.
 Hēdŷa, Hēdŷ-andra, Hēdŷ-osmum, Hēdŷ-scepe.
 Hēll-anthus, Hēll-opsis; Hēllō-carpus, Hēllō-tropium.
 Hēmērō-bius, hēmērō-biella, Hēmērō-callia.
 Hēmī-andra, Hēmī-dictyum, Hēmī-meris, Hēmī-onitas.
 Hēsper-antha, Hēsper-is, Hēsper-īdium; Hēsperō-scordon hētēr-acantha, Hētēr-actis, Hētēr-anthera; Hētērō-phlebium, Hētērō-ptera, Hētērō-theoa.
 hōlō-chrysum, Hōlō-discus, Hōlō-gymne, Hōlō-schœnus
 Hōmāl-anthus, Hōmāl-ium; Hōmālō-nema.
 Hŷdr-angea; Hŷdrō-charis, Hŷdrō-phyllum.
 Hŷmēn-andra, Hŷmēn-anthera; Hŷmēnō-callis, Hŷmēnō-dictyon, Hŷmēnō-phyllum: Calyx-hŷmēnia.
 Hŷpēr-anthera, Hŷpēr-ales.
 Hŷp-ericum; Hŷpō-calymma, Hŷpō-glaucia, Hŷpō-lepis
 Hŷō-phorbe, Hŷō-spathe; Hŷōs-cyamus.
 Hŷtēr-ia, Hŷtēr-ium; Hŷtērō-carpus, Hŷtērō-nica.
 Iōn-antha, Ion-opsis; Iōnō-charis, Iōnō-ptera: Lenoo-I Lāgō-pus (Hare's Foot); lāg-otis (Hare's Ear).
 Lāsī-andra; Lāsīō-nema, Lāsīō-petalum, Lāsīō-pus.
 Lēcān-ium, Lēcān-ora, Lēcān-otis; Lēcānō-pteria.
 Lēcŷth-ea, Lēcŷth-is, Lēcŷth-īdēs, Lēcŷth-opsis.
 Līmōn-ium; Līmōnī-astrum; Līmōnī-folium: Acantha līmōn.
 Lirī-anthe; Lirīō-dendron; Pyro-lirīon; Chamæ-lirīum
 Lēōn-otis, Lēōn-urus; Lēōnt-odon; Lēōntō-podium
 lēōntō-glossa: Chamæ-lēōn.
 Lēpīd-agathis, Lēpīd-ium; Lēpīdō-culon, lēpīdō-phylls Actino-lēpis, Iso-lēpis, Lopho-lēpis, Platy-lēpis.

Pronouncing Dictionary—continued.

ROOT-WORD.

Lōbōs (λοβός), a lobe
 Lōmā, lōmātōs (λῶμα, λώματος), a border, fringe
 Lōphōs (λόφος), a crest
 Lōrōn (λῶρον), a thong
 Lŷcōs (λύκος), a wolf
 Mācrōs (μακρός), long
 Mēcōn, mēcōnōs (μήκων, μήκωνος), a poppy
 Mēgās, mēgālōn (μέγας, μεγάλην), big
 Mēlās, mēlānōs (μέλας, μέλανος), black
 Mēli, mēlitōs (μέλι, μελίτος), honey
 Mēlōn (μήλον), an apple
 Mēlōs (μέλος), a limb, member
 Mēris, mēridōs (μερίς, μερίδος), a part
 Mēsōs (μέσος), middle
 Micrōs (μικρός), little
 Mōnōs (μόνος), alone, solitary
 Mŷcēs, mŷcētōs (μύκης, μύκητος), a mushroom
 Mŷrīōs (μυρίς), countless
 Mŷrōn (μύρον), sweet ointment
 Mŷs, mŷōs (μύς, μύος), a mouse
 Nēma, nēmātōs (νήμα, νέματος), a thread
 Nēphrōs (νεφρός), a kidney
 Nōthōs (νόθος), bastard, spurious
 Nōtōs (νότος), the South; nōtīōs (νότιος), moist southern
 Nōtōs (νώτος), the back
 Ōdous, ōdōntōs (όδοός, όδόντος), a tooth
 Ōlīgōs (όλιγός), little
 Ōmphālōs (όμφαλός), the navel
 Ōnōs (όνος), an ass
 Ōnŷx, ōnŷchōs (όνυξ, όνυχος), a claw
 Ōphis, ōphīōs (όφίς, όφιος), a snake
 Ōrnīs, ōrnīthōs (όρνις, όρνιθος), a bird
 Oura or ūra (ούρα), the tail
 Ous, ōtōs (ός, ότός), an ear
 Ōxŷs (όξύς), sharp, acid
 Pāchŷs (παχύς), thick
 Pānax, pānācōs (πάναξ, πάνακος), panacea, all-heal
 Pārā (παρά), beside, like
 Pēdilōn (πέδιλον), a shoe
 Pēra (πήρα), a wallet
 Pērī (περί), round
 Pētālon (πέταλον), a leaf, petal
 Phīlōs (φίλος), fond
 Phlēps, phlēbos (φλέψ, φλεβός), a vein

EXAMPLES OF DERIVATIVES.

Lōbō-stemon: acuti-lōba, Cocco-lōba; Aniso-lōbā; Amphi-lōbīūm, Astro-lōbīūm, Epi-lōbīūm.
 Lōmā-gramme; Lōm-andra; Lōmātō-gonium, Lōmātō-phylūm; Antho-lōma, Micro-lōma, Platy-lōma.
 Lōph-anthus, Lōph-idium; Lōphō-lepis, Lōphō-sorus; Aleoctoro-lōphūs, Platy-lōphūs; Amphi-lōphīūm.
 Lōr-anthus; Lōrō-glossum, Lōrō-petalum.
 Lŷcō-ctonum, Lŷcō-perdon, Lŷcō-persicum, Lŷcō-podium, mācr-acantha, Mācr-anthus; Mācrō-cladus, Mācrō-enemum, Mācrō-glossa, Mācrō-rhynchus, Mācrō-stigma.
 Mēcōn-opsis, Mēcōn-idium: Dendro-mēcōn, Eo-mēcōn.
 Mēgā-carpha, Mēgā-chile; mēgāl-antha; Mēgālō-theca.
 Mēlā-leuca, Mēlā-stoma; Mēlām-pyrum, Mēlām-psora; mēlām-ops; Mēlānō-pteris: Chryso-mēlās.
 Mēll-anthus, Mēll-cocca, Mēll-cope, Mēll-lotus.
 Mēlō, Mēlō-cactus; Mēlōn-gena: Xylo-mēlūm.
 Aniso-mēles, Hetero-mēles, Octo-mēles, Tetra-mē'es.
 Actino-mēris, Hēmi-mēris, Iso-mēris, micro-mēris; Crypto-mēria, Lepto-mēria; Tetra-mēriūm.
 Mēsō-chlāna, mēsō-chloa, mēsō-leuoum, Mēsō-spinidium; Micr-andra, micr-antha, Micr-anthera; Micrō-coccus; Micrō-loma, Micrō-myrtus: Tetra-miera.
 mōn-acantha, mōn-adelpha, Mōn-orobis; mōnō-ceras, mōnō-chlamys, Mōnō-chilus, Mōnō-lophus.
 Choiro-mŷcēs, Hypo-mŷcēs, Saccharo-mŷcēs, Uro-mŷcēs; Asco-mŷcōtes, Disco-mŷcōtes, Schizo-mŷcōtes.
 mŷrī-acantha, Mŷrī-adenus; Mŷrīō-cephalus.
 Mŷrō-balanus, Mŷrō-broma, Mŷrō-spermum, Mŷrō-xylon.
 Mŷrō-porum, Mŷrō-seris; Mŷrō-otis, Mŷrō-urus.
 Nēm-aconia; Nēmā-stylis; Nēmō-stylis; Nēmāt-anthus; Nēmātō-phylūm: Actino-nēma, Cyclo-nēma.
 Nēphr-andra, Nēphr-anthera; Nēphrō-lepis.
 Nōthō-chlāna, Nōthō-lāna, Nōthō-lirion, Nōthō-acordum
 Nōt-elaea; Nōtō-spartium; Nōti-ophrys; Nōtīō-sphuce.
 Nōtō-ceras; Nōt-odonta: Spilo-nōta; Lysio-nōtus.
 Ōdōnt-adenia, Ōdōnt-arrhena; Ōdōntō-glossum, Ōdōntō-loma: ambly-ōdōn, Brachy-ōdōn, Leont-ōdōn.
 Ōlīg-antha, Ōlīg-osma; Ōlīgō-scias, Ōlīgō-trichum.
 Ōmphāl-andria, Ōmphāl-ia; Ōmphāl-bium.
 Ōnō-broma, Ōnō-brychis, Ōnō-pordon, Ōnō-seris.
 Ōnŷch-ium; Ōnŷchō-sepalum: Dipl-ōnyx, platy-ōnyx.
 Ōphīō-caryon, Ōphīō-desma, Ōphīō-glossum, Ōphīō-pogon
 Ōrnīth-idium; Ōrnīthō-cephalus, Ōrnīthō-chilus, Ōrnīthō-galum, Ōrnīthō-pteris; tri-ōrnīthō-phora.
 Ōrō-cystis, Ōrō-petalum, Ōrō-spatha: Di-ūrīs, Hipp-ūrīs; Ather-ūrīs, Lag-ūrīs, Myos-ūrīs, Scorpi-ūrīs.
 Ōt-acanthus, Ōt-andra, Ōt-anthus; Ōtō-chilus, Ōtō-stemma: Arct-ōtīs, Di-ōtīs, Leon-ōtīs.
 Ōxŷ-acantha, Ōxŷ-cedrus, Ōxŷ-dendron, Ōxŷ-spora.
 pāchŷ-antha, Pāchŷ-chilus, Pāchŷ-loma; Pāchŷs-andra.
 Pānāx: Mono-pānāx, Opo-pānāx, Oreo-pānāx, Pseudo-pārā-caryum, Pārā-gramma, Pārā-nomus, Pārā-tropia.
 Pēdil-anthus, Pēdil-ee; Pēdilōn-ia.
 Pērā-nema: Acro-pēra, Cyrtō-pēra.
 pērī-acanthus, Pērī-clymenum, Pērī-ploca, Pērī-stylis.
 Pētāl-acte; Pētālō-lepis, Pētālō-stemon: Deca-pētāla; Oxy-pētālūm, Uro-pētālūm, Zygo-pētālūm.
 Phīl-adelphus; Phīlō-dendron, Phīlō-gyne: Āgri-phīla, Chima-phīla, Nemo-phīla, Scia-phīla; Geo-phīlūs.
 Phlēbī-gonium; Phlēbīō-phylūm; Eu-phlēbia, Phanero-phlēbia; Gonio-phlēbīūm, Hetero-phlēbīūm.

Pronouncing Dictionary—continued.

ROOT-WORD.

Phōrōs (φορός), bearing, producing
 Phýllon (φύλλον), a leaf
 Phýsa (φύσα), a bladder, bellows
 Phýtōn (φυτόν), a plant
 Pīlōs (πίλος), a hat
 Pītýs, Pītýōs (πίτυς, πίτυος), a pine-tree
 Plāgīōs (πλάγιος), oblique
 Plātýs (πλατύς), flat, broad
 Plēctōs (πλεκτός), twisted
 Plēctrōn (πλεκτρον), a spur
 Plōcō (πλοκή), a twining
 Pōgōn, pōgōnōs (πάγων, πάγωνος), a beard
 Pōlýs (παλύς), much, many
 Pōrōs (πόρος), a passage, ford
 Pōrphýrēōs (πορφύρεος), purple
 Pous or pūs, pōdōs (πούς, ποδός), a foot
 Prāsōn (πράσον), a leek
 Psīlōs (ψιλός), bare
 Psýchē (ψυχή), the soul, a butterfly
 Ptēris, ptēridōs (πτέρις, πτέριδος), a fern
 Ptērōn (περόν), a feather, leaf
 Ptēryx, Ptērygōs (πετερύξ, πτέρυγος), a wing
 Ptilōn (πτίλον), a feather
 Pýr, pýrōs (πύρ, πυρός), a fire
 Pýrēn, pýrēnōs (πυρήν, πυρήνος), a kernel, fruit-
 stone
 Pýrōs (πυρός), Wheat
 Rāchīs or rhāchīs, rhāchīōs (ράχις, ράχιος), the
 back
 Rāphīs or rhāphīs, rhāphīdōs (ραφίς, ραφίδος), a
 needle
 Rhīs, rhīnos (ρίς, ρινος), the nose
 Rhīza (ρίζα), a root
 Rhōdōn (ρόδον), a rose
 Ripīs or rhīpīs, rhīpīdōs (ρίπις, ρίπιδος), a fan
 Rōps or rhōps, rhōpōs (ρώψ, ρωπός), a shrub
 Scāphē (σκάφη), a boat, skiff (Latin, scapha)
 Scīas, scīādōs (σκιάς, σκιάδος), a shade, an umbrella
 Sēma and sēmeiōn (σημα and σημείον), a mark
 Sērīs (σέρις), Sucoory
 Sīdērōs (σίδηρος), iron
 Sīphōn, sīphōnōs (σίφων, σίφωνος), a reed, tube
 (Latin, sīpho).
 Sītōs (σίτος), Wheat
 Sōlēn, sōlēnōs (σωλήν, σωλήνος), a pipe
 Sōrōs (σωρός), a heap

EXAMPLES OF DERIVATIVES.

Phōrō-lobus: Adeno-phōra, Botryo-phōra; Acro-phōrās,
 Belo-phōrās; Erio-phōrām, Stephano-phōrām.
 Phýll-acne, Phýll-amphora; Phýllō-cactus,
 calyx: Cerato-phýlla; Penta-phýllōn; Platý-
 Podo-phýllūm; Carylō-phýllūm.
 Phýsā-ptēris; Phýsō-poda, Phýsō-spermum: Di-phýsa;
 Stephano-phýsūm.
 Phýt-elephas; Phýtō-crena: rhizo-phýta, Xero-phýta;
 Argyro-phýtōn; Anoplo-phýtūm, Chloro-phýtūm.
 Pilē-anthus, pilō-rhiza; Pilō-carpus, Pilō-phora.
 Pītý-opsis: Chamē-pītýs, Prumno-pītýs, Sciado-pītýs.
 Plāgī-anthus; Plāgīō-lirion, Plāgīō-lobium.
 plātý-acantha, Plātý-ohilum, plātý-rhynchos.
 Plēctō-cephalus, Plēctō-gyne, plēctō-lepis: Chello-plēctōn.
 Plēctr-anthera, Plēctr-anthus, Plēctr-itis, Plēctr-urus.
 Plōcō-glottis, Plōcō-stemma: Peri-plōca; Sym-plōcō.
 Pōgō-gyne; Pōgōn-ia; Pōgōn-pus: Andro-pōgōn.
 pōlý-acantha, Pōlý-anthus, Pōlý-gala, Pōlý-gonum.
 Pōr-anthera; Pōrō-stoma: Myo-pōrām; Poly-pōrās.
 pōrphýr-antha; Pōrphýrō-coma, Pōrphýrō-stachys.
 Pōd-anthus; Pōdī-soma; Pōdō-carpus, Pōdō-phylum;
 Brachy-pōda; Cheno-pōdīum, Lyco-pōdīum, Poly-
 pōdīum; Corono-pūs, Lago-pūs, Ornitho-pūs.
 Prās-anthea; Prās-phylum: Sōcōno-prāsūm.
 Psīla; Psīlō-gyne, Psīlō-stoma; Psīlō-anthus.
 Psýchē, Psýche-ohilum; Psýchō-trophum: Calli-psýchē.
 Ptēris; ptēridī-fovia: Acino-ptēris, Acro-ptēris, Angio-
 ptēris, Cysto-ptēris, Struthio-ptēris. [Ano-ptērās.
 Ptērō-carpus, Ptērō-phyton: Cato-ptērōn; Heli-ptērūm:
 Ptērygō-calyx: Tetra-ptērygūm; Tetra-ptērya.
 Ptilō-cnema, Ptilō-stephium, Ptilō-trichum: Acro-ptilōn.
 Pýr-acantha, Pýr-alis, Pýr-ethrum; Pýrō-lirion, Pýrō-
 stegia. [pýrēnum
 Pýrēnō-mycetes: Cato-pýrēnum, Endo-pýrēnum, mono-
 Agro-pýrum, Hydro-pýrum, Iso-pýrum, Lepto-pýrum,
 Melam-pýrum; leuco-pýrus.
 rāchī-rhizon: erythro-rāchīs.
 Rāphī-stemma; rāphīd-acantha; Rāphīdō-phora, Rhā-
 phīdō-phora; Rāphīō-lepis, Rhāphīō-lepis: Pēnta-
 rāphīā, Penta-rāphīā.
 Rhīn-acanthus; Rhīnō-petalum: Antir-rhīnum.
 Rhīzō-bius, Rhīzō-phora: Acantho-rhīza; Glycy-rhīza;
 Xantho-rhīza; macro-rhizon; Pachy-rhīzus.
 Rhōdō-dendron, Rhōdō-rhiza, Rhōdō-thamnus; leuco-
 rhōda, melano-rhōda; Chamē-rhōdōs.
 Ripīd-ium; Rhīpīdō-dendron, Rhīpīdō-pt-ris.
 Chamē-rōps, Dæmono-rōps. [scāphis.
 Scāpha; scāphī-gera; Scāphý-glottis: Loxo-scāpha; Eu-
 Scīādō-calyx, Scīādō-phylum, Scīādō-pitys, Oligo-scīas.
 Sēmē-carpus; Sēmei-andra: Brachy-sēma, Erio-sēma:
 Steno-sēma.
 Sērīs: Dendro-sērīs, Lago-sērīs, Ono-sērīs.
 Sīdēr-itis; Sīdērō-dendron, Sīdērō-xylon: Metro-sīdērōs.
 Sīpho, Sīpho-campylus; Sīphōn-andra, Sīphōn-antha; Sīph-
 ōnō-phora: Lepto-sīphōn, Ortho-sīphōn, Physo-sīphōn.
 Sītō-codium, Sītō-bolium, Sītō-lobium.
 Sōlēna; Sōlēn-andra, Sōlēn-idium; Sōlēnō-phora: Strepto-
 sōlēn; Steno-sōlēnūm.
 Sōrō-cephalus, Sōrō-manes, Sōrō-sporium: Odonto-sōrīs;
 pleisio-sōrūm; Allo-sōrās, Crypto-sōrās, Tricho-
 sōrās.

Pronouncing Dictionary—continued.

ROOT-WORD.

Spáthē (σπάθη), a blade, flower-sheath (Latin, spatha)

Sphēn, sphēnōs (σφήν, σφηνός), a wedge

Spīlōs (σπίλος), a spot

Spira or speira (σπείρα), a coil

Spōrā (σπορά), a seed

Stāchys, stāchýōs (στάχυς, στάχυος), an ear of corn

Stāphýlē (σταφυλή), a cluster of grapes

Stēgē (στέγη), a covering

Stēmna, stēmniātōs (στέμμα, στέμματος), a wreath

Stēma, stēmniātōs (στήμα, στήματος), and } the warp,
Stēmōn, stēmōnos (στήμων, στήμονος), } a stamen

Stēnōs (στενός), narrow

Stēphōs (στέφος), and }
Stēphānē (στεφάνη) } a crown

Stīchōs (στίχος), a row, line

Stōma, stōmiātōs (στόμα, στόματος), the mouth

Strōbīlōs (στρόβιλος), a fir-cone (Latin, strobilus)

Strōbōs (στρόβος), a top [cone] (Latin, strobilus)

Stýlōs (στύλος), a pillar, style

Sýrinx, sýringōs (σύριγξ, σύριγγος), a pipe

Thēōē (θήκη), a case, sheath (Latin, theca)

Thēlē (θηλή), a teat

Thēlys (θήλυς), female

Thrix, trichōs (θρίξ, τρίχος), hair

Tōmē (τομή), a cut

Trāchýs (τραχύς), rough

Trāgōs (τράγος), a he-goat

Trōpīs, trōpīdōs (τρόπις, τρόπιδος), a keel

Týlōs (τύλος), a knot

Xērōs (ξηρός), dry

Xīphōs (ξίφος), a sword

Xýlon (ξύλον), wood

Zēmīa (ζημία), loss (Latin, Zāmia)

Zōstēr, zōstērōs (ζωστήρ, ζωστήρος), a belt

Zýgōn (ζυγόν), a yoke

EXAMPLES OF DERIVATIVES.

Spāth-acea, Spāth-antheum; Spāthi-carpa, Spāthi-phyl-
lum; Spāthō-glottis; Argo-spātha, Brachy-spātha,
Rhodo-spātha; Hetero-spāthe, Hyo-spāthe.

Sphēn-andra; Sphēnō-dēsmē, Sphēnō-gyne, Sphēnō-toma.

Spil-anthes; Spilō-nota, spilō-pterum, Spilō-soma.

Spir-aea, Spir-anthera; Spīrō-conus, Spīrō-stemon.

Spōrō-bolus; Chori-spōra, Clado-spōra; Pitto-spōrum.

Stāchys; Stāchý-urus; Stāchýōs-pogon; Calli-stāchys,
Echino-stāchys, Gymno-stāchys; Lepto-stāchya;
Acantho-stāchýum, Gymno-stāchilium.

Stāphýl-ēa, Stāphýl-inus; Comaro-stāphýlis; Arcto-
stāphýlōs.

Stēg-ōsia; Caly-stēgia, Cono-stēgia, Crypto-stēgia,
Leuco-stēgia, Physo-stēgia.

Stēmniāt-ium; Agro-stēmna, Calli-stēmna, Crypto-
stēmna, Sarcō-stēmna.

Stēmōn-a, Stēmōn-acanthus; Centro-stēmā, micro-
stēmā; ampho-stēmōn, Cyclo-stēmōn, Pent-stēmōn;
Steno-stēmim.

Stēnō-carpus, Stēnō-ohilus, Stēnō-glossum, Stēnō-loma,
Stēnō-rhynchus.

Stēphān-andra; Stēphānō-coma, Stēphānō-lirion; Andro-
stēphūm, Ptilo-stēphūm; Calli-stēphūs; A-stēph-
ānus.

Stīchō-neuron; Aoro-stīchūm, Di-stīchūm, Poly-stīchūm
Adeno-stōma, Chaeno-stōma, Mela-stōma, Pachy-stōma.

Strōbīla; Strōbīl-anthes; Strōbīlō-rachis.

Strōbūs; Strōbō-clinium; Actīno-strōbūs, Glypto-strōbūs.

Stýl-andra, Stýl-urus; Stýlō-coryne, Stýlō-lepis; Bulbo-
stýlis, Crypto-stýlis, Micro-stýlis, Peri-stýlis.

Sýringa; sýring-ella, Sýring-odea; sýringi-folia;
sýringō-thyrakis.

Thēō-stelo; Anoma-thēca, Aroto-thēca, Gymno-thēca,
Hetero-thēca, Platy-thēca.

Thēla; Thēlō-bolos, Thēlō-phora, Thēlō-sperma; phymato-
thēle, Spharo-thēle.

Thēly-gonum, Thēly-mitra, Thēly-pogon, Thēly-pteris.

Thrix-spermum; Trīch-antha; Trīchō-cephalus, Trīchō-
manos; Aoro-trīche, calli-trīcha; Eri-trīchūm,
Poly-trīchūm; oligo-trīchūm; Lepto-thrix, Poly-
thrix.

Calyco-tōme, Hetero-tōma, Iso-tōma, Peri-tōma, Spheno-
tōma; Bu-tōmā.

Trāchý-carpus, Trāchý-mene, Trāchý-notia, Trāchý-
stemon.

Trāg-ia, Trāg-acantha, Trāg-ua; Trāgō-pogon.

Trōpīd-ia; Calo-trōpīa, Iso-trōpīa, Macro-trōpīa, Oxy-
trōpīa.

Týlō-ohilus, Týlō-glossa, Týlō-phora.

Xēr-andra, Xēr-anthemum; Xērō-nema, Xērō-phyllum,
Xērō-phyta.

Xīph-idium, Xīph-ion, Xīph-pteris, Xīph-stachys;
Dictyo-xīphūm.

Xýl-acantha; Xýlō-bium, Xýlō-melum, Xýlō-phylla;
Capro-xýlōn, Chloro-xýlōn, Hæmato-xýlōn, Sidero-
xýlōn; Cithare-xýlūm, Xantho-xýlūm.

Zāmīa; Zāmīō-oulesca; Corato-zāmīa, Macro-zāmīa,
Platy-zāmīa.

Zōstēra; zōstēra-folia; Zōstērō-spermum, Zōstērō-stylis.

Zýg-adenus; Zýgō-glossum, Zýgō-petalum, Zýgō-
phyllum; Tetra-zýgia.

Pronouncing Dictionary—*continued.*

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This Bibliographical List contains the titles of works useful for the study of plant-names; most of them fall under the following heads:—

(1) Books in which we find the old classical names of plants, such as those of the ancient authors Theophrastus, Virgil, Pliny, and the moderns Fraas, Sprengel, Lenz, &c.

(2) Those of writers who supply information on the so-called barbarous native names, such as Aublet and Seemann for American names; Siebold and Kaempfer for Japanese; Bretschneider for Chinese, &c.

(3) The books which afford particulars as to commemorative names and the lives of the men thus honoured—*see* Haller, Böhmer, Pritzel, &c.

(4) General works which give the derivation and pronunciation of botanical names. Some of these may be found under the names Wittstein, Glaser, Paxton, Loudon.

(5) National Floras, which are authorities especially for names commemorative of men belonging to the respective nations, as for England, Withering and Hooker; Germany, Koch; Italy, Arcangeli; Sweden, Nyman.

(6) Treatises dealing with the special pronunciation of Latin, as advocated in this Dictionary. A few of these, though not connected directly with botany, have been inserted for convenience of reference—Ellis, Haldeman, Roby, Smith, Kennedy.

It has not been thought worth while to mention the authorities for the comparatively few zoological names (principally those of insects) which occur in the Dictionary.

Some of the works enumerated have been but little used; but all of them have been consulted more or less. The edition actually used has been named in every case; but that is also generally the latest. In order to ascertain the original etymology, reference has been made, in very numerous instances, to the work in which the author originally published the name; but of course the titles of such publications have not been inserted in the list, as doing so would have many times multiplied its present size. For the rare works which were not in the writer's own library, recourse has been had to the admirable Botanical Library in the Natural History Department of the British Museum at South Kensington, to which free access was permitted, and much assistance rendered, through the courtesy of Mr. Carruthers and Mr. Britten.

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- Salomon (Carl).** Wörterbuch der Botanischen Kunst-sprache. Stuttgart, 1886. 12mo.
- Wörterbuch der Botanischen Gattungsnamen. Stuttgart, 1887. 12mo.
These two little books, the last German publications dealing with the subject, give the accentuation of many specific and generic names, but very incorrectly.
- Seemann (Berthold).** Die Volksnamen der Amerikanischen Pflanzen. Hannover, 1851. 8vo.
Only a fragment of the work projected.
- Siebold (Ph. Fr. de).** Flora Japonica. Lugdun. Batavorum, 1835 and 1870. 2 vols. Fol.
- Skeat (W. W.).** Etymological Dictionary of the English Language. Oxford. Ed. 2, 1884. 4to.
Clears up many doubtful derivations.

Pronouncing Dictionary—continued.

- Smith (W.).** Latin-English Dictionary.
The botanical portion was specially prepared by Professor Arthur Henfrey.
- and **Hall (T. D.).** The Student's Latin Grammar. London. Ed. 13, 1885. 8vo.
- Sprengel (Curt.).** Historia Rei Herbariæ. Amsteld., 1807. 2 vols. 8vo.
The first volume, with its valuable indexes, has been of great service.
- Strabo.** See **Meyer**.
- Strabo (Walafrid).** See **Macer**.
- Théris (Alex. de).** Glossaire de Botanique, ou Dictionnaire Etymologique. Paris, 1810. 8vo.
A very interesting book, dealing with the derivations of specific as well as generic names. It has been freely quarried from by subsequent writers on the subject.
- Theophrastus Eresius.** Opera, ed. F. Wimmer. Paris, 1866. 8vo.
A very useful edition, with Index containing the views of Sprengel, Fraas, and Fée on the identification of Theophrastus plants.
- Turner (W.).** The Names of Herbes [A.D. 1548]. Ed. James Britten. London, 1881. 8vo.
Easily consulted by means of the thorough indexes appended by the editor.
- Vaniček (Alois).** Etymologisches Wörterbuch der Lateinischen Sprache. Leipzig, 1874. 8vo.
- Griechisch-Lateinisches Etymologisches Wörterbuch. Leipzig, 1877-78. 2 vols. 8vo.
- Varro (Ter.).** De Re Rustica. See **Rusticæ Rei Scriptores**.
- Vergilius Maro (P.).** Opera, ed. J. B. Greenough. Boston, 1882. 8vo.
Contains a special Glossary of the plants mentioned by Virgil (Virgile). See **Bubani** and **Fée**.
- Walafrid Strabo.** See **Macer**.
- Watson (J. Forbes).** Index to the Native and Scientific Names of Indian Plants. London, 1868. 4to.
- Wharton (E. R.).** Etyma Græca. London, 1882. 8vo.
Gives the correct etymology of many old Greek plant-names.
- White (J. T.) and Riddle (J. E.).** Latin-English Dictionary. London. Ed. 4, 1872. 2 vols. 8vo.
Very copious, but with many unsound etymologies.
- Withering (Wm.).** Systematic Arrangement of British Plants. Birmingham. Ed. 5, 1812. 4 vols. 8vo.
Gives special rules for pronunciation, and accentuates both genera and species throughout.
- Wittstein (G. C.).** Etymologisch-botanisches Handwörterbuch. Ausbach, 1852. 8vo. ("Editio 2, 1856, non differt."—Pritzel.)
The most valuable foreign authority for the derivation of generic names.
- Wright (T.).** Anglo-Saxon and Old English Vocabularies. Ed. 2, by R. P. Walcker. London, 1884. 2 vols. 8vo.
- Yeats (J.).** Natural History of Raw Materials of commerce. London. Ed. 2, 1887. 8vo.
Appendix of native names.



AN INDEX TO HERBACEOUS PLANTS FOR SPECIAL PURPOSES.

TO obviate the necessity of looking through the whole of the **DICTIONARY OF GARDENING** in order to make a selection of herbaceous plants suitable for any special purpose, lists are here given of subjects which are adapted to various situations, or are good for particular purposes.

Very few plants except those which have been distinguished in the body of this work by an asterisk as specially desirable are included hereunder; the exceptions being those which, though perhaps not the best of the species, are yet very useful for the purpose indicated. Orchids, Ferns, Lycopods, and Succulents (with the exception of some of the dwarf rockery plants, *e.g.*, Sedums and Sempervivums) are not included here, but are separately classified further on in the Supplement.

Whether the plant is especially useful for its flowers, fruit, or foliage is shown by the descriptive letters which follow the name. In order to avoid a multiplicity of abbreviations, the different tints of the flowers have been grouped, *e.g.*, vermilion, scarlet, and carmine are described as red (*r*), and rose-colour included with pink (*pi*), while all shades of yellow are simply denoted by *y*. For more detailed information as to colours of flowers, the reader is referred to the classification given further on in this volume. Where blossoms exhibit an admixture of two or more colours, the prevailing or ground colour is placed first.

Thus it will be seen that if a reader wish to make a selection of suitable plants for a special purpose he has ready to his hand such an index as will enable him to complete his work with the least possible trouble and with a certainty that the result will be satisfactory.

The following are the abbreviations used in this division :

aq, aquatic; *b*, blue; *bk*, black; *br*, brown; *c*, cream; *c-h*, cool house; *fl*, flowers; *fol*, foliage; *fr*, fruits; *g*, green; *gl*, glaucous; *gy*, grey; *i-h*, intermediate house; *l*, lilac; *m*, magenta; *mv*, mauve; *o*, orange; *p*, purple; *pi*, pink; *r*, red; *s-aq*, semi-aquatic; *sc*, scented; *si*, silvery; *st*, stove; *v*, violet; *w*, white; *y*, yellow.

BOGS AND WATER.—Under this heading are included a good selection of herbaceous plants that require to be grown in water, or to be planted in marshy or boggy situations. They are classified according to hardiness and duration; and aquatics (those which grow in water) and semi-aquatics (subjects requiring damp soil or a marshy situation, or to grow on the margins of lakes

Bogs and Water—*continued.*
or streams) are further distinguished by the abbreviations *aq* and *s-aq*.

Hardy.—**ANNUALS.**—*Malcolmia maritima* (*s-aq, fl l, pi, r, or w*); *Samolus Valerandi* (*aq, fl w*); *Saxifraga Cymbalaria* (*s-aq, fl y*); *Trapa natans* (*aq, fr; fol g*); *T. verbanensis* (*aq, fr; fol g*).

Bogs and Water (Hardy)—continued.

BIENNIAL.—*Sabbatia calycosa* (s-ag, fl w).
PERENNIALS.—*Acorus Calamus* (s-ag, fol y and g striated);
A. gramineus (ag, fol g); *A. g. variegatus* (aq, fol g, striped w);
Alisma natans (ag, fl w); *A. Plantago* (aq, fl pi); *Anagallis tenella* (s-ag, fl pi);
Anemone rivularis (s-ag, fl w, p anthers); *A. virginiana* (s-ag, fl p or p-g); *Aponogeton distachyon* (aq, fl w, sc);
Arnica foliosa (s-ag, fl y); *Asclepias incarnata* (s-ag, fl r or p);
Astilbe rivularis (s-ag, fl y-w or r); *Astrantia carniolica* (s-ag, fl w; fol g, tinged r);
A. helleborifolia (s-ag, fl pi); *A. major* (s-ag, fl pi); *Butomus umbellatus* (aq, fl pi);
Calla palustris (aq, fl w); *Caltha leptosepala* (s-ag, fl w); *C. palustris* (s-ag, fl y);
C. p. biflora (s-ag, fl y); *C. p. parnassifolia* (s-ag, fl y); *C. radicans* (s-ag, fl y);
Cardamine pratensis (s-ag, fl p or w); *Carex pseudo-cyperus* (s-ag, fl);
C. riparia (s-ag, fl); *Corydalis solida* (s-ag, fl p); *Cyperus longus* (s-ag, fol g);
Diphylleia cymosa (s-ag, fl w); *Heteranthera limosa* (s-ag, fl v-b);
Hottonia palustris (aq, fl l, y eye); *Iris lævigata* (s-ag, fl p, blotched y);
I. Pseudo-acorus (s-ag, fl y, o, and g); *Juncus leteviensis* (s-ag, fol g);
Limnanthemum nymphoides (aq, fl y); *Lysimachia atropurpurea* (s-ag, fl p);
L. bursastachys (s-ag, fl w); *L. ciliata* (s-ag, fl y); *L. clothroides* (s-ag, fl w);
L. punctata (s-ag, fl y); *L. vulgaris* (s-ag, fl y); *Lythrum Salicaria* (s-ag, fl r-p);
Mimulus cardinalis (s-ag, fl r); *M. Lewisii* (s-ag, fl pi);
M. moschatus (s-ag, fl w); *Myosotis palustris* (s-ag, fl b, y throat);
Nuphar advena (aq, fl y, r anthers); *N. luteum* (aq, fl y, sc); *Nymphæa alba* (aq, fl w);
N. a. rosea (aq, fl pi); *N. odorata* (aq, fl w, tinged pi, sc);
N. pygmaea (aq, fl w, sc); *Podophyllum Emodi* (s-ag, fl w, fr r);
Polygonum sachalinense (s-ag, fl g-y); *Pontederia cordata* (aq, fl b or w; fol g);
Primula involucriata (s-ag, fl c-w, y eye); *P. i. Munroi* (s-ag, fl w, y eye, sc);
P. luteola (s-ag, fl y); *Sagittaria heterophylla* (s-ag, fl w);
S. sagittifolia (aq, fl w, p claws); *Scirpus lacustris* (aq, fl br);
S. Tabernaemontani zebrinus (s-ag, fol w and g); *Typha angustifolia* (aq, fl br).

Half-Hardy.—**ANNUAL.**—*Vallisneria spiralis* (aq, fl w; fol g).

PERENNIAL.—*Thalia dealbata* (aq, fl p; fol g).

Tender.—**ANNUALS.**—*Burylea ferox* (st, aq, fl w; fol g); *Tytonia natans* (st, aq, fl r, w, and y); *Victoria regia* (st, aq, fl w, and p or pi; fol g).

PERENNIALS.—*Actinocarpus minor* (c-h, aq, fl w); *Aponogeton spathaceum juncum* (c-h, aq, fl pi); *Cabomba aquatica* (i-h, aq, fl y); *Eichhornia azurea* (st, aq, fl b; fol g); *E. crassipes* (st, aq, fol g); *Limncharis Plumieri* (i-h, aq, fl y); *Nelumbium luteum* (c-h, aq, fl y, sc; fol b-g); *N. speciosum* (c-h, aq, fl w, tipped pi, sc; fol g); *Nymphæa Devonensis* (st, aq, fl pi-r); *N. Lotus* (st, aq, fl r or w) and var.; *N. scutifolia* (i-h, aq, fl b, sc); *N. stellata* (st, aq, fl b, sc) and vars.; *N. Sturtovantii* (st, aq, fl pi); *N. thermalis* (st, aq, fl w, sc); *Ottelia ovalifolia* (st, aq, fl g and y); *Ouvirandra fenestralis* (st, aq, fl g-w); *Papyrus antiquorum* (c-h, aq, stems and fol); *Pistia Stratiotes* (st, aq, fol g); *Sagittaria montevidensis* (i-h, aq, fl w, spotted r); *Scirpus riparius* (c-h, s-ag, fl br); *Villarsia parnassifolia* (c-h, s-ag, fl y; fol g); *V. reniformis* (c-h, s-ag, fl g; fol g).

BORDERS.—Under this heading are given lists of the most desirable herbaceous plants for the open Border. These lists are intended to assist anyone in rapidly selecting plants which are likely to give satisfaction in the general garden. After making what appears to be a suitable selection, the reader will, of course, turn to the body of the Dictionary for fuller information respecting the plants chosen. The colours of the flowers are indicated, as upon that a selection so much depends. Everyone who has a garden will therefore find this section of "Plants for Special Purposes" exceedingly useful.

Hardy.—**ANNUALS.**—*Acroclinium roseum* (fl pi); *A. r. album* (fl w); *A. r. grandiflorum* (fl pi); *Adonis æstivalis* (fl r); *A. autumnalis* (fl r); *Agrostemma cœli-rosa* (fl pi, w, or p); *A. e.-r. fimbriata* (fl p); *Agrostis nebulosa* (fl);

Borders (Hardy Annuals)—continued.

A. pulchella (fl); *Amarantus caudatus* (fl p); *Anagallis grandiflora* (fl r, b, &c.); *Argemone albiflora* (fl w); *A. hirsuta* (fl w); *A. ochroleuca* (fl y); *Asperula orientalis* (fl b); *Bartonia alba* (fl y); *B. aurea* (fl y); *Blumenbachia insignis* (fl w); *Borago longifolia* (fl b); *B. officinalis* (fl b, p, or w); *Calandrinia grandiflora* (fl p-r); *C. Menziesii* (fl pi); *Calendula maderensis* (fl o); *C. officinalis* (fl o); *Callistephus chinensis* (fl p, &c.); *Centaurea Cyanus* (fl p and b); *C. suaveolens* (fl y, sc); *Centranthus macrosiphon* (fl r or w); *Cerinth major* (fl y and p); *C. minor* (fl y, or spotted br); *C. retorta* (fl y and v); *Chlora perfoliata* (fl y); *Chrysanthemum carinatum* (fl w, p); *C. coronarium* (fl y); *C. segetum* (fl y); *C. s. grandiflorum* (fl y); *Clarkia elegans* (fl r); *C. pulchella* (fl p); *Collinsia bicolor* (fl w and pi-p); *C. grandiflora* (fl p and b); *C. verna* (fl w and b); *Collomia coccinea* (fl r); *C. grandiflora* (fl r-y); *Convolvulus tricolor* (fl y, b, and w); *Coreopsis Drummondii* (fl y, banded r-br); *C. tinctoria* (fl y, blotched p-br); *Crepis rubra* (fl r); *Delphinium Ajacis* (fl b, r, or w); *D. cardinalis* (fl r and y); *Downingia pulchella* (fl b, y eye); *Erysimum Perofskianum* (fl o-y); *Eucharidium concinnum* (fl l-p); *Fedia Cornucopiæ* (fl r); *Gaillardia amblyodon* (fl r); *Gilia achilleifolia* (fl p-b, w, or r); *G. androsacea* (fl l, p, or w, y or dark throat); *G. capitata* (fl b); *G. densiflora* (fl l, or nearly w); *G. liniflora* (fl w); *G. micrantha* (fl pi); *G. m. aurea* (fl y); *G. tricolor* (fl o-y, p, and w) and vars.; *Glauconium phoeniceum* (fl r, spotted bk); *Helianthus annuus* (fl w, variable, usually y); *Heliotropium convolvulaceum* (fl w, sc); *Hordeum jubatum* (fl); *Iberis coronaria* (fl w); *I. umbellata* (fl variable, usually p); *Impatiens amphorata* (fl p, r, and pi); *I. Koylei* (fl p); *Lathyrus grandiflorus* (fl pi); *L. odoratus* (fl variable, sc); *Limnanthes Douglasii* (fl y, passing to w, streaked gy, sc); *Linaria bipartita* (fl v-p, o, and w); *L. reticulata* (fl p and y); *L. spartea* (fl y); *Linum grandiflorum* (fl pi); *L. g. rubrum* (fl r-pi); *Loasa Pentlandii* (fl o); *L. prostrata* (fl y); *L. vulcanica* (fl w); *Lupinus luteus* (fl y, sc); *L. nanus* (fl l and b); *Madia elegans* (fl y); *Malcolmia maritima* (fl l, pi, r, or w); *Malope trifida* (fl p or w); *Matricaria inodora flore-pleno* (fl w); *Mimulus luteus* (fl y); *M. l. cupreus* (fl r or r-br); *Moricandia arvensis* (fl w); *M. sonchifolia* (fl v-b); *Nemesia cynanchifolia* (fl l-b); *N. floribunda* (fl w and y, sc); *Nemophila insignis* (fl b, w eye, &c.) and vars.; *N. maculata* (fl w, blotched v-p); *N. Menziesii* (fl w, varying to b) and vars.; *Nicandra physaloides* (fl b); *Nigella damascena* (fl w or b); *N. hispanica* (fl b, r stamens); *N. orientalis* (fl y, spotted gy); *Nolana lanceolata* (fl b, w, g); *N. paradoxa* (fl); *N. tenella* (fl b); *Nonna rosea* (fl pi, y-w throat, or b); *Oenothera amœna* (fl pi, spotted r); *O. a. rubicunda* (fl l-p, blotched); *O. bistorta Veitchiana* (fl y, spotted r); *O. Whitneyi* (fl pi-r, w, &c.); *Oxalis valdiviensis* (fl y, streaked r); *Panicum capillare* (fl); *P. miliaceum* (fl); *Papaver Hookeri* (fl pi to r, blotched w or b-bk); *P. Rhœas* (fl r) and vars.; *P. somniferum* (fl variable); *Phacelia campanularia* (fl b, spotted w); *P. viscidula* (fl b, p); *P. Whitlavia* (fl b); *Podolepis aristata* (fl y); *Polygonum orientale* (fl pi-p or w); *Roseda odorata* (fl y-w, &c., sc); *Sabbatia campestris* (fl pi); *Saponaria calabrica* (fl pi); *Scabiosa atropurpurea* (fl r) and vars.; *Schizanthus pinnatus* (fl v or l, and y, &c.) and vars.; *Sedum cœruleum* (fl b; fol g, spotted r); *Silene Atocion* (fl w); *S. pendula* (fl pi); *S. p. compacta* (fl pi); *Silybum Marianum* (fl pi-p); *Statis Suworowi* (fl l); *Streptanthus maculatus* (fl p); *Tagetes erecta* (fl y); *T. patula* (fl y or y-br); *T. tenuifolia* (fl y); *Tropæolum majus* (fl variable); *T. minus* (fl variable); *T. peregrinum* (fl y); *Ursinia pulchra* (fl o); *Vesicaria grandiflora* (fl y); *Vicia onobrychioides* (fl p); *Wahlenbergia hederacea* (fl b); *Xeranthemum annuum* (fl p); *Zea Mays* (fl, fol) and vars.

BIENNIALS.—*Althæa caribæa* (fl pi); *Aster Bigelovii* (fl l and y); *Bromus brisæiformis* (fl g); *Campanula Medium* (fl b, p, and w); *C. sibirica divergens* (fl v); *Centaurea Fenzlii* (fl y); *Chlora grandiflora* (fl y); *Dianthus chi-*

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Borders (Hardy Biennials)—continued.

ensis (fl variable); *D. c. Atkinsoni* (fl r); *Digitalis purpurea* (fl p, varying to w); *Echinopspermum marginatum macranthum* (fl b); *Foeniculum dulce* (fol g); *Glaucium flavum* (fl y); *Grindelia grandiflora* (fl y or o); *Hesperis grandiflora* (fl); *Lavatera arborea variegata* (fol variegated); *Meconopsis nepalensis* (fl y); *Michauxia levigata* (fl w); *Myosotis sylvatica* (fl b, y throat); *Eriogonum biennis* (fl y, sc); *Salvia bicolor* (fl b-v, dotted y, and w); *Tragopogon glaber* (fl p); *Verbascum Chaixii* (fl y).

PERENNIALS.—*Abronia fragrans* (fl w, sc); *Acantholimon glumaceum* (fl pi); *A. venustum* (fl pi); *Acanthus longifolius* (fl p); *A. mollis* (fl w or pi); *A. m. latifolius* (fl w or pi); *A. spinosissimus* (fl pi); *A. spinosus* (fl pi); *Achillea aegyptiaca* (fl y); *A. asplenifolia* (fl pi); *A. aurea* (fl y); *A. Eupatorium* (fl y); *A. Millefolium roseum* (fl pi); *A. Ptarmica flore-pleno* (fl w); *Aconitum album* (fl w); *A. angustifolium* (fl b); *A. Anthora* (fl y); *A. A. nemorosum* (fl y); *A. barbatum* (fl c); *A. biflorum* (fl b); *A. chinense* (fl b); *A. delphinifolium* (fl b-p); *A. emineus* (fl b); *A. gracile* (fl b or w); *A. Halleri* (fl w); *A. H. bicolor* (fl w, variegated b); *A. japonicum* (fl pi); *A. lycocotum* (fl w); *A. Napellus* (fl); *A. oohroleucum* (fl c); *A. Ottonianum* (fl b, variegated w); *A. paniculatum* (fl w); *A. pyrenaicum* (fl y); *A. rostratum* (fl w); *A. tauricum* (fl b); *A. uncinatum* (fl b); *A. vulparia* (fl y); *A. v. septentrionale* (fl b); *A. Willdenovii* (fl b-p); *Aotina grandiflora* (fl y); *Aotinosmeris helianthoides* (fl y); *A. proera* (fl y); *A. squarrosa* (fl y); *Adenophora coronopifolia* (fl b); *A. denticulata* (fl b); *A. Fischeri* (fl b or b-w); *A. Lamarckii* (fl b); *A. liliiflora* (fl sc); *A. pereskifolia* (fl b); *A. stylosa* (fl b); *A. verticillata* (fl b); *Adonis pyrenaica* (fl y); *Ethionema coridifolium* (fl pi-l); *Agrimonia odorata* (fl y); *Agrostemma coronaria* (fl w, centre, &c.); *A. flos-Jovis* (fl p or r); *Aira flexuosa* (fl br); *Ajuga orientalis* (fl b); *A. pyramidalis* (fl b or p); *A. reptans* (fl b to pi); *Alchemilla alpina* (fl g); *A. sericea* (fl g); *Aletris aurea* (fl y); *A. farinosa* (fl w); *Allium acuminatum* (fl pi); *A. azureum* (fl b); *A. Bidwellii* (fl pi); *A. Breweri* (fl pi); *A. caeruleum* (fl b); *A. falcifolium* (fl pi); *A. Macnabianum* (fl m); *A. Moly* (fl y); *A. Murrayanum* (fl pi-p); *A. neapolitanum* (fl w); *A. nigrum* (fl v or w); *A. pedemontanum* (fl pi-p); *A. reticulatum attenuifolium* (fl w); *A. roseum* (fl l-pi); *A. sphaerocephalum* (fl r-p and g); *Alstromeria aurantiaca* (fl r-y); *A. chilensis* (fl pi or r, variegated y); *A. psittacina* (fl r and g, spotted p); *A. versicolor* (fl y, marked p); *A. v. niveo-marginata* (fl pi, r, and w, marked g and bk); *Althaea cannabina* (fl pi); *A. flexuosa* (fl r); *A. narbonensis* (fl r); *A. rosea* (fl pi, w, y, r, &c.); *Alyssum alpestre* (fl y); *A. orientale* (fl and fol y); *Amsonia salicifolia* (fl b); *A. Tabernamontana* (fl b); *Anemone alpina* (fl w and p, c, y, &c.); *A. sulphurea* (fl y); *A. angulosa* (fl b); *A. apennina* (fl b); *A. blanda* (fl b); *A. coronaria* (fl various); *A. decapetala* (fl c or y); *A. dichotoma* (fl w, tinged r); *A. fulgens* (fl r, bk centre); *A. Halleri* (fl pi); *A. japonica* (fl r); *A. j. alba* (fl w); *A. j. elegans* (fl pi); *A. multifida* (fl r, w, y, or y); *A. nemorosa caerulea* (fl b); *A. n. flore-pleno* (fl w); *A. n. Robinsoniana* (fl b); *A. n. rosea* (fl pi); *A. patens* (fl p or y); *A. p. Nuttalliana* (fl p or c); *A. pratensis* (fl pi); *A. Pulsatilla* (fl v); *A. rivularis* (fl w, p anthers); *A. stellata* (fl p, pi, or w); *A. sylvestris* (fl w); *A. vernalis* (fl w and v); *A. virginiana* (fl p or p-g); *Anemoneopsis macrophylla* (fl l and p); *Antennaria dioica* (fl pi); *A. d. minima* (fl pi); *A. margaritacea* (fl w); *A. tomentosa* (fol); *Anthemis Aizoon* (fl w); *A. Biebersteinii* (fl y); *Anthericum Liliago* (fl w); *A. Liliastrium* (fl w, spotted g, sc); *A. L. major* (fl w, spotted g, sc); *A. ramosum* (fl w); *Antirrhinum majus* (fl variable); *Apios tuberosa* (fl br-p, sc); *Apocynum androsaemifolium* (fl r); *Aquilegia atropurpurea* (fl p or b-p); *A. caerulea* (fl b and w, &c.); *A. c. alba* (fl w); *A. c. hybrida* (fl b and w); *A. canadensis* (fl r and y); *A. chrysantha* (fl y, tipped r); *A. formosa* (fl r and y); *A. fragrans* (fl w or p, sc); *A. glandulosa* (fl l-b and w); *A. olympica* (fl b and w); *A. vulgaris* (fl w, b, l-p, &c.); *Arabis lucida* (fl w); *A. l. variegata*

Borders (Hardy Perennials)—continued.

(fol y and g); *A. rosea* (fl pi); *Aralia odalis* (fol g); *A. nudicaulis* (fol g); *A. racemosa* (fol g); *Arisaema ringens* (fl g and w); *A. triphylla* (fl g and p-br); *Armeria ophiolotos* (fl pi or r); *A. plantaginosa* (fl pi); *Arnebia echioides* (fl y); *Arnica Chamissonis* (fl y); *A. foliosa* (fl y); *A. scorpioides* (fl y); *Artemisia cana* (fol w); *A. vulgaris* (fol w and variegated); *Arum italicum* (fl g-y or w); *A. i. marrostratum* (fol y and g); *A. probosoideum* (fl g-p); *A. tenuifolium* (fl w); *Aselepias acuminata* (fl r and w); *A. amœna* (fl p); *A. Douglasii* (fl l-p); *A. incarnata* (fl r or p); *A. quadrifolia* (fl w, sc); *A. syriaca* (fl p, sc); *A. tuberosa* (fl o); *A. variegata* (fl w, fr r); *Ascyrum Crux-Andreas* (fl y); *Asperula longiflora* (fl w, y, and r); *A. montana* (fl pi); *A. odorata* (fl w); *Aster acuminatus* (fl w); *A. astivus* (fl b); *A. alpinus* (fl p); *A. altaicus* (fl b-p); *A. Amellus* (fl p); *A. A. bessarabicus* (fl p); *A. argenteus* (fl p); *A. caucasicus* (fl p); *A. concinnus* (fl p); *A. Douglasii* (fl p); *A. dumosus* (fl w); *A. d. albus* (fl w); *A. ericoides* (fl w); *A. floribundus* (fl p); *A. grandiflorus* (fl p); *A. hyssopifolius* (fl w, or shaded p); *A. luvius* (fl b); *A. longifolius* (fl w); *A. l. formosus* (fl pi); *A. multiflorus* (fl w); *A. novæ-angliæ* (fl p); *A. n.-a. rubra* (fl r-pi); *A. novæ-belgii* (fl b); *A. n.-b. amethystinus* (fl b); *A. paniculatus* (fl b); *A. pendulus* (fl w, ultimately turning pi); *A. peregrinus* (fl b-p); *A. pulchellus* (fl p); *A. pyrenaicus* (fl l-b and y); *A. salunginosus* (fl v-p); *A. sikkimensis* (fl p); *A. spectabilis* (fl b); *A. Tradescanti* (fl w); *A. versicolor* (fl w, turning p); *Astragalus adurgens* (fl b-p); *A. alpeuroides* (fl y); *A. austriacus* (fl b and pi); *A. galegiformis* (fl y); *A. glycyphyllos* (fl y); *A. hypoglottis* (fl p, b, and w); *A. h. alba* (fl w); *A. leucophyllus* (fl y); *A. maximus* (fl y); *A. onobrychioides* (fl p); *A. sulcatus* (fl v, w keel tipped br); *A. vulpinus* (fl y); *Astrantia carniolica* (fl w; fol g, tinged r); *A. helleborifolia* (fl pi); *A. major* (fl pi); *Baptisia alba* (fl w); *B. australis* (fl b); *B. exaltata* (fl b); *B. perfoliata* (fl y); *B. tinctoria* (fl y); *Bellevalia romana* (fl w); *B. syriaca* (fl w); *Bellidistram Michellii* (fl w); *Bellis perennis* var. (fl w or r); *B. p. aucubifolia* (fol g, variegated y); *Berkheya purpurea* (fl p); *Biarum tenuifolium* (fl br-p); *Boltonia asteroides* (fl pi); *B. glastifolia* (fl pi); *Brodiaea capitata* (fl v-b); *B. oceanica* (fl r, tipped y-g); *B. congesta* (fl b); *B. c. alba* (fl w); *B. grandiflora* (fl b-p); *B. Howellii* (fl b-p); *B. lactea* (fl w, midribs g); *B. multiflora* (fl b-p); *Bulboodium vernum* (fl v-p, w spot); *Bupthalmum grandiflorum* (fl y); *B. salicifolium* (fl y); *B. speciosissimum* (fl y); *Caecilia suaveolens* (fl w); *C. tuberosa* (fl w); *Calamintha grandiflora* (fl p); *Callirhoe digitata* (fl r-p); *C. involuerata* (fl r); *C. Papaver* (fl v-r); *Calophanes oblongifolia* (fl b); *Caltha leptosepala* (fl w); *C. palustris* (fl w) and var.; *C. radicans* (fl y); *Calystegia dahurica* (fl r-p); *C. pubescens flore-pleno* (fl pi); *C. Soldanella* (fl r, y plait); *Camassia esculenta* (fl b or w); *C. e. Leichthli* (fl c-w); *C. Fraseri* (fl b); *Campanula betonicæfolia* (fl p-b, y base); *C. bononiensis* (fl b-v or w); *C. carpathica* (fl w); *C. o. alba* (fl w); *C. o. pelviformis* (fl l, sc); *C. c. turbinata* (fl p); *C. collina* (fl b); *C. glomerata* (fl b-v-r w); *C. grandis* (fl v-b or w); *C. isophylla* (fl l-b, gy centre); *C. lactiflora* (fl c tinged b, or b); *C. latifolia macrantha* (fl p-b); *C. nitida* (fl b or w); *C. nobilis* (fl r-v, w, or c); *C. perograna* (fl v); *C. persicæfolia* (fl b, varying to w); *C. pyramidalis* (fl b or w); *C. rapunculoides* (fl h-w); *C. Rapunculus* (fl b or w); *C. rotundifolia* (fl b); *C. r. alba* (fl w); *C. r. Hostii* (fl b); *C. r. soldanellaeflora* (fl b); *C. sarmatica* (fl b); *C. speciosa* (fl b, p, or w); *C. Trachelium* (fl b, varying to w); *C. Van Houttei* (fl b); *Cardamine asarifolia* (fl w); *C. pratensis* (fl p or w); *C. rhomboidea* (fl w); *C. r. purpurea* (fl pi-p); *C. trifolia* (fl w); *Carex riparia* (fl); *Carina acanthifolia* (fl w); *Cedronella cordata* (fl p); *Centaurea alpina* (fl y); *C. atropurpurea* (fl p); *C. aurea* (fl y); *C. babylonica* (fl y); *C. dealbata* (fl pi); *C. macrocephala* (fl y); *C. montana* (fl b); *C. m. alba* (fl w); *C. m. rosea* (fl pi); *Centranthus ruber* (fl r or w); *Cerastium alpinum* (fl w); *C. Bieber-*

Borders (Hardy Perennials)—continued.

steinii (fol sc); C. Boissieri (fl w); C. tomentosum (fol sc); Cerinthe maculata (fl y, spotted p); Chaptalia tomentosa (fl w); Cheloneanthus Cheiri (fl variable, sc); C. Marshallii (fl o); Chelone Lyoni (fl p); C. nemorosa (fl pi-p); C. obliqua (fl p); C. o. alba (fl w); Chionodoxa Luciliae (fl b, w centre, or w); C. nana (fl w, l); Chlorogalum pomeridianum (fl w, veined p); Chrysanthemum argenteum (fl w); C. sinense (fl variable); Chrysobactron Hookeri (fl y); Chrysoygonum virginianum (fl y); Chrysopsis trichophylla (fl y); Cimicifuga americana (fl w); C. japonica (fl w); C. racemosa (fl w); Clematis aromatica (fl v-b, sc); C. recta (fl w, sc); Clintonia Andrewsiana (fl pi); C. uniflora (fl w); Cnicus acaulis (fl p); C. altissimus (fl p); C. spinosissimus (fl y); C. undulatus (fl p); Colobium autumnale (fl p); C. Bivonae (fl w and p); C. byzantinum (fl pi); C. luteum (fl y); C. Parkinsoni (fl w, tessellated p); Commelina virginica (fl b); Convallaria majalis (fl w, sc); Convolvulus althmoides (fl r or l); C. chinensis (fl r-p, marked y); Coreopsis auriculata (fl y, banded p-br); C. grandiflora (fl y); C. lanceolata (fl y); C. verticillata (fl y); Coronilla varia (fl pi); Corydalis bracteata (fl y); C. oava (fl p); C. c. albiflora (fl w); C. Kolpakowskiana (fl pi or p); C. lutea (fl y); C. Marshalliana (fl y); C. nobilis (fl y, tipped g); C. solida (fl p); Crambe cordifolia (fl w; fol g); Crinum capense (fl flushed r); Crocosmia aurea (fl o-r); Crocus aureus (fl o); C. biflorus (fl w, varying to l); C. Boryi (fl c-w and o-y); C. Imperati (fl l-p, lined p); C. iridiflorus (fl p and l); C. nudiflorus (fl p or v); C. speciosus (fl l, striped p); C. susianus (fl o, or marked br); C. vernus (fl l, v, w, or streaked v and w); C. versicolor (fl p, varying to w); Datisca cannabina (fl y; fol g); Delphinium azureum (fl b); D. cashmirianum (fl b); D. exaltatum (fl b or w); D. formosum (fl b); D. grandiflorum (fl b, varying to w); D. nudicaule (fl r and y); Dentaria digitata (fl p); D. diphylla (fl w and p); D. polyphylla (fl c); Dianthus arenarius (fl w, livid spot); D. atrorubens (fl r); D. barbatus (fl variable); D. Caryophyllus (fl all colours except b); D. oruentis (fl r); D. fimbriatus (fl pi); D. Fischeri (fl pi); D. fragrans (fl w, suffused p, sc); D. Holtzeri (fl pi); D. plumarius (fl p, w, &c.); D. Seguierii (fl pi-p); D. superbus (fl pi, sc); Dicontra obrysantha (fl y); D. eximius (fl r-p); D. formosa (fl r); D. spectabilis (fl pi-r); D. thalictroides (fl y, r mouth, sc); Dictamnus albus (fl w or p); Digitalis ambigua (fl y, reticulated bg); Dodonaea integrifolia (fl r); D. Moadia (fl pi-p, w, or l, y anthers); D. M. frigidum (fl r-p); D. M. lanifolium (fl pi, y at base); Doronicum altaicum (fl y); D. austriacum (fl y); D. caucasicum (fl y); D. Pardalianches (fl y); D. plantagineum excelsum (fl y); Dracocephalum altaicense (fl b); D. austriacum (fl b); D. peregrinum (fl b); D. Ruprechtii (fl pi-p or l); D. Ruyshianum japonicum (fl w, bordered b); D. speciosum (fl pi-b, spotted); Dracunculus vulgaris (fl br); Echinacea angustifolia (fl pi or p); E. purpurea (fl r-p, tipped g); Echinops comnutatus (fl w); E. Bitrio (fl b); Epilobium Dodonaei (fl pi); E. hirsutum (fl pi or w); E. rosmarinifolium (fl r); Eremurus himalaicus (fl w); E. robustus (fl peach); E. spectabilis (fl g-y); Erigeron aurantiacus (fl y); E. glaucus (fl p); E. grandiflorus (fl p or w); E. speciosus (fl v and y); Eryngium alpinum (fl b); E. amethystinum (fl b); E. Bourkati (fl b); E. giganteum (fl b); Erysimum alpinum (fl y, sc); E. ochroleucum (fl y-w, sc); Erythronium americanum (fl y); E. dens-canis (fl p-pi or w); Eulalia japonica foliis-striatis (fol g, banded c); E. j. zobrina (fol g, cross-barred y); Ferula asparagifolia (fl y; fol g); F. communis (fl y; fol g); F. glauca (fl y; fol g); F. tingitana (fl y; fol g); Foeniculum vulgare (fol g); Fragaria chilensis (fl w; fr pi); F. o. grandiflora (fl w; fr r); Fritillaria armena (fl y); F. delphinensis (fl p, spotted y); F. graeca (fl br, spotted, &c.); F. Hookeri (fl l); F. imperialis (fl y, varying to r); F. lutea (fl y, suffused p); F. macrophylla (fl pi); F. Meleagris (fl ohequered p); F. pallidiflora (fl y); F. persica (fl v-b); F. pudica (fl y); F. pyrenaica (fl p); F. recurva (fl r); F. Sewerzowi (fl p,

Borders (Hardy Perennials)—continued.

g-y within); F. tenella (fl y, ohequered p-br); F. tulipifolia (fl b, streaked p-br, p-br within); F. verticillata Thunbergii (fl g, mottled p); Funkia ovata (fl b-l or w); F. o. marginata (fl b-l or w; fol g, margined w); F. Sieboldiana (fl w, tinged l); F. subcordata (fl w); Gagea lutea (fl y, g at back); Galanthus Elwesii (fl w, spotted g); G. nivalis (fl w, marked g) and vars.; G. plicatus (fl g-w); Galega officinalis (fl b); G. o. albiflora (fl w); G. orientalis (fl b); Galtonia candicans (fl w, sc); Gentiana acaulis (fl b, marked y); G. affinis (fl b); G. Andrewsii (fl b); G. asclepiadea (fl); G. cruciata (fl b, dotted g); G. lutea (fl y, veined and spotted); G. Pneumonanthe (fl b, w, &c.); G. septemfida (fl b); Geranium atlanticum (fl p, veined r); G. dahuricum (fl p); G. Endressii (fl pi, dark veins); G. ibericum (fl b); G. Lamberti (fl l); G. macrorhizon (fl r or p); G. maculatum (fl l); G. phaeum (fl bk-br, spotted w); G. pratense (fl b); G. striatum (fl pi, dark stripes); G. sylvaticum (fl p or b); Geum coccineum (fl p); G. elatum (fl y); G. montanum (fl y); G. pyrenaicum (fl y); G. rivale (fl y); G. triflorum (fl p, w, and p-r); Gilia Brandegei (fl y); Gillenia trifoliata (fl r, varying to w); Gladiolus byzantinus (fl r); G. segetum (fl pi); Globularia vulgaris (fl b); Glycyrrhiza glabra (fl b); Gratiola aurea (fl y); G. officinalis (fl w, striated p); Gynerium argenteum (fl silky, sometimes tinted p or y); Gypsophila cerastoides (fl w, veined r); G. paniculata (fl w); G. Stevenii (fl w); Hedyarum coronarium (fl r); Helium autumnale (fl y); Helianthus decaepetalus multiflorus (fl y); H. orgyalis (fl y); H. rigidus (fl br and y); Heliochrysum arenarium (fl y); Helleborus niger (fl w); H. olympicus (fl p); Hemerocallis Dumortieri (fl o-y, tinged br); H. flava (fl o-y, sc); H. fulva (fl y); H. Middendorfi (fl y); H. minor (fl y); Hesperis matronalis (fl variable, usually sc); Heuchera americana (fl r; fol g); H. hispida (fl veined p; fol g); H. sanguinea (fl r; fol g); Holcus lanatus albo-variegatus (fol w, striped g); Hypericum elegans (fl y); H. patulum (fl y); H. perforiatum (fl y); Iberis Tenoreana (fl p or w); Incaurvillea Olgae (fl pi); Iris (Xiphion) alata (fl l-p); I. aurea (fl y); I. balkana (fl l-p); I. biflora (fl v-p); I. Chamæiris (fl y, veined br); I. cretensis (fl b); I. cristata (fl l); I. dichotoma (fl l, w, and p); I. Douglasiana (fl l-p); I. (Xiphion) filifolia (fl p, keel y); I. flavescens (fl y); I. florentina (fl w, l, g, and br); I. foetidissima (fl b-l); I. fulva (fl br); I. germanica (fl variable, sc); I. graminea (fl l-p, w, y, and b-p, sc); I. Guldenstadiana (fl w, o, and y); I. (Xiphion) Histrio (fl l, l-p and y); I. hybrida (fl variable); I. iberica (fl p-b, blotched p); I. i. insignis (fl w and l-w, blotched and veined r-br); I. laevigata (fl p, blotched y, &c.); I. lutescens, fl y, marked p-br); I. Monnier. (fl y, sc); I. neglecta (fl l, w, and p); I. ochroleuca (fl w and o-y); I. (Xiphion) persica (fl y-l, keeled y, sc); I. pumila (fl l-p); I. (Xiphion) reticulata (fl v-p, lined y); I. rubromarginata (fl g, tinged p); I. sambucina (fl p and y, sc); I. sibirica (fl l-b and w); I. equalans (fl l-p, y, and br-y); I. tectorum (fl l and w); I. (Xiphion) tingitana (fl l-p); I. tuberosa (fl g-y); I. unguicularis (fl l, y, and w, sc); I. variegata (fl br and y); I. versicolor (fl p); I. (Xiphion) vulgare (fl p); I. (Xiphion) xiphoides (fl l-p, y, and p); Isopyrum thalictroides (fl w; fol g); Kniphofia aloides (fl coral-r, fading to g-y) and vars.; K. Burchelli (fl r and y, tipped g); K. Leichtlinii (fl r and y); K. Booperi (fl o-r, turning y); Lactuca alpina (fl p-b); L. macrorhiza (fl v-p); L. tuberosa (fl b); Lamium maculatum (fl p; fol g, striped w; Lathyrus magellanicus (fl b-p); L. pratensis (fl y); L. rotundifolius (fl pi); L. sylvestris platyphyllus (fl pi or w); Lencoum aestivum (fl w, tipped g); L. Hernandezii (fl w, spotted g); L. vernum (fl w, spotted g, sc); Libertaria formosa (fl w); Ligularia Kamperii aureo-maculata (fol g, blotched y, w, or pi); Lilium aratum (fl w, banded y, spotted p) and vars.; L. bulbiferum (fl r); L. canadense (fl y to r, spotted r-p); L. candidum (fl w, rarely tinged p); L. Cateshii (fl o-r, spotted p); L. chalcedonium (fl r, rarely y); L. concolor Buschianum (fl r,

Borders (Hardy Perennials)—continued.

spotted bk below); *L. croceum* (*f* y, tinted r); *L. davuricum* (*f* r) and vars.; *L. elegans* (*f* r, rarely spotted); *L. e. armeniacum* (*f* r, spotted y); *L. e. atrosanguineum* (*f* blotched r); *L. e. sanguineum* (*f* r and y); *L. Hansoni* (*f* r-o, dotted p); *L. Krameri* (*f* w, tinged r, sc); *L. Leichtlinii* (*f* y, marked p and r); *L. longiflorum* (*f* w, sc); *L. l. eximium* (*f* w); *L. Martagon* (*f* p-r, spotted p); *L. monadelphum* (*f* y, tinged r at base) and vars.; *L. oxypetalum* (*f* l-p, dotted p within); *L. pardalinum* (*f* o-r, variable); *L. Parryi* (*f* y, spotted br-r, sc); *L. philadelphicum* (*f* o-r, spotted p below); *L. pomponium* (*f* r); *L. pseudo-tigrinum* (*f* r, spotted bk within); *L. pyrenaicum* (*f* y); *L. roseum* (*f* l); *L. speciosum* (*f* w, or spotted r); *L. s. albiflorum* (*f* w); *L. s. punctatum* (*f* w, spotted r); *L. s. roseum* (*f* w, tinted pi); *L. superbum* (*f* o-r, spotted); *L. tenuifolium* (*f* r); *L. tigrinum* (*f* o-r, spotted p-bk) and vars.; *L. Washingtonianum* (*f* w, tinged p or l); *L. Linaria dalmatica* (*f* y); *L. purpurea* (*f* b-p); *L. triornithophora* (*f* p and y); *L. linum narbonense* (*f* b or w); *Lithospermum Gastoni* (*f* b); *L. purpureo-œruleum* (*f* r, at length p); *L. prostratum* (*f* b, striped r-v); *Lobelia siphilitica* (*f* b); *Lophanthus anisatus* (*f* b); *Lupinus lepidus* (*f* p-b, spotted w); *L. leucophyllus* (*f* pi); *L. nootkatensis* (*f* b, mixed p, w, or y); *L. ornatus* (*f* b); *L. perennis* (*f* b); *L. polyphyllus* (*f* b); *L. subcarnosus* (*f* b, blotched y); *Lychnis chalcœdonica* (*f* r or w); *L. coronaria* (*f* r); *L. diurna* (*f* p-pi); *L. fulgens* (*f* r); *L. f. Haageana* (*f* r, varying to w); *L. vespertina* (*f* w, sc); *L. Viscaria* (*f* pi or r); *Lythrum Salicaria* (*f* r-p); *Malva Alcea fastigiata* (*f* r); *M. moschata* (*f* pi or w); *Marshallia cœspitosa* (*f* b-w); *Melittis Melisophyllum* (*f* c-w, spotted pi or p); *Mertensia alpina* (*f* b); *M. lanceolata* (*f* b); *M. sibirica* (*f* p-b or w); *M. virginica* (*f* p-b); *Meum athamanticum* (*f* w); *Milla biflora* (*f* w and g); *Mimulus moschatus* (*f* y; *fol* sc); *Mirabilis Jalapa* (*f* w, y, r, &c.); *Monarda didyma* (*f* r); *M. fistulosa* (*f* p); *Morina Coulteriana* (*f* y); *M. longifolia* (*f* w, changing to r); *Muscari botryoides* (*f* b, w teeth) and vars.; *M. comosum monstrosum* (*f* b-v); *M. Elwesii* (*f* b); *M. Heldreichii* (*f* b); *M. moschatum* (*f* p, changing to g-y tinged v, sc); *M. neglectum* (*f* b, sc); *M. paradoxum* (*f* b-bk, g inside, sc); *M. racemosum* (*f* b, changing to r-p, sometimes tipped w, sc); *M. Szovitsianum* (*f* b, sc); *Myosotis biflorata* (*f* b); *M. pauciflorus* (*f* b, y throat); *Narcissus dissiflorus* (*f* w, crown y); *N. Bulbocodium* (*f* y) and vars.; *N. calathinus* (*f* y); *N. incomparabilis* (*f* y) and vars.; *N. Jonquilla* (*f* y, sc); *N. Macleani* (*f* w and y); *N. poeticus* (*f* w, crown edged r, sc) and vars.; *N. Psendonarcissus* (*f* y) and vars.; *N. Tazetta* (*f* w and y, &c., sc) and vars.; *N. triandrus* (*f* w or y, &c.) and vars.; *Nierembergia rivularis* (*f* w, tinged pi or y); *Nothoscordium fragrans* (*f* w, barred l, sc); *E. Nothoscordium acaulis* (*f* w, fading to r); *E. californica* (*f* w, varying to pi, y centre, sc); *E. eximia* (*f* w); *E. glauca* (*f* y); *E. g. Fraseri* (*f* y); *E. linearis* (*f* y, sc); *E. missouriensis latifolia* (*f* y); *E. pallida* (*f* w, y at base); *E. speciosa* (*f* w, fading to r); *E. taraxacifolia* (*f* w, fading to r); *Ononis Natrix* (*f* y, veined r); *Onopordon Acanthium* (*f* p); *Ornithogalum narbonense* (*f* w, striped g); *O. nutans* (*f* w and g); *O. pyramidale* (*f* w and g); *O. umbellatum* (*f* w and g); *Orobis aurantiacus* (*f* y); *O. flaccidus* (*f* p); *O. pannonicus* (*f* w, p, &c.); *O. vernus* (*f* p and b, veined r); *Ourisia coccinea* (*f* r, c anthers); *O. Pearcei* (*f* r); *Oralis tetraphylla* (*f* r or p-v); *Pæonia albiflora* (*f* w, pi, &c.) and vars.; *P. Emodi* (*f* w); *P. officinalis* (*f* r); *P. tenuifolia* (*f* r); *P. Wittmanniana* (*f* y-w); *P. varieties*; *Panocratum illyricum* (*f* w, sc); *Panicum virgatum* (*f*); *Papaver bracteatum* (*f* r); *P. nudicaule* (*f* y or w); *P. orientale* (*f* r, spotted p); *P. pilosum* (*f* r or o, marked w); *Pedicularis dolichorhiza* (*f* y); *P. flammea* (*f* r); *P. Scepterum-Carolinum* (*f* y); *P. verticillata* (*f* pi or w); *Peltaria alliacea* (*f* w); *Pentstemon antirrhinoides* (*f* y); *P. asureus* (*f* b, r-p at base); *P. barbatus* (*f* r) and var.;

Borders (Hardy Perennials)—continued.

P. breviflorus (*f* y or pi); *P. campanulatus* (*f* pi, v, &c.); *P. confertus* (*f* g-y); *P. denustus* (*f* y); *P. diffusus* (*f* p); *P. Eatoni* (*f* r); *P. glaber* (*f* p, v, or b); *P. gracilis* (*f* l-p or w); *P. Hartwegi* (*f* r); *P. heterophyllus* (*f* pi or pi-p); *P. Menziesii Douglasii* (*f* l-p, pi-r at base); *P. Murrayanus* (*f* r); *P. pubescens* (*f* v or p, or partly w); *P. venustus* (*f* p); *Petasites fragrans* (*f* w, sc); *P. frigida* (*f* w); *Phalaris arundinacea* (*f* p); *Phlomis herba-venti* (*f* b-v); *Phlox amœna* (*f* p, pi, or w); *P. divaricata* (*f* l or b); *P. glaberrima* (*f* r); *P. g. suffruticosa* (*f* pi); *P. maculata* (*f* p, &c., sc); *P. ovata* (*f* r-p); *P. paniculata* (*f* pi-p, varying to w); *P. pilosa* (*f* pi, p, w, &c.); *P. reptans* (*f* p or v); *P. subulata* (*f* p or w); *Phnopsis stylosa* (*f* pi); *Physalis Alkekengi* (*f* w and r; *fr* r); *Physostegia virginiana* (*f* pi or p) and vars.; *Phyteuma comosum* (*f* p or b); *Humile* (*f* b); *Phytolacca decandra* (*f* w; *fr* p); *Platyodon grandiflorum* (*f* b); *Plumbago Larpentis* (*f* v); *Polemonium œruleum* (*f* b; *fol* sometimes variegated); *P. confertum* (*f* b); *P. humile* (*f* b or p); *P. reptans* (*f* b or w); *Polygonatum biflorum* (*f* g); *P. multiflorum* (*f* w; *fr* b-bk), and vars.; *Polygonum affine* (*f* pi-r); *P. amplexicaule* (*f* pi-r or w); *P. compactum* (*f* w); *P. cuspidatum* (*f* c-w); *P. filiforme variegatum* (*fol* g and y); *P. sachalinense* (*f* g-y); *Potentilla argyrophylla* (*f* y); *P. congesta* (*f* w); *P. Hopwoodiana* (*f* variegated pi and y); *P. nitida* (*f* pi); *P. unguiculata* (*f* w); *Prenanthes purpurea* (*f* p); *Primula Allionii* (*f* mv, w eye); *P. altaica* (*f* mv or p-r, y eye); *P. Auricula* (*f* variable); *P. auriculata* (*f* p, w eye); *P. calycina* (*f* p); *P. capitata* (*f* v-b); *P. cœrtusoides* (*f* pi); *P. denticulata* (*f* l); *P. d. cashmeriana* (*f* p, y eye); *P. farinosa* (*f* p, y eye); *P. floribunda* (*f* y); *P. glutinosa* (*f* b-p); *P. japonica* (*f* variable); *P. marginata* (*f* pi-v); *P. minima* (*f* pi or w); *P. mollis* (*f* r, pi); *P. nivalis* (*f* w); *P. Parryi* (*f* pi, y eye); *P. rosea* (*f* pi-r, y eye); *P. scotica* (*f* p, y eye); *P. sikkimensis* (*f* y); *P. spectabilis Wulfeniana* (*f* pi-p); *P. Steini* (*f* p); *P. Stuartii* (*f* p); *P. viscosa* (*f* pi-p, w eye); *P. v. pedemontana* (*f* pi-p, y-w eye); *P. vulgaris* (*f* y); *Pulmonaria angustifolia* (*f* pi, at length b); *P. saccharata* (*f* pi); *Puschkinia scilloides* (*f* w, striped b); *Pyrethrum aciliolifolium* (*f* y); *P. corymbosum* (*f* w); *P. parthenifolium aureum* (*fol* g-y); *P. roseum* (*f* pi and y) and vars.; *P. Tohinhatchewii* (*f* w and y); *T. uliginosum* (*f* w and y); *Ranunculus aconitifolius* (*f* w); *R. amplexicaulis* (*f* w); *R. anemonoides* (*f* w, tinted p); *R. asiaticus* (*f* variable); *R. a. sanguineus* (*f* p, y, o, or variegated); *R. cortusifolius* (*f* y); *R. gramineus* (*f* y); *R. parnasifolius* (*f* w or p); *Rhoum nobile* (*fol* g, nerved r); *R. officinale* (*fol* g); *Rhexia ciliosa* (*f* p); *R. virginica* (*f* p); *Romulea Bulbocodium* (*f* y and v, &c.); *Rudbeckia grandiflora* (*f* y and p); *R. maxima* (*f* y); *R. pinnata* (*f* y); *R. purpurea* (*f* r-p, tipped g); *R. speciosa* (*f* o and bk-p); *Ruscus Hypophyllum* (*fr* r); *Salvia asperata* (*f* w); *S. discolor* (*f* p and v-bk); *S. hians* (*f* b); *S. interrupta* (*f* v-p, w throat); *S. Rœmeriana* (*f* r); *S. Sclarea* (*f* b-w); *Sanguinaria canadensis* (*f* w); *Saponaria officinalis* (*f* l or w); *Saussurea pulchella* (*f* p); *Saxifraga Campopii* (*f* w); *S. Cotyledon* (*f* w; *fol* edged w); *S. crassifolia* (*f* r); *S. diversifolia* (*f* y); *S. granulata* (*f* w); *S. ligulata* (*f* r-w); *S. peltata* (*f* w or pi; *fol* g); *S. Stracheyi* (*f* pi); *S. umbrosa* (*f* w, marked r); *S. virginiana* (*f* w); *Scabiosa amœna* (*f* l or pi); *S. caucasia* (*f* b); *S. Webbiana* (*f* c-y); *Soilla amœna* (*f* b or w); *S. bifolia* (*f* b, r, or w); *S. hispanica* (*f* b, w, &c.) and vars.; *S. hyacinthoides* (*f* b-l); *S. nutans* (*f* b, p, w, or pi); *S. peruviana* (*f* l, r, or w); *S. pratensis* (*f* b); *S. sibirica* (*f* b); *Scolymus grandiflorus* (*f* y); *Scopolia carniolica* (*f* r, y or g within); *Scorzonera undulata* (*f* p-pi); *Scutellaria orientalis* (*f* y, or y and p); *Sedum acre aureum* (*fol* y); *S. Aizoon* (*f* y); *S. album* (*f* w; *fol* g and br); *S. brevifolium* (*f* w, ribbed pi; *fol* pi); *S. erythrostictum* (*f* g, flushed pi); *S. glaucum* (*f* pi-w; *fol* g and w); *S. lydium* (*f* pi; *fol* g, tipped r); *S. maximum* (*f* w, spotted r; *fol* g); *S. m. hamatodes* (*fol* p);

Borders (Hardy Perennials)—continued.

S. pulchellum (fl pi-p); *S. reflexum* (fl y); *S. Rhodiola* (fl g or r-p); *S. spectabile* (fl pi); *Sempervivum arachnoideum* (fl r; fol g and br); *S. atlanticum* (fl r; fol g and r-br); *S. Boisieri* (fl r; fol g); *S. calcaratum* (fl r-w; fol g, tipped r-br); *S. calcareum* (fl r; fol g, tipped r-br); *S. fibriatum* (fl r; fol g and r); *S. Funckii* (fl r-p; fol g); *S. Heuffelii* (fl y; fol g, tinted r-br); *S. Lamottei* (fl pi; fol g, tipped r-br); *S. montanum* (fl p; fol g); *S. Pomelii* (fl pi-r; fol g); *S. soboliferum* (fl y; fol g, tipped r-br); *S. Wulfeni* (fl y; fol g, tipped r-br); *Senecio Doria* (fl y); *S. Doronicum* (fl y); *S. pulcher* (fl p, disk y); *Sida Napæa* (fl w); *Silene Elizabethæ* (fl pi, w, and p); *S. Hookeri* (fl pi); *S. maritima* (fl w); *S. pennsylvanica* (fl pi); *S. Schafta* (fl p); *S. virginica* (fl r); *Silphium laciniatum* (fl y); *Sisyrinchium grandiflorum* (fl p, striated, or w); *Smilacina oloracea* (fl w, tinged pi); *S. stellata* (fl w); *Solidago Drummondii* (fl y); *S. lanceolata* (fl y); *S. speciosa* (fl y); *Spigelia marilandica* (fl r and y); *Spiræa astilboidea* (fl w); *S. Filipendula* (fl w or pi); *S. palmata* (fl r); *S. p. alba* (fl w); *S. Ulmaria* (fl w); *Stachys grandiflora* (fl pi and w); *S. lunata* (fl striped); *S. Maewana* (fl y-w, blotched p); *Stachis elata* (fl b); *S. floribunda* (fl b); *S. latifolia* (fl b); *S. tatarica* (fl r); *Sternbergia lutea* (fl y) and vars.; *Stipa pennata* (fl); *Streptopus roseus* (fl p); *Stylophorum diphyllum* (fl y); *Symphytum caucasicum* (fl b); *S. officinale bohemicum* (fl r or r-p); *S. tuberosum* (fl y); *Tamnoctum leptophyllum* (fl y; fol g-w); *Tenerium Chamædryis* (fl pi, spotted w and r); *Thalictrum anemoneoides* (fl w or pi); *T. aquilegifolium* (fl w); *T. tuberosum* (fl w); *Thermopsis barbata* (fl p); *T. montana* (fl y); *Thladiantha dubia* (fl); *Tiarella cordifolia* (fl w); *Tradescantia virginica* (fl v, p, or w); *Trifolium Lupinaster* (fl p); *Trillium erectum* (fl p); *T. erythrocarpum* (fl w, striped p); *T. grandiflorum* (fl w, turning pi); *T. nivale* (fl w); *Tritonia Potssii* (fl y, flushed r); *Trollius europæus* (fl y); *Tropæolum polyphyllum* (fl y); *T. speciosum* (fl r); *Tulipa australis* (fl flushed r); *T. Clusiana* (fl w, r, and bk); *T. Eichleri* (fl r, marked y and bk); *T. elegans* (fl r, y eye); *T. Gesneriana* (fl r, y, &c.); *T. Greigi* (fl r, blotched bk); *T. macrosepala* (fl r, blotched bk and y); *T. Oculus-solis* (fl r, blotched bk); *T. præcox* (fl r, blotched bk); *T. pubescens* (fl variable, sc); *T. retroflexa* (fl y); *T. suaveolens* (fl r and y, sc); *T. sylvestris* (fl y, sc); *T. varieties*; *Tussilago Farfara variegata* (fol g and c-w); *Uvularia grandiflora* (fl y); *U. sessilifolia* (fl y); *Valeriana Phu aurea* (fl w; fol g and y); *Veratrum album* (fl w and g); *V. nigrum* (fl bk-p); *Veronica incana* (fl b); *V. spicata* (fl b); *V. virginica* (fl w or b); *Vesicaria utriculata* (fl y); *Vicia argentea* (fl pi, spotted bk); *Vinea major* (fl b-p); *V. minor* (fl v-p, w, or b); *Viola cornuta* (fl b); *V. cucullata* (fl v-b or p) and var.; *V. Munbyana* (fl v or y) and var.; *V. odorata* (fl b, v, or r-p, sc) and vars.; *V. pedata* (fl b or w) and vars.; *V. rothomagensis* (fl b, striped bk); *V. suavis* (fl b and w, sc); *V. tricolor* (fl variable) and vars.; *Waldsteinia fragarioides* (fl y); *Wulfenia carinthiaca* (fl b); *Yucca angustifolia* (fl g; fol g and r-br) and var.; *Yucca filamentosa* vars. (fol g, &c.); *Y. glauca* (fl w; fol g); *Y. gloriosa recurvifolia* (fl w, tinged r; fol g); *Zephyranthes Atamasco* (fl w).

Half-Hardy.—**ANNUALS.**—*Alonsoa linifolia* (fl r); *A. Warsceviczii* (fl r); *Amarantus bicolor ruber* (fol); *A. hypochondriacus* (fl and fol r); *A. h. atropurpureus* (fl and fol p); *A. melancholicus ruber* (fol); *Ammobium alatum grandiflorum* (fl w); *Brachycome iberidifolia* (fl b or w, dark centre); *Browallia domissa* (fl b, r or p); *B. elata* (fl b); *B. grandiflora* (fl g-y, and w or l); *B. Jamesoni* (fl o); *Castilleja indivisa* (fl g-y, bracts r); *Chloris barbata* (fl); *Coix lachryma* (fr); *Datura fastuosa* (fl w, w within); *D. Metel* (fl w, sc); *Gomphrena globosa* (fl variable); *Heliochrysum bracteatum* (fl variable); *H. b. niveum* (fl w, y); *Helipterum Humboldtianum* (fl y); *H. Manglesii* (fl pi, p, and y); *Impatiens Balsamina* (fl r); *Ipomœa hederacea* (fl b); *Lamarckia aurea* (fl); *Lopezia coronata* (fl pi-p); *Martynia fragrans* (fl r-p, throat y,

Borders (Half-hardy Annuals)—continued.

sc); *Mathiola annua* (fl variable, sc); *Maurandya Barclayana* (fl g and v-p); *Mentzelia bartonioides* (fl w-y); *M. ornata* (fl w, sc); *Nicotiana affinis* (fl y, sc); *N. longiflora* (fl w, turning p or y-g); *Pennisetum longistylum* (fl p); *Perilla ocimoides crispata* (fol p); *Petunia varieties* (fl variable); *Phlox Drummondii* (fl r, w, &c., dark eye); *Portulaca grandiflora* (fl y-g); *Ricinus communis* (fol g) and vars.; *Salpiglossis sinuata* (fl p, y-w, &c.); *Salvia coccinea* (fl r) and vars.; *Schizanthus candidus* (fl w); *S. Grahani* (fl l or pi, and y); *S. G. retusus* (fl pi and o); *Schizopetalon Walkeri* (fl w); *Senecio elegans* (fl p and y); *Swertia corymbosa* (fl b, or w nerved b); *S. paniculata* (fl w, and p or g); *Zaluzianskia capensis* (fl w); *Zinnia elegans* (fl variable) and vars.

BIENNIALS.—*Ammobium alatum grandiflorum* (fl w); *Anagallis fruticosa* (fl b); *Anarrhinum bellidifolium* (fl w or b); *Blumenbachia coronata* (fl w); *Mathiola incana* (fl p, &c., sc).

PERENNIALS.—*Ainslia Walkeræ* (fl w, r anthers); *Alströméria Pelegrina* (fl w or y, striped pi); *A. pulchra* (fl p and y-w, spotted r); *Amaryllis Belladonna* (fl w to p); *Ambrosinia Bassii* (fl g); *Amicia Zygomeres* (fl y, splashed p); *Anagallis linifolia* (fl b); *A. l. Broweri* (fl r); *A. l. Eugenio* (fl b, margined w); *A. l. Napoleon III.* (fl r); *A. l. phœnicia* (fl r); *A. l. Wilmoreana* (fl b-p, y eye); *Anomatheca cruenta* (fl r); *Antholyza æthiopia* (fl r and g); *A. castra* (fl r); *A. Cunouia* (fl r and bk); *Antirrhinum tortuosum* (fl p); *Aphyllanthes monspeliensis* (fl b); *Arctotis acualis* (fl y and r); *A. arborescens* (fl w, pi, and y); *A. grandiflora* (fl o); *A. speciosa* (fl y); *Arisæma speciosa* (fl p, g, and w); *Astilbe japonica* (fl w); *A. j. variegata* (fl w; fol g, variegated y); *Babiana disticha* (fl b, sc); *B. plicata* (fl v-b, sc); *B. ringens* (fl r); *B. stricta* (fl w and l-b, dark blotch); *B. a. rubro-cyanea* (fl r and b, sc); *B. s. sulphurea* (fl c or y, b anthers); *B. s. villosa* (fl r, v-b anthers); *Begonia Evansiana* (fl pi); *Bellis rotundifolia cærulescens* (fl w or b); *Bessera elegans* (fl r, or r and w, variable); *Blumenbachia chinquensis* (fl r and y); *Boussingaultia baselloides* (fl w); *Bravoa geminiflora* (fl o-r); *Brodiaea gracilis* (fl y, nerved br); *B. volubilis* (fl pi); *Calceolaria amplexicaulis* (fl y); *C. arachnoidea* (fl p); *C. Burbidgei* (fl y); *C. Fothergilli* (fl y, spotted r); *C. Pavonii* (fl y and b); *C. plantaginea* (fl y); *Calochortus albus* (fl w, blotched); *C. Benthami* (fl y); *C. caruleus* (fl l, marked b); *C. elegans* (fl g-w, p base); *C. Gunnisoni* (fl l, g, and p); *C. lilacinus* (fl pi); *C. luteus* (fl g and y); *C. Nuttallii* (fl g and y, marked r and p); *C. pulchellus* (fl y); *C. purpureus* (fl g, p, and y); *C. splendens* (fl l); *C. venustus* (fl w and y, marked r); *Caloscordum nerinaeflorum* (fl pi); *Caryopteris Mastacanthus* (fl w); *Centaura Cineraria* (fl p); *C. ragusina* (fl y); *Chionographis japonica* (fl w); *Chianthus Dampieri* (fl r, blotched bk or p); *Colestima ageratoides* (fl b); *Collinsonia anisata* (fl y); *Commelina cœlestis* (fl b); *C. c. alba* (fl w); *Crinum asiaticum* (fl w); *C. Macowani* (fl g, w, and p); *Cypella Herberti* (fl y); *Dahlia varieties* (fl w, y, r, &c.); *Dianella lavis* (fl b); *Eryngium pandanifolium* (fl p); *Eucomis bicolor* (fl g, edged p); *E. nana* (fl br); *Ferraria Ferrariola* (fl g-br); *F. undulata* (fl g-br); *Francoa ramosa* (fl w); *F. sonchifolia* (fl pi, often blotched); *Gaillardia aristata* (fl y, styles r); *Gaura Lindheimeri* (fl pi-w); *Gladiolus blandus* (fl w and y, marked r); *G. brachyandrus* (fl r); *G. cardinalis* (fl r, spotted w); *G. Colvillei* (fl r, marked p); *G. C. alba* (fl w); *G. cruentus* (fl r and y-w); *G. cuspidatus* (fl p and r, &c.); *G. floribundus* (fl w, p, r, &c.); *G. Papilio* (fl p and y); *G. pit-tacinus* (fl r, p, y, and g); *G. purpureo-auratus* (fl y, blotched p); *G. varieties*; *Gunnera manicata* (fol g); *G. soabra* (fl r; fol g); *Heliodioides cernitius* (fl p-br); *Herbertia cœrulea* (fl w and b); *Hyaacinthus varieties* (fl variable); *Iris susiana* (fl w, tinged l, marked br-bk); *Lilium cordifolium* (fl y, v, p); *L. giganteum* (fl w, tinged g and p); *L. japonicum* (fl w, y, tinged p); *Lilium Maconii*

Borders (Half-hardy Perennials)—continued.

(*f* o); *Lobelia cardinalis* (*f* r); *L. fulgens* (*f* r); *L. splendens* (*f* r); *Moraea edulis* (*f* v, spotted *y*); *M. tricuspidis* (*f* g-w, spotted *p*); *M. unguiculata* (*f* w, spotted *p-r*); *Myosotis azorica* (*f* p, at length *b*); *Neja gracilis* (*f* y); *Nierembergia calycina* (*f* y and *w*); *Ophiopogon Jaburan variegatus* (*f* v-b; *fr* *b*); *O. japonicus* (*f* w); *O. j. intermedium* (*f* w); *Othonnopsis cheirifolia* (*f* y); *Panoratum maritimum* (*f* w, *sc*); *Petunia violacea* vars. (*f* variable); *Phygadeuon capensis* (*f* r); *Romneya Coulteri* (*f* w); *Salvia patens* (*f* b); *Saxifraga oortusifolia* (*f* w); *S. Fortunei* (*f* w); *Schizostylis coccinea* (*f* r); *Scilla chinensis* (*f* pi-p); *Sisyrinchium iridifolium* (*f* y-w); *Stachys callicoma* (*f* p); *S. sinuata* (*f* y); *Tephrosia virginiana* (*f* y-w, marked *p*); *Tigridia pavonia* (*f* o-y); *Tricyrtis birta* (*f* y, dotted *p*); *T. macropoda* (*f* w-p, dotted *p*); *Tritelioia laxa* (*f* b); *T. porrifolia* (*f* w-v); *T. uniflora* (*f* l); *Tropaeolum tricolorum* (*f* o, r, and *bk*); *Urginea maritima* (*f* w, keeled *g-p*); *Verbena venosa* (*f* l or *b*); *Viola hederacea* (*f* b or *w*); *V. pedunculata* (*f* y); *Wachendorfia thyrsiflora* (*f* y); *Zephyranthes carinata* (*f* g and *pi*); *Z. rosea* (*f* pi).

CLIMBERS.—The most desirable herbaceous plants of a scandent or twining habit are here enumerated. By far the larger number of the ornamental Climbers and Twiners grown in our gardens, both outdoors and under glass, are of a shrubby nature: these are classified under the heading **Shrubs**.

Hardy.—ANNUALS.—*Amphicarpæa monoica* (*f* r and *w*); *Ipomœa purpurea* (*f* p); *Lathyrus grandiflorus* (*f* pi); *L. odoratus* (*f* variable, *sc*); *Maurandya Barclayana* (*f* g and *v-p*); *Tropaeolum peregrinum* (*f* y).

PERENNIALS.—*Apios tuberosa* (*f* br-p, *sc*); *Calystegia dahurica* (*f* pi-p); *C. pubescens flore-pleno* (*f* w-pi, changing to *pi*); *C. Soldanella* (*f* r and *y*); *Cardamine trifolia* (*f* w); *Cedronella cordata* (*f* p); *Cynanchum roseum* (*f* r); *Hablitia tannoides* (*f* g); *Humulus Lupulus* (*f* g-y); *Ipomœa pandurata* (*f* w and *p*); *Lathyrus magellanicus* (*f* b-p); *L. roseus* (*f* pi); *L. rotundifolius* (*f* pi); *L. sylvestris platyphyllus* (*f* pi); *Mutisia decurrens* (*f* o).

Half-hardy.—ANNUALS.—*Grammotocarpus volubilis* (*f* y); *Ipomœa hederacea* (*f* b); *Trichosanthes anguina* (*f* w; *fr*).

BIENNIAL.—*Adlumia cirrhosa* (*f* pi).

PERENNIAL.—*Blumenbachia chiquitensis* (*f* r and *y*).

Tender.—ANNUALS.—*Citrullus vulgaris* (*st*, *fr*); *Ipomœa Bona-nox* (*st*, *f* w); *I. Quamoclit* (*st*, *f* r); *Porana racemosa* (*c-h*, *f* w); *Thunbergia alata* (*st*, *f* y and *p*); *Trichosanthes palmata* (*st*, *f* w; *fr*).

PERENNIALS.—*Alstrœmeria densiflora* (*c-h*, *f* r, dotted *bk*); *Aristolochia Goldieana* (*st*, *f* g, *y*, and *br*); *Asparagus scandens* (*c-h*, *fol* g); *Batatas bignonioides* (*st*, *f* p); *B. Cavaniillesii* (*st*, *f*, *w-r*); *B. paniculata* (*st*, *f* p); *Blumenbachia contorta* (*c-h*, *f* o-r and *g*); *Bomarea Caldasiana* (*c-h*, *f* o-y); *B. Carderi* (*c-h*, *f* p, spotted *p-br*); *B. oligantha* (*c-h*, *f* r and *y*); *B. Shuttleworthii* (*c-h*, *f* o-r, *y*, and *g*); *B. Williamsii* (*c-h*, *f* pi); *Campana grandiflora* (*st*, *f* w and *r*); *Campanumœa gracilis* (*st*, *f* b); *Canavalia bonariensis* (*st*, *f* p); *C. ensiformis* (*st*, *f* w and *r*); *C. obtusifolia* (*st*, *f* p); *Ceropegia elegans* (*st*, *f* p); *C. Gardnerii* (*c-h*, *f* w, blotched *p*); *C. Wrightii* (*st*, *f* g and *p*); *Cobœa penduliflora* (*i-h*, *f* g); *C. scandens* (*c-h*, *f* p); *Columnæa Schiedeana* (*st*, *f* y and *br*); *Hardenbergia Comptoniana* (*c-h*, *f* p); *H. monophylla* (*c-h*, *f* p); *Kennedy prostrata* *Marryattæ* (*c-h*, *f* r); *K. rubicunda* (*c-h*, *f* r); *Litonia modesta* (*st*, *f* o); *Maurandya scandens* (*c-h*, *f* p-w); *Momordica Charantia* (*st*, *f* y; *fr* *br* or *r*); *Myrsiphyllum asparagoides* (*c-h*, *f* g or *w*; *fol* g); *Orypetalum caruleum* (*i-h*, *f* b); *Rhodochiton volubile* (*c-h*, *f* r); *Selaginella Willdenovii* (*st*, *fol* g); *Swainsona galegifolia* (*c-h*, *f* r); *Testudinaria elephantipes* (*c-h*, *f* g-y; *fol* g); *Thunbergia coccinea* (*st*, *f* r or *o-pi*); *T. fragrans* (*st*, *f* w, *sc*); *T. laurifolia* (*st*, *f* b); *Tropaeolum azureum* (*c-h*, *f* b and *g-w*); *T. Jarrattii* (*c-h*, *f* o-r, *y*, and *br*); *T. Lobbianum* (*c-h*, *f* o); *T. peregrinum* (*c-h*, *f* y).

COOL HOUSE.—The term "Cool House" applies equally to the Greenhouse and the Conservatory. Most of the plants are subjects which, though tender, do not require any great degree of heat to bring them to perfection; but a few hardy ones which are indispensable for Cool-house decoration, e.g., *Auricula* and some of the *Liliums*, are also included. From 45deg. to 50deg. should be the maximum winter temperature of a structure suited to their requirements. In summer, artificial heat is unnecessary.

ANNUALS.—*Ageratum mexicanum* (*f* l-b) and vars.; *Amarantus tricolor* (*fol* p-r or r, and *y*); *Browallia demissa* (*f* b, r, or *p*); *B. elata* (*f* b) and vars.; *B. grandiflora* (*f* w or *l*); *Drosera peltata* (*f* pi); *D. rotundifolia* (*f* w); *Gomphrena globosa* (*f* variable); *Holipterum Manglesii* (*f* y or *p*); *Impatiens flaccida* (*f* p); *Martynia fragrans* (*f* r, p, y throat, *sc*); *M. proboscidea* (*f* v, y-w, &c.); *Maurandya Barclayana* (*f* v-p and *g*); *Nicotiana acutiflora* (*f* w); *N. affinis* (*f* w, g outside, *sc*); *N. longiflora* (*f* w, turning *p* or *y-g*); *Oxalis Barrelieri* (*f* y, spotted o); *Phlox Drummondii* (*f* r, varying to *pi*, *p*, or *w*); *Porana racemosa* (*f* w); *Reseda odorata* (*f* y-w, &c., *sc*); *Rhodochiton volubile* (*f* r); *Salpiglossis sinuata* (*f* p, y-w, &c.); *Salvia coccinea* (*f* r); *Schizanthus candida* (*f* w); *S. Grahami* (*f* l or *pi*, and *y*) and var.; *S. pinnatus* (*f* v or *l*, *p*, and *y*); *Schizopetalum Walkeri* (*f* w); *Solanum Melongena* (*f* b; *fr* w, y, or *p*); *S. sisymbriifolium* (*f* b or *w*; *fr* r); *Waitsia aurea* (*f* y); *W. nivea* (*f* w).

BIENNIALS.—*Blepharis capensis* (*f* b); *Convolvulus erubescens* (*f* r-pi); *Echium candicans* (*f* b); *Eustoma Russellianum* (*f* l-p); *Humea elegans* (*f* br-r, pi, or r; *fol* g).

PERENNIALS.—*Actinocarpus minor* (*aq*, *f* w); *Actinotus helianthi* (*f* w); *Agapanthus umbellatus* (*f* b) and vars.; *A. u. variegatus* (*f* w, banded *g*); *Agathaea caelestis* (*f* b); *Albica aurea* (*f* y); *A. Nelsoni* (*f* w, striped r); *Amicia Zygomeres* (*f* y and *p*); *Amorphophallus Lacourii* (*fol* g, mottled *y*); *A. Rivieri* (*f* r and *pi-g*; *fol* g); *Amphicoma arguta* (*f* r); *A. Enodi* (*f* pi and o); *Anelima biflora* (*f* b); *Anigozanthus coccineus* (*f* r); *A. flavidus* (*f* y-g) and vars.; *A. pulcherrimus* (*f* y); *A. tyrianthinus* (*f* p and *w*); *Anomatheca oruenta* (*f* r); *Antholyza æthiopicæ* (*f* r and *g*); *A. caffra* (*f* r); *A. Cunonia* (*f* r and *bk*); *Anthurium cordifolium* (*fol* g); *A. coriaceum* (*fol* g); *Arisæma concinna* (*f* w, and *g* or *b-p*); *A. curvatum* (*f* g, w, and *br-r*); *A. galcuta* (*f* g, w, and *p*); *A. nepenthoides* (*f* y, *br*, and *g*); *A. speciosa* (*f* p, g, and *w*); *Arthropodium neo-caledonium* (*f* w); *A. paniculatum* (*f* w); *A. pondulum* (*f* w); *Arum palostinum* (*f* p, *bk*, and *y-w*); *Arundo Donax* (*f* r; *fol* g); *Asparagus decumbens* (*fol* g); *A. scandens* (*fol* g); *Astilbe japonica* (*f* w); *A. j. variegata* (*fol* variegated *y*); *A. rubra* (*f* pi); *Babiana disticha* (*f* b, *sc*); *B. plicata* (*f* v-b, *sc*); *B. ringens* (*f* r); *B. stricta* (*f* w and *l-b*, blotched) and vars.; *Bea hygrometrica* (*f* b, y throat); *Begonia Evansiana* (*f* pi; *fol* g, r beneath); *B. gracilis* (*f* pi); *B. natalensis* (*f* pi; *fol* g, spotted *w*); *Blandfordia aurea* (*f* y); *B. Cunninghamii* (*f* r); *B. flammea* (*f* y) and var.; *B. grandiflora* (*f* r); *B. nobilis* (*f* o and *y*); *Blumenbachia contorta* (*f* o-r); *Bravoa gominiflora* (*f* o-r); *Brodiaea gracilis* (*f* y, nerved *br*); *Brunonia australis* (*f* b); *Brunsvigia Cooperi* (*f* g-y, edged *r*); *B. falcata* (*f* r); *B. Josephinæ* (*f* r); *B. multiflora* (*f* r); *B. toxicaria* (*f* pi); *Bullbine alooides* (*f* y); *B. caulescens* (*f* y); *Caliphuria Hartwegiana* (*f* g-w); *C. subdentata* (*f* w); *Callipsyche aurantiaca* (*f* o-y); *C. eucrosioides* (*f* r and *g*); *C. mirabilis* (*f* g-y); *Calochortus albus* (*f* w, blotched); *C. Benthami* (*f* y); *C. cœruleus* (*f* l, dotted *b*); *C. elegans* (*f* g-w and *p*); *C. Gunnisoni* (*f* l, y-g, and *p*); *C. lilacinus* (*f* pi); *C. luteus* (*f* g and *y*); *C. Nuttallii* (*f* g and *w*, marked *r* and *p*); *C. pulchellus* (*f* y); *C. purpureus* (*f* g, *p*, and *y*); *C. splendens* (*f* l); *C. venustus* (*f* w and *r*) and vars.; *Calotis cuneifolia* (*f* b); *Carpolyca spiralis* (*f* w and *r*); *Centropogon fastuosus* (*f* pi); *Cephalotus folli-*

Cool House (Perennials)—*continued.*

ularis (*fol g, p, and r-pi*); *Ceropogon Barklyi* (*fl pi*); *C. Gardnerii* (*fl c-w, blotched p*); *C. Sandersoni* (*fl g*); *Chaenostoma polyantha* (*fl l and y*); *Chironia floribunda* (*fl pi*); *C. jasminoides* (*fl r or p*); *C. linoidea* (*fl r*); *Cinéraires orientalis* vars. (*fl*); *Clianthus Dampieri* (*fl r, blotched bk or p*); *Clivia nobilis* (*fl r and y*); *Cobaea penduliflora* (*fl g*); *C. scandens* (*fl p*) and vars.; *Coleus varieties* (*fol variegated*); *Colocasia esculenta* (*fl w; fol g*); *Commelina elliptica* (*fl w*); *Convolvulus mauritanicus* (*fl b. w throat*); *C. ocellatus* (*fl w, r-p eye*); *Crinum asiaticum* (*fl w, tube g*); *C. Macowani* (*fl w tinged p, and g*); *C. Moorei* (*fl w, flushed r*); *Cyanella odoratissima* (*fl pi, sc*); *Cyclamen africanum* (*fl w or tinted r, spotted p*); *C. cilicium* (*fl w, blotched p*); *C. Coum* (*fl r*) and vars.; *C. ibericum* (*fl r, spotted p; fol zoned w*) and vars.; *C. neapolitanum* (*fl w or r, spotted v-p*); *C. persicum* (*fl w, blotched p*) and vars.; *Cyperus alternifolius* (*fol g*); *C. a. variegatus* (*fol w, or g variegated w*); *Dahlia imperialis* (*fl w, l, and r*); *D. Juarezii* (*fl r*); *Darlingtonia californica* (*fl w or g*); *Decabelone Barklyi* (*fl y-w, spotted r*); *Dianella laevis* (*fl b*); *D. tasmanica* (*fl b; fr b*); *Dianthus Caryophyllus varieties* (*fl*); *Dionaea muscipula* (*s-aq, fl w; fol*); *Drimiopsis Kirkii* (*fl w*); *Drosora binata* (*fl w*); *D. filiformis* (*fl p*); *D. spatulata* (*fl p*); *Dyckia argentea* (*fol w-scaly*); *Elisona longipetala* (*fl w*); *Equisetum sylvaticum* (*fol g*); *Eulalia japonica folia-stratis* (*fol g, banded c*); *E. j. zebra* (*fol g, barred y*); *Falkia repens* (*fl r*); *Fragaria indica* (*fl g-y; fr r*); *Froesia Leichtlinii* (*fl y or c, sc*); *F. refracta* (*fl w or lined w, blotched o, sc*); *Galanthus Elwesii* (*fl w, spotted g*); *G. nivalis* (*fl w, marked g*) and vars.; *G. plicatus* (*fl g-w*); *Galaxia ovata* (*fl y*); *Geissorhiza grandis* (*fl y and r*); *G. inflexa* (*fl y, spotted p*); *G. Roehensis* (*fl b, spotted r*); *Gladiolus blandus* (*fl w and y, marked r*); *G. brachyandrus* (*fl r*); *G. cardinalis* (*fl r, spotted w*); *G. Colvillei* (*fl r, marked p*); *G. C. alba* (*fl w*); *G. eruentus* (*fl r and y-w*); *G. cuspidatus* (*fl p and r, &c.*); *G. floribundus* (*fl w, p, r, &c.*); *G. Pupilio* (*fl p and y*); *G. psittacinus* (*fl r, p, y, and g*); *G. purpureo-auratus* (*fl y, blotched p*); *G. varieties*; *Gynera aurantiaca* (*fl o; fol g, v-hairy*); *Hæmanthus natalensis* (*fl g and o*); *Hechtora argentea* (*fl w; fol ei*); *Hedychium flavum* (*fl o, sc*); *H. Gardnerianum* (*fl g-y, sc*); *Hesperantha radiata* (*fl w, tinged r-br*); *Hessea crispata* (*fl pi*); *Hibiscus coccineus* (*fl r*); *Hippeastrum alicium* (*fl r, g, and r-p*); *H. pardinum* (*fl c, dotted r*); *H. vittata* (*fl w, striped r*); *H. hybrids*; *Houttynia cordata* (*fl w; fol g*); *Hyacinthus amethystinus* (*fl b*); *H. corymbosus* (*fl l-pi*); *H. orientalis* (*fl variable, sc*); *H. o. albus* (*fl w, sc*); *H. varieties*; *Hymenocallis calathinum* (*fl w, sc*); *Hypoxis stellata* (*fl w and b*); *Imantophyllum Gardeni* (*fl r-o or y*); *I. minutum* (*fl o and buff*); *I. hybrids*; *Ixia capillaris* (*fl pi or l*); *I. hybrida* (*fl w*); *I. maculata* (*fl o*); *I. odorata* (*fl y, sc*); *I. patens* (*fl pi*); *I. speciosa* (*fl r*); *I. viridiflora* (*fl y, spotted and vars.*); *Kennedia prostrata* (*fl r*) and vars.; *K. rubicunda* (*fl r*); *Lachenaia fragrans* (*fl y, sc*); *L. lilacina* (*fl l and b*); *L. Nelsoni* (*fl y*); *L. pendula* (*fl p, r, and y*); *L. purpureo-cærulea* (*fl p-b*); *L. tricolor* (*fl g, r, and y*); *L. t. lutea* (*fl y*); *Lilium auratum* (*fl w, banded y, spotted p*) and vars.; *L. elegans* (*fl r*) and vars.; *L. giganteum* (*fl w, tinged g and p*); *L. japonicum* (*fl w, tinged p*); *L. longiflorum* (*fl w, sc*) and vars.; *L. neilgherrense* (*fl w, sc*); *L. speciosum* (*fl w and r*) and vars.; *Lobelia Erinus* (*fl b, w or y throat*) and vars.; *L. fulgens* (*fl r*); *Lotus australis* (*fl w, varying to p-r*); *L. gebelii* (*fl r, turning pi*); *L. Jacobæus* (*fl bk-p and y*); *Lyocoria aurea* (*fl y*); *L. Sowerzubi* (*fl br-r, sc*); *Lythrum Graefori* (*fl pi*); *Manulea rubra* (*fl y*); *Marica lutea* (*fl y, r, and w*); *Maurandya Barclayana* (*fl g and v-p*); *Mimulus moschatius* (*fl y; fol sc*); *Mirabilis Jalapa* (*fl w, y, r, &c.*); *Moltkia petraea* (*fl v-p*); *Moræa edulis* (*fl w, spotted y*); *M. trioupsis* (*fl g-w, spotted w*); *M. unguiculata* (*fl w, spotted p-r*); *Muschia aurea* (*fl y*); *Myrsiphyllum asparagoides* (*fl g or w; fol g*);

Cool House (Perennials)—*continued.*

Narcissus biflorus (*fl w, y crown*); *N. Bulbocodium* (*fl y*) and vars.; *N. calathinus* (*fl y*); *N. incomparabilis* (*fl y*) and vars.; *N. Jonquilla* (*fl y, sc*); *N. Maulei* (*fl w and y*); *N. poeticus* (*fl w, crown edged r, sc*) and vars.; *N. Pseudonarcissus* (*fl y*) and vars.; *N. Tazetta* (*fl w and y, &c., sc*) and vars.; *N. triandrus* (*fl w or y, &c.*) and vars.; *Nelumbium luteum* (*aq, fl y, sc; fol b-g*); *N. speciosum* (*aq, fl w, tipped pi, sc; fol g*); *Nemastylis acuta* (*fl b, y, and bk*); *Nerine curvifolia* (*fl r*); *N. flexuosa* (*fl r, tinged o*) and vars.; *N. sarniensis* (*fl pi*) and vars.; *N. undulata* (*fl w-pi*); *Nicotiana suaveolens* (*fl w, sc*); *Nierembergia filicalia* (*fl l, y centre*); *Nolina georgiana* (*fl w*); *Ornithogalum arabicum* (*fl w, bk eye, sc*); *O. thyrsoides* (*fl y*) and vars.; *Oxalis Bowiei* (*fl pi, y at base*); *O. elegans* (*fl p*); *O. hirta* (*fl v or r*) and vars.; *O. lasiandra* (*fl r; fol g, spotted p*); *O. Martiana* (*fl pi*); *O. rosea* (*fl pi*); *O. variabilis* (*fl w or r*) and vars.; *O. versicolor* (*fl w, y outside*); *Pancreatium maritimum* (*fl w, sc*); *Pelargonium Bowkeri* (*fl p and y*); *P. Endlicherianum* (*fl pi, nerved p*); *P. fissum* (*fl pi*); *P. pulchellum* (*fl w, spotted r*); *Perilla ocimoides crispata* (*fl w; fol p*); *Petunia varieties* (*fl variable*); *Phædranassa rubro-viridis* (*fl r and g*); *Phormium Cookianum* (*fl y, or y and g; fol g*); *P. C. variegatum* (*fol g and c-w*); *P. tenax* (*fl y or r; fol g, margined r-br*) and vars.; *Phyllostachys nigra* (*fol g; stems*); *Physalis peruviana violacea* (*fl y, spotted p; fr w*); *Pinguicula caudata* (*fl r; fol g, margined p*); *Podolepis gracilis* (*fl p, l, or w*); *Polianthes tuberosa* (*fl w, sc*) and vars.; *Prepusa Hookeriana* (*fl y-w*); *Primula Auricularia* (*fl variable, sc*); *P. Boveana* (*fl y*); *P. cortusoides Sieboldii* (*fl pi, w eye*); *P. floribunda* (*fl y*); *P. mollis* (*fl pi and r*); *P. obovata* (*fl l or p*); *P. sinensis* (*fl w or l*); *P. verticillata sinensis* (*fl y*); *Pterodiscus speciosus* (*fl l or r*); *Ranunculus Lyalli* (*fl w*); *Richardia africana* (*s-aq, fl w, spadix y*); *R. albo-maculata* (*s-aq, fl g-w*); *R. melanoleuca* (*s-aq, fl y and bk-p, spadix w*); *Romneya Coulteri* (*fl w*); *Romulea speciosa* (*fl pi, y, and v*); *Salvia cacaliifolia* (*fl b*); *S. coccinea* (*fl r*); *S. gesneriflora* (*fl r*); *S. ianthina* (*fl v-p*); *Sandersonia aurantiaca* (*fl o*); *Sarracenia chelsoni* (*fol r*); *S. Courtii* (*fol r-p*); *S. Drummondii* (*fl p; fol g, w, and p*) and vars.; *S. flava* (*fl y; fol y, r, and p*) and vars.; *S. formosa* (*fol g and r*); *S. Mitchelliana* (*fol g veined r, turning r*); *S. psittacina* (*fl p; fol g, p, and w*); *S. purpurea* (*fl p; fol g, veined p*); *S. rubra* (*fl r-p; fol g, veined p*); *S. Williamsi* (*fol g, veined p-r*); *Schizostylis coccinea* (*fl r*); *Senecio speciosus* (*fl p*); *Solanum sisymbriifolium* (*fl b or w; fr r*); *Sparaxis grandiflora* (*fl p, w, or variegated*); *S. pendula* (*fl l*); *S. tricolor* (*fl o, y, and bk*); *S. varieties*; *Sprekelia formosissima* (*fl r or w*); *Stachys coccinea* (*fl r*); *Stenomesson oocineum* (*fl r*); *S. incarnata* (*fl r, &c.*); *Streptanthera elegans* (*fl w, pi, p, and y*); *Streptocarpus Dunnii* (*fl pi, tinged r*); *S. parviflorus* (*fl w, streaked p*); *Stylidium bulbiferum macrocarpum* (*fl g-p*); *S. graminifolium* (*fl pi*); *S. spatulatum* (*fl y*); *Swainsona gallegifolia* (*fl r*); *S. Greyana* (*fl pi*); *Synnotia variegata* (*fl y and v*); *Theropogon pallidus* (*fl w or tinged r*); *Thysanotus junceus* (*fl p*); *T. multiflorus prolifer* (*fl p*); *T. tuberosus* (*fl p*); *Tigridia atrata* (*fl p, g, and br*); *T. Meleagris* (*fl p, banded r*); *T. Van Houttei* (*fl y, l, and p*); *Triebinium Manglesii* (*fl pi and w*); *Triorytis hirta* (*fl w, dotted p*); *T. macropoda* (*fl w-p, dotted p*); *Tritonia crocata* (*fl y*); *T. crocosmiflora* (*fl o-r*); *T. miniata* (*fl r*); *Tropæolum azureum* (*fl b, g-w claw*); *T. Jarrattii*; (*fl o-r and y*); *T. Lobbianum* (*fl o*); *T. peregrinum* (*fl y*); *T. tricolorum* (*fl o-r, o, and bi*); *Utricularia bifida* (*fl y*); *Vallota purpurea* (*fl r*) and vars.; *Villarsia parnassifolia* (*s-aq, fl y*); *V. reniformis* (*s-aq, fl y*); *Wahlenbergia saxicola* (*fl l*); *V. tuberosa* (*fl w, banded pi-r*); *Watsonia densiflora* (*fl pi-r*); *W. Meriana* (*fl p or r*); *W. rosea* (*fl pi*); *Wiganidia macrophylla* (*fl l; fol g*); *W. Vigieri* (*fl l-b, varying to r; fol g*); *Xanthorrhoea Preissii* (*fl w*); *Xanthosia rotundifolia* (*fl w*); *Yucca flexilis enisifolia* (*fl w, tinged r; fol g*); *Zephyranthes Andersoni* (*fl y or y-br*); *Z. candida* (*fl w*).

INTERMEDIATE HOUSE.—Plants which require a higher temperature than is usually maintained in the ordinary cool or green-house, but yet need less heat and humidity than stove subjects, are here classified. The following may be taken as the average temperatures of an Intermediate or Warm House: Winter, day, 55deg. to 65deg; night, 50deg. to 55deg. In summer no fire heat is required.

ANNUALS.—*Begonia humilis* (fl w); *Celosia argentea* (fl w); *C. cristata* (fl r) and vars.; *C. o. variegata* (fl r; fol variegated); *C. Huttonii* (fl r; fol r); *C. pyramidalis* (fl variable); *Thunbergia alata* (fl y and p) and vars.

PERENNIALS.—*Achimenes grandiflora* (fl v-p); *A. Klei* (fl l, y mark); *A. multiflora* (fl l); *A. ocellata* (fl r-y, dark spots); *A. pedunculata* (fl r, y eye); *A. picta* (fl r, y eye); *A. varieties*; *Amorphophallus campanulatus* (fl br, r, and bk; fol g); *Barbaena purpurea* (fl p, sc); *B. Rogieri* (fl p, sc); *Batatas bignonioides* (fl p); *B. Cavanillesii* (fl w-r); *B. edulis* (fl w and p); *B. paniculata* (fl p); *Begonia acutiloba* (fl w); *B. amabilis* (fl pi or w; fol g or variegated); *B. amena* (fl pi); *B. Berkeleyi* (fl pi); *B. bolivianis* (fl r); *B. Brantii* (fl w or pi; fol g, tinted br); *B. Chelsoni* (fl o-r); *B. Clarkii* (fl r); *B. coriacea* (fl pi); *B. Davisii* (fl r; fol g, r beneath); *B. Dregii* (fl w; fol g, w, and r); *B. echinospala* (fl w); *B. eximia* (fol p and r); *B. geraniifolia* (fl r and w; fol g, margined r); *B. geranioides* (fl w; fol g); *B. glandulosa* (fl g-w; fol g); *B. herbaea* (fl w); *B. hydrocotylifolia* (fl pi); *B. imperialis* (fol olive-g, banded gy-g); *B. laciniata* (fl w, tinted pi; fol g); *B. malabarica* (fl pi; fol g, spotted w); *B. maxima* (fl w); *B. monoptera* (fl w; fol g, r beneath); *B. nelumbiifolia* (fol g); *B. octopetala* (fol g); *B. Pearcei* (fl y; fol g, r beneath); *B. picta* (fl pi; fol sometimes variegated); *B. pruinata* (fl w); *B. ricinifolia* (fol bronzy g); *B. rubricaulis* (fl w and pi; fol g); *B. rubro-venia* (fl w, veined pi-r; fol g, w, and p-br); *B. scandens* (fl w; fol g); *B. Schmidtiana* (fl w; fol g, tinged r beneath); *B. semperflorans* (fl w or pi; fol g) and vars.; *B. stigmosa* (fl w; fol g and br-p); *B. strigillosa* (fl pi; fol g, margined r); *B. Sutherlandii* (fl o-r; fol g, nerved r); *B. Veitchii* (fl r; fol g); *B. Verschaffeltiana* (fl pi); *B. xanthina* (fl y; fol g, p beneath) and vars.; *Canna Achiras variegata* (fl r; fol g, striped w and y); *C. Annæi* (fl pi) and vars.; *C. Anguste Ferrier* (fl o-r; fol g, margined p-r); *C. Bihorelli* (fl r; fol bronzy); *C. Depute Honon* (fl y); *C. discolor* (fl r; fol g and r); *C. expansa-rubra* (fl p; fol r); *C. gigantea* (fl o-r and p); *C. indica* (fl r and y); *C. limbata* (fl y-r); *C. nigricans* (fol r); *C. Rendatleri* (fl pi-r; fol g, tinged r); *C. speciosa* (fl r); *C. Van Houttei* (fl r; fol g, margined p-r); *C. Warsowiczii* (fl r and p; fol g, tinged p); *C. zebрина* (fl w; fol g and r); *Coleus varieties* (fol variable); *Eurycoles Cunninghamii* (fl w); *Griffinia Blumenavia* (fl w, streaked pi); *G. dryades* (fl p-l and w); *G. hyacinthina* (fl b and w); *G. ornata* (fl b-l and w); *Hippeastrum Aokermanni* (fl r) and vars.; *H. equestris* (fl o-g) and vars.; *H. reticulatum* (fl pi and w, netted); *H. hybrids* (fl); *Iresine Herbatii* (fol r); *I. H. aureo-reticulata* (fol g, blotched y); *I. Lindenii* (fol r, banded p); *Limnocharis Plumieri* (aq, fl y); *Littonia modesta* (fl o); *Nymphaea scutifolia* (aq, fl b, sc); *Oplismenus hirtellus* (fl); *Pellionia Daveauana* (fol g, tinted v); *P. pulchra* (fol g and bk, p beneath); *Phædranassa Carmioli* (fl r, tipped g); *P. eucrosioides* (fl g and r); *P. Lehmanni* (fl r); *Sagittaria montevidensis* (aq, fl w, spotted r); *Stenomesson vitellinum* (fl y); *Strelitzia augusta* (fl w); *S. Reginae* (fl o and p); *Streptocarpus Bexii* (fl b); *S. Saunderii* (fl b; fol y-g, pi-p beneath); *Vinca rosea* (fl w, p eye, or w or pi); *Zebraia pendula* (fol g or variegated); *Zephyranthes citrina* (fl y).

ROCKERIES.—For the accommodation of hardy and half-hardy alpine and other herbaceous plants a Rockery is generally constructed in gardens of any extent. All the best annuals, biennials, and perennials that are suitable for the Rock Garden are here enumerated. Dwarf-growing evergreen shrubs and some of the Yuccas may

Rockeries—continued.

be successfully associated with them, in order to improve the appearance of the Rock Garden in winter, when most of the herbaceous subjects have died down. For instructions as to arranging and planting a Rockery, see the article on Garden in Vol. II.

Hardy.—**ANNUALS.**—*Æthionema saxatile* (fl p); *Anagallis grandiflora* (fl r, b, &c.); *Androsace coronopifolia* (fl w); *Asperula orientalis* (fl b, sc); *Bellium bellidioides* (fl w); *Bivonaea lutea* (fl y); *Briza maxima* (fl); *B. minor* (fl); *Campanula Erinus* (fl b-pi or w); *Centranthus Calceitrapa* (fl w, tinged r); *C. macrosiphon* (fl r); *Delphinium cardinale* (fl r and y); *Helianthemum guttatum* (fl y, spotted r); *Hutchinsia petraea* (fl y); *Ionopidium acaule* (fl l, or w tinged v); *Lupinus nanus* (fl l and b); *Malcolmia maritima* (fl l, pi, r, or w); *Oenothera Whitneyi* (fl pi-r, w, &c.); *Oxalis valdiviensis* (fl y, streaked r); *Sedum oerulolum* (fl b; fol g, spotted r); *S. glandulosum* (fl r-p); *S. sempervivoides* (fl r); *Silene Atocon* (fl pi); *S. pendula* (fl pi); *S. p. compacta* (fl pi); *Statice Suworowii* (fl l); *Wahlenbergia hederacea* (fl b).

BIENNIALS.—*Bromus bizaformis* (fl); *Campanula thyrsoidea* (fl y); *Celsia cretica* (fl y spotted); *Hesperis tristis* (fl w, c, br-r, or p, sc).

PERENNIALS.—*Abronia fragrans* (fl w, sc); *Acena microphylla* (fol g); *A. millefolia* (fol g); *A. myriophylla* (fol g); *A. pulchella* (fol bronze); *Acantholimon glumaceum* (fl pi); *A. venustum* (fl pi); *Achillea Ageratum* (fl w); *A. atrata* (fl w); *A. Clavennæ* (fl w); *A. Herba-rota* (fl w); *A. moschata* (fl w); *A. nana* (fl w); *A. pectinata* (fl w); *A. serrata* (fl w); *A. tomentosa* (fl y); *A. umbellata* (fl y); *Aciphylla Colensoi* (fl w); *A. squarrosa* (fl w); *Acis autumnalis* (fl w); *A. grandiflorus* (fl w); *A. roseus* (fl pi); *A. trichophyllus* (fl w); *Aconitum Anthora* (fl y); *A. biflorum* (fl b); *A. delphinifolium* (fl b-p); *A. Ottonianum* (fl b-w); *A. paniculatum* (fl w); *A. pyrenaicum* (fl y); *A. rostratum* (fl w); *Adenophora periplocaefolia* (fl b); *Adonis pyrenaica* (fl y); *A. vernalis* (fl y); *Æthionema coridifolium* (fl pi-l); *Æ. grandiflorum* (fl pi); *Ajuga genevensis* (fl b, pi, or w); *Alochemilla alpina* (fol g); *A. sericea* (fol g, w beneath); *Alyesum alpestre* (fl y); *A. orientale* (fl and fol y); *Androsace carnea* (fl pi, y eye); *A. o. eximia* (fl r, y eye); *A. Chamæjasme* (fl pi, y eye); *A. lactea* (fl w); *A. Laggeri* (fl pi); *A. lanuginosa* (fl pi, y eye); *A. sarmentosa* (fl pi, w eye); *A. villosa* (fl pi, sc); *A. Vitaliana* (fl y); *A. Wulfeniana* (fl pi or r); *Anemomo alpina* (fl w and p, c, y, &c.); *A. s. sulphurea* (fl y); *A. angulosa* (fl b); *A. apennina* (fl b); *A. baldensis* (fl w, or r tinged b); *A. blanda* (fl b); *A. fulgens* (fl r, bk centre); *A. Halleri* (fl p); *A. japonica* (fl r); *A. j. alba* (fl w); *A. j. elegans* (fl pi); *A. multifida* (fl r, w-y, or y); *A. narcissiflora* (fl c); *A. nemorosa* (fl b); *A. n. flore-pleno* (fl w); *A. n. Robinsoniana* (fl b); *A. n. rosea* (fl pi); *A. palmata* (fl y); *A. pratensis* (fl p); *A. Pulsatilla* (fl w); *A. stellata* (fl p, pi, or w); *Antennaria dioica* (fl pi); *A. d. minima* (fl pi); *A. tomentosa* (fol); *Anthemis Aizoon* (fl w); *Anthyllis erinaea* (fl b-p); *A. montana* (fl pi or p); *A. Vulneraria* (fl y, w, r, or p); *Aquilegia alpina* (fl b, or b and w); *A. Bertoloni* (fl b-v); *A. cærulea* (fl b and w, &c.); *A. c. alba* (fl w); *A. c. hybrida* (fl b and w); *A. canadensis* (fl r and y); *A. glandulosa* (fl l-b and w); *A. pyrenaica* (fl l-b); *A. sibirica* (fl l, or l and w); *Arabis alba* (fl w); *A. a. variegata* (fol); *A. alpina* (fl w); *A. arenosa* (fl pi, w, or b); *A. lucida* (fl w); *A. l. variegata* (fol y and g); *A. petræa* (fl w); *A. rosea* (fl pi); *Aronaria balearica* (fl w); *A. graminifolia* (fl w); *A. grandiflora* (fl w); *A. larioifolia* (fl w); *A. purpurascens* (fl p); *A. rotundifolia* (fl w); *Armeria cephalotes* (fl pi or r); *A. dianthoides* (fl pi); *A. juncea* (fl pi); *A. juniperifolia* (fl pi); *A. plantaginosa* (fl pi); *A. setacea* (fl pi); *A. vulgaris* (fl pi, r, l, or w); *Arnebia echioides* (fl y); *Arnica montana* (fl y); *Artemisia alpina* (fl w); *A. argentea* (fl y); *A. Mutellina* (fol w); *A. Stelleriana* (fol w); *Asarum canadense* (fl br); *A. caudatum* (fl br-r); *A. europæum* (fl br); *Asperula longiflora*

Rockeries (Hardy Perennials)—*continued.*

(*f. w. y.* and *v.*); *A. montana* (*f. pi.*); *A. odorata* (*f. w.*); *Aster Amellus* (*f. p.*); *A. peregrinus* (*f. b-p.*); *A. pyrenaeus* (*f. l-b* and *y.*); *A. Boevisi* (*f. w.*, *y.* centre); *Astragalus admarginatus* (*f. b-p.*); *A. arenarius* (*f. b.*); *A. austriacus* (*f. b* and *p.*); *A. hypoglottis* (*f. p.*, *b.* and *w.*); *A. h. alba* (*f. w.*); *A. onobrychioides* (*f. pi.*); *A. pannosus* (*f. pi.*); *A. vimineus* (*f. p-pi* and *w.*); *Aubriota deltoidea* (*f. p.*); *A. d. Bougainvillei* (*f. v-p.*); *A. d. Campbelli* (*f. v-b.*); *A. d. Eyrei* (*f. v-p.*); *A. d. graeca* (*f. p.*); *A. d. purpurea* (*f. p.*); *A. d. violacea* (*f. v-p.*); *Briza media* (*f.*); *Calliprora lutea* (*f. p-b.*); *Campanula Allionii* (*f. b* or *w.*); *C. alpina* (*f. b.*); *C. barbata* (*f. b* or *w.*); *C. cuspitosa* (*f. b* or *w.*); *C. carpathica* (*f. b.*); *C. c. alba* (*f. w.*); *C. c. polviformis* (*f. l.*, *sc.*); *C. c. turbinata* (*f. p.*); *C. cenisia* (*f. b.*); *C. Elatinea* (*f. b-p.*); *C. fragilis* (*f. l-p.*, *w.* centre); *C. garganica* (*f. b.*); *C. glomerata pusilla* (*f. b-v* or *w.*); *C. isophylla* (*f. l-b.*, *gy.* centre); *C. l. alba* (*f. w.*); *C. Portenschlagiana* (*f. b-p.*); *C. pulla* (*f. v-b.*); *C. pusilla* (*f. b.*, varying to *w.*); *C. Rainieri* (*f. b.*); *C. rotundifolia* (*f. b.*); *C. r. alba* (*f. w.*); *C. r. Hostii* (*f. b.*); *C. r. soldanelloflora* (*f. b.*); *C. Scheuchzeri* (*f. b.*); *C. Tommasiniana* (*f. b.*); *C. Waldsteiniana* (*f. v-b.*); *C. Zeyssii* (*f. b.*); *Cedronella cordata* (*f. p.*); *Centranthus ruber* (*f. r* or *w.*); *Cerastium alpinum* (*f. w.*); *C. Biebersteini* (*fol. vi.*); *C. Boissieri* (*f. w.*); *C. tomentosum* (*fol. vi.*); *Chaptalia tomentosa* (*f. w.*); *Chionodoxa Lucilium* (*f. b.*, *w.* centre, or *w.*); *C. nana* (*f. w.*, *l.*); *Claytonia sibirica* (*f. pi.*); *C. virginica* (*f. w.*); *Colchicum autumnale* (*f. p.*); *C. byzantinum* (*f. pi.*); *Coris monepeliensis* (*f. l.*, anthers *o.*); *Coronilla iberica* (*f. y.*); *Corydalis bracteata* (*f. y.*); *C. cava* (*f. p.*); *C. c. albiflora* (*f. w.*); *C. Kolpakowskiana* (*f. pi* or *p.*); *C. lutea* (*f. y.*); *C. Marschalliana* (*f. y.*); *C. nobilis* (*f. y.*, tipped *g.*); *C. solida* (*f. p.*); *Crocus aureus* (*f. o.*); *C. biflorus* (*f. w.*, varying to *l.*); *C. Boryi* (*f. c-w* and *o-y.*); *C. Imperati* (*f. l-p.*, lined *p.*); *C. iridiflorus* (*f. p* and *l.*); *C. nudiflorus* (*f. p* or *v.*); *C. speciosus* (*f. l.*, striped *p.*); *C. susianus* (*f. o.*, or marked *br.*); *C. vorrus* (*f. l.*, *v.*, *w.*, or streaked *w* and *v.*); *C. versicolor* (*f. p.*, varying to *w.*); *Cyananthus incanus* (*f. b.*); *C. lobatus* (*f. p-b.*); *Dianthus alpestris* (*f. r.*); *D. alpinus* (*f. pi.*); *D. caesius* (*f. pi.*, *sc.*); *D. cruentus* (*f. r.*); *D. fragrans* (*f. w.*, suffused *p.*, *sc.*); *D. glacialis* (*f. r-p.*); *D. monspessulanus* (*f. r.*); *D. neglectus* (*f. pi.*); *D. petrus* (*f. pi.*); *Dianthus japonica* (*f. w.*); *Dicentra formosa* (*f. r.*); *Dietamnus albus* (*f. w* or *p.*); *Diotis maritima* (*f. y.*; *fol. woolly*); *Dodecatheon integrifolium* (*f. r.*); *D. Meadia* (*f. pi-p.*, *w.*, or *l.*, anthers *y.*); *D. M. frigidum* (*f. r-p.*); *D. M. lanceifolium* (*f. pi.*, *y.* at base); *Douglasia nivalis* (*f. pi.*); *Draba aizoides* (*f. y.*); *D. Aizoon* (*f. y.*); *D. alpina* (*f. y.*); *D. glacialis* (*f. y.*); *D. Mawii* (*f. w.*); *D. nivalis* (*f. w.*); *D. violacea* (*f. v-p.*); *Ebenus Sibthorpii* (*f. p.*); *Epilobium oboordatum* (*f. pi-p.*); *Epimedium alpinum* (*f. r.*, *y.*, and *gy.*); *E. macranthum* (*f. w.*); *E. Muschianum* (*f. w.*); *E. pinnatum* (*f. y.*); *E. rubrum* (*f. r.*, *y.*, and *gy.*); *Erigeron aurantiacus* (*f. y.*); *E. glaucus* (*f. p.*); *E. grandiflorus* (*f. p* or *w.*); *E. multiradiatus* (*f. p.*); *E. speciosus* (*f. v* and *y.*); *Erinus alpinus* (*f. p* or *w.*); *Eritrichium naumum* (*f. b.*, *w.* eye); *Erodium macradonum* (*f. w.*); *E. Manoscovi* (*f. p-r.*); *E. praeatum* (*f. p.*); *E. Reichardi* (*f. w.*, veined *pi.*); *E. trichomanefolium* (*f. w-pi.*); *Erysimum alpinum* (*f. y.*, *sc.*); *E. pumilum* (*f. g-y.*, *sc.*); *Erythraea diffusa* (*f. pi.*); *Erythronium americanum* (*f. y.*); *E. dens-canis* (*f. p-pi* or *w.*); *Funkia ovata* (*f. b-l* or *w.*); *F. o. marginata* (*f. b-l* or *w.*; *fol. g.*, margined *w.*); *F. Sieboldiana* (*f. w.*, tinged *l.*); *F. subcordata* (*f. w.*); *Galax aphylla* (*f. w.*); *Gentiana acaulis* (*f. b.*, marked *y.*); *G. alba* (*f. b.*, and *c.* marked *b.*); *G. Andrewsii* (*f. b.*); *G. bavarica* (*f. b.*); *G. cruciata* (*f. b.*, dotted *g.*); *G. Kurroo* (*f. b.*, sprinkled *w.*); *G. ornata* (*f. b.* and *w.*); *G. Pneumonanthe* (*f. b.*, *w.*, &c.); *G. punctata* (*f. y.*, dotted *p.*); *G. pyrenaica* (*f. b.* and *g.*); *G. septemfida* (*f. b.*); *Geranium argenteum* (*f. r.*, dark stripes); *G. cinereum* (*f. r.*, dark stripes); *G. dahuricum* (*f. w.*); *G. Endressii* (*f. pi.*, dark veins); *G. ibericum* (*f. b.*); *G. Lamberti* (*f. l.*); *G. macro-*

Rockeries (Hardy Perennials)—*continued.*

rhizon (*f. r* or *p.*); *G. maculatum* (*f. l.*); *G. sanguineum* (*f. r.*); *G. s. lancastrinense* (*f. w-pi.*); *G. striatum* (*f. pi.*, dark stripes); *G. Wallichianum* (*f. p.*); *Geum coccineum* (*f. p.*); *G. elatum* (*f. y.*); *G. montanum* (*f. y.*); *G. pyrenaeicum* (*f. y.*); *G. rivale* (*f. r.*); *G. triflorum* (*f. p.*, *w.*, and *p-r.*); *Globularia nana* (*f. b.*); *G. vulgaris* (*f. b.*); *Gypsophila cerastioides* (*f. w.*, veined *r.*); *G. paniculata* (*f. w.*); *G. Stevenii* (*f. w.*); *Haberlea rhodopensis* (*f. l.*); *Hacquetia Epipactis* (*f. y.*); *Helianthemum formosum* (*f. y* and *bk.*); *H. globularioides* (*f. g-y.*, spotted *bk.*); *H. halimifolium* (*f. y.*); *H. scoparium* (*f. y.*); *H. vulgare* (*f. y.*, *pi.*, *r.*, &c.); *Heuchera hispida* (*f. veined p.*; *fol. g.*); *H. sanguinea* (*f. r.*; *fol. g.*); *Hieracium aurantiacum* (*f. g.*); *H. Honstonia caerulea* (*f. b* or *w.*); *Iberidella rotundifolia* (*f. pi-l.*, *y.* eye, *sc.*); *Isopyrum thalictroides* (*f. w.*; *fol. g.*); *Königia spinosa* (*f. w.*); *Leontopodium alpinum* (*f.*; *fol. woolly*); *Leucocium vernum* (*f. w.*, spotted *g.*, *sc.*); *Lewisia rediviva* (*f. pi.*, *w.* centre); *Linaria alpina* (*f. l.*, *v.*, *y.* centre); *L. Cymbalaria* (*f. b.*, *l.*, or *w.*; *fol.* sometimes variegated); *L. hepaticifolia* (*f. l-p.*); *Linum borealis* (*f. l-w-pi.*, *sc.*); *Linum alpinum* (*f. b.*); *L. narbonneuse* (*f. b* or *w.*); *Lithospermum Gastoni* (*f. b.*); *L. prostratum* (*f. b.*, striped *r-v.*); *L. purpureo-caeruleum* (*f. r.*, at length *p.*); *Lotus corniculatus* (*f. y.*); *Lupinus lepidus* (*f. p-b.*, spotted *w.*); *Lychnis alpina* (*f. pi.*); *L. fulgens* (*f. r.*); *L. Lagasca* (*f. pi.*, *w.* centre); *L. pyrenaica* (*f. pi.*); *L. Viscaria* (*f. pi* or *r.*); *Mazus pumilio* (*f. v.*); *Meconosopsis cambrica* (*f. y.*); *Mendertia Bulboodium* (*f. pi-l.*); *Mertensia alpina* (*f. b.*); *M. lanceolata* (*f. b.*); *M. sibirica* (*f. p-b* or *w.*); *M. virginica* (*f. p-b.*); *Menyanthes arvensis* (*f. w.*); *Micromeria Piperella* (*f.*); *Mimulus primuloides* (*f. y.*); *Mitchella repens* (*f. w.*, tinged *p.*); *Mitella diphylla* (*f. w.*); *M. pentandra* (*f. y.*); *Möhringia muscosa* (*f. w.*); *Myosotis alpestris* (*f. b.*, *y.* eye, *sc.*); *M. dissitiflora* (*f. b.*); *Nertera depressa* (*fr. o.*); *Eriogonum acaulis* (*f. w.*, fading to *r.*); *OE. eximia* (*f. w.*); *OE. taraxacifolia* (*f. w.*, fading to *r.*); *Omphalodes Lucilium* (*f. l-b.*); *O. verna* (*f. b.*, throat *w.*); *Ononis Matrix* (*f. y.*, veined *r.*); *Onosma stellulatum tauricum* (*f. y.*); *Ourisia coccinea* (*f. r.*, anthers *c.*); *O. Pearcei* (*f. r.*); *Oxalis Acetosella* (*f. w.*, veined *p.*); *O. enneaphylla* (*f. w* or *pi.*, veined *p.*); *O. lobata* (*f. y.*, spotted *r.*); *O. tetraphylla* (*f. r* or *p-w.*); *Oxytropis Lambertii* (*f. pi-r.*); *O. montana* (*f. b.*); *O. pyrenaica* (*f. b.*); *Papaver alpinum* (*f. h-y.*, *pi.*, or *w.*); *P. nudicaule* (*f. y* or *w.*); *Pentstemon antirrhinoides* (*f. y.*); *P. azureus* (*f. b.*, *r-p.* at base); *P. barbatus* (*f. r.*) and var.; *P. campanulatus* (*f. pi.*, *v.*, &c.); *P. confertus* (*f. g-y.*); *P. deustus* (*f. y.*); *P. diffusus* (*f. p.*); *P. Eatonii* (*f. r.*); *P. glaber* (*f. p.*, *v.*, or *b.*); *P. gracilis* (*f. l-p.* or *w.*); *P. Hartwegii* (*f. r.*); *P. heterophyllum* (*f. pi* or *pi-p.*); *P. Menziesii* Douglasii (*f. l-p.*, *pi-r.* at base); *P. Murrayanus* (*f. r.*); *P. pubescens* (*f. v* or *p.*, or partly *w.*); *P. venustus* (*f. p.*); *Petasites fragrans* (*f. w.*, *sc.*); *P. frigida* (*f. w.*); *Phlox amoena* (*f. p.*, *pi.*, or *w.*); *P. divaricata* (*f. l* or *b.*); *P. reptans* (*f. p* or *v.*); *P. subulata* (*f. pi* or *w.*); *Phyteuma comosum* (*f. p* or *b.*); *P. humile* (*f. b.*); *Polemonium confertum* (*f. b.*); *Polygonum affine* (*f. pi-r.*); *P. vacciniifolium* (*f. pi.*); *Potentilla alpestris* (*f. y.*); *P. ambigua* (*f. y.*); *P. nitida* (*f. pi.*); *Pratia angulata* (*f. w.*); *P. repens* (*f. w.*, tinged *y.*); *Primula Allionii* (*f. mv.*, *w.* eye); *P. altaica* (*f. mv* or *p-r.*, *y.* eye); *P. Auricula* (*f. variable*); *P. auriculata* (*f. p.*, *w.* eye); *P. calycina* (*f. p.*); *P. capitata* (*f. v-b.*); *P. cortusoides* (*f. pi.*); *P. denticulata* (*f. y.*); *P. d. cashmeriana* (*f. p.*, *y.* eye); *P. farinosa* (*f. p.*, *y.* eye); *P. glutinosa* (*f. b-p.*); *P. japonica* (*f. variable*); *P. marginata* (*f. pi-v.*); *P. minima* (*f. pi* or *w.*); *P. nivalis* (*f. w.*); *P. Parryi* (*f. p.*, *y.* eye); *P. rosea* (*f. pi-r.*, *y.* eye); *P. scotica* (*f. p.*, *y.* eye); *P. sikkimensis* (*f. y.*); *P. spectabilis* Wulfeniana (*f. pi-p.*); *P. Steinii* (*f. p.*); *P. Stuartii* (*f. y.*); *P. viscosa* (*f. pi-p.*, *w.* eye); *P. v. pedemontana* (*f. pi-p.*, *y-w.* eye); *P. vulgaris* (*f. y.*); *Puschkinia scilloides* (*f. w.*, striped *b.*); *Pyrola rotundifolia* (*f. w.*, *sc.*); *P. secunda* (*f. g-w.*); *Ranunculus pyrenaica* (*f. p* or *w.*); *Ranunculus aconitifolius* (*f. w.*); *R. amplexicaulis* (*f. w.*); *R. anemoneoides* (*f. w.*, tinted *pi.*); *R. asiaticus* (*f. variable*); *R. a. sanguineus*

Rockeries (Hardy Perennials)—continued.

(*f p*, *y*, *o*, or variegated); *R. cortusae-folius* (*f y*); *R. gramineus* (*f y*); *R. parnassifolius* (*f w* or *pi*); *Romanzoffia sitchensis* (*f w*); *Sanguinaria canadensis* (*f w*); *Saponaria oymoides* (*f r* or *pi*); *Saxifraga aizoides* (*f o* or *y*, dotted *r*); *S. aretioides* (*f y*); *S. Bursariana* (*f c-w*); *S. B. major* (*f w*); *S. cœsia* (*f c-w*); *S. cœspitosa* (*f w*); *S. Camposii* (*f w*); *S. Cotelyledon* (*f w*; fol edged *w*); *S. crassifolia* (*f r*); *S. diversifolia* (*f y*); *S. granulata* (*f w*); *S. Hiroulus* (*f dotted r*); *S. Hostii* (*f w*, or *p-dotted*); *S. hypnoides* (*f w*); *S. ligulata* (*f r-w*); *S. ligulata oohlearis* (*f w*; fol *g*); *S. longifolia* (*f w*, dotted *r*; fol *g*); *S. Mawana* (*f w*); *S. moschata* (*f y* or *p*); *S. oppositifolia* (*f p*); *S. o. pyrenaica superba* (*f pi-l*); *S. retusa* (*f p*; fol dotted); *S. Rocheliana coriophylla* (*f w*); *S. sanota* (*f y*); *S. sarmentosa* (*f w*, spotted *r* and *y*; fol *g*, *p* beneath); *S. Stracheyi* (*f pi*); *S. umbrosa* (*f w*, marked *r*); *S. valdensis* (*f w*); *S. virginiensis* (*f w*); *Scutellaria alpina* (*f p*); *S. orientalis* (*f y*); *Sedum aere aureum* (*f ol y*); *S. Aizoon* (*f y*); *S. album* (*f w*; fol *g* and *br*); *S. anglicum* (*f w* or *pi*; fol *g*); *S. brevifolium* (*f w*, ribbed *pi*; fol *pi*); *S. erythrodictum* (*f g*, flushed *pi*); *S. glaucum* (*f pi-w*; fol *g* and *r*); *S. japonicum* (*f y*; fol *g*); *S. kantschaticum* (*f y*; fol *g*); *S. Lydium* (*f pi*; fol *g*, tipped *r*); *S. maximum* (*f w*, spotted *r*; fol *g*); *S. m. hæmatodes* (*f ol p*); *S. pulchellum* (*f pi-p*); *S. reflexum* (*f y*; fol *g*); *S. Rhodiola* (*f y* or *r-p*); *S. spectabile* (*f pi*); *Sempervivum arachnoideum* (*f r*; fol *g* and *br* and var.); *S. arenarium* (*f y*); *S. atlanticum* (*f r*; fol *g* and *r-br*); *S. Boissieri* (*f r*; fol *g*); *S. Braunii* (*f y*; fol *g*); *S. calcæarum* (*f r-w*; fol *g*, tipped *r-br*); *S. calcæarum* (*f r*; fol *g*, tipped *r-br*); *S. simbratum* (*f r*; fol *g* and *r*); *S. Funckii* (*f r-p*; fol *g*); *S. Houffellii* (*f y*; fol *g*, tinted *r-br*); *S. Lamottei* (*f pi*; fol *g*, tipped *r-br*); *S. montanum* (*f p*; fol *g*); *S. Pomelii* (*f pi-r*; fol *g*); *S. soboliferum* (*f y*; fol *g*, tipped *r-br*); *S. Wulfeni* (*f y*; fol *g*, tipped *r-br*); *Silene acaulis* (*f pi* or *w*); *S. alpestris* (*f w*); *S. Elizabethæ* (*f pi, w*, and *p*); *S. Hookeri* (*f pi*); *S. maritima* (*f w*); *S. pennsylvanica* (*f pi*); *S. Saxifraga* (*f y* and *r-br*); *S. Schauffa* (*f p*); *S. virginica* (*f r*); *Soldanella alpina* (*f w*); *S. montana* (*f y*); *Statice latifolia* (*f b*); *S. tatarica* (*f r*); *Tiarella cordifolia* (*f w*); *Trifolium alpestre* (*f y*); *T. uniflorum* (*f b* and *p*); *Vicia argentea* (*f pi*, spotted *bk*); *Vinea major* (*f b-p*); *V. minor* (*f v-p, w*, or *b*); *Viola cornuta* (*f b*); *V. cucullata* (*f v-b* or *p*) and var.; *V. Munbyana* (*f v* or *y*) and var.; *V. odorata* (*f b, v*, or *v-p, sc*) and vars.; *V. pedata* (*f b* or *w*) and vars.; *V. rothomagensis* (*f b*, striped *bk*); *V. suavis* (*f b* and *w, sc*); *V. tricolor* (*f y* variable) and vars.; *Wahlenbergia Kitaibellii* (*f b*); *W. tenuifolia* (*f v-b, w* base); *Wulfenia Amherstiana* (*f b*); *W. carinthiaca* (*f b*).

Half-Hardy.—**ANNUALS.**—*Abronia umbellata* (*f pi, sc*); *Calceolaria chelidonioides* (*f y*); *Grammanthes chloro-flora* (*f o-y*, at length *o-r*); *Grammatocarpus volubilis* (*f y*); *Laurentia minuta* (*f p*); *Loasa hispida* (*f y*, centre *g* and *w*); *L. vulcanica* (*f w*); *Martynia fragrans* (*f r-p*, throat *y, sc*); *M. lutea* (*f o-y*, suffused *r*); *M. proboscidea* (*f y, w, &c.*); *Mentzelia bartonioides* (*f y*); *Portulaca* vars. (*f*).

PERENNIALS.—*Amphicome arguta* (*f r*); *A. Emodi* (*f pi* and *o*); *Antirrhinum Asarina* (*f w* and *y*, spotted *p*); *A. molle* (*f w* and *y*, striped *p*); *Arabis blepharophylla* (*f pi*); *Bellium minutum* (*f w* and *y*); *Chionographis japonica* (*f w*); *Darlingtonia californica* (*f w* or *g*, marked *r-br*; pitchers *g*, marked *w* and *r-br*); *Myosotis azorica* (*f p*, at length *b*); *Oxalis arenaria* (*f v-p*); *Saxifraga cortusae-folia* (*f w*); *S. Fortunei* (*f w*); *Statice callicoma* (*f pi*); *S. sinuata* (*f p, y*); *Viola hederacea* (*f b* or *w*); *V. pedunculata* (*f y*).

SHRUBBERIES.—Many hardy herbaceous plants may be introduced with good effect into the Shrubbery, although the latter term, strictly speaking, means a plantation of shrubs. Shade-loving subjects, and such as are found growing in woodlands in their native countries, are eminently suited for the purpose. The following lists

Shrubberies—continued.

comprise most of the hardy herbaceous plants that will thrive in the Shrubbery.

ANNUALS.—*Adonis æstivalis* (*f r*); *A. autumnalis* (*f r*); *Agrostemma cœli-rosa* (*f pi, w*, or *p*); *A. o-r. fimbriata* (*f p*); *Agrostis nebulosa* (*f w*); *A. pulchella* (*f*); *Anagallis grandiflora* (*f r, b, &c.*) and vars.; *Argemone albiflora* (*f w*); *A. hirsuta* (*f w*); *A. ochroleuca* (*f y*); *Bartonia albescens* (*f y*); *B. aurea* (*f y*); *Blumontachia insignis* (*f w*); *Calendula maderensis* (*f o*); *C. officinalis* (*f o*); *Callistophus chinensis* (*f p, &c.*); *Centaurea Cyanus* (*f p* and *b*); *C. suaveolens* (*f y, sc*); *Centranthus macrosiphon* (*f r* or *w*); *Chlora perfoliata* (*f y*); *Chrysanthemum carinatum* (*f w, p*); *C. coronarium* (*f y*); *C. segetum* (*f y*); *C. s. grandiflorum* (*f y*); *Clarkia elegans* (*f r*); *C. pulchella* (*f p*); *Collinsia bicolor* (*f w* and *pi-p*); *C. grandiflora* (*f p* and *b*); *C. verna* (*f y* and *b*); *Convolvulus tricolor* (*f y, b*, and *w*); *Coreopsis Drummondii* (*f y*, banded *r-br*); *C. tinctoria* (*f y*, blotched *p-br*); *Crepis rubra* (*f r*); *Delphinium Ajacis* (*f b, r*, or *w*); *Erysimum Perofskianum* (*f o-y*); *Eucharidium concinnum* (*f l-p*); *Gaillardia amblyodon* (*f r*); *Gilia achilleifolia* (*f p-b, w*, or *r*); *G. androsacea* (*f l, p*, or *w, y* or dark throat); *G. capitata* (*f b*); *G. liniflora* (*f w*); *G. tricolor* (*f o-y, p*, and *w, &c.*); *Glaucium phonicium* (*f r*, spotted *bk*); *Helianthus annuus* (*f* variable, usually *y*); *Hordeum jubatum* (*f*); *Impatiens coronaria* (*f w*); *I. Roylei* (*f p*); *Linaria bipartita* (*f v-p, o*, and *w*); *L. reticulata* (*f p* and *w*); *L. spurtea* (*f y*); *Linum grandiflorum* (*f pi*); *L. g. rubrum* (*f r-pi*); *Loasa Pentlandii* (*f o*); *Lupinus nanus* (*f l* and *b*); *Madia elegans* (*f y*); *Mulcolmia maritima* (*f l, pi, r*, or *w*); *Malope trifida* (*f p* or *w*); *Matricaria inodora flore-pleno* (*f w*); *Neumphilia insignis* (*f b, w* eye, &c.) and vars.; *Nigella damascena* (*f w* or *b*); *N. hispanica* (*f b, r* stamens); *Oenothera amœna* (*f pi*, spotted *r*); *O. a. rubicunda* (*f l-p*, blotched); *O. bistorta Veitchiana* (*f y*, spotted *r*); *O. Whitneyi* (*f pi-r*, blotched *r*); *Oxalis corniculata* (*f w*); *O. c. rubra* (*f y*; fol *p*); *O. valdiviensis* (*f y*, stripes *r*); *Panicum capillare* (*f*); *P. miliaceum* (*f*); *Papaver Rhœus* (*f r*) and vars.; *P. somniferum* (*f* variable); *Phacelia campanularia* (*f b*, spotted *w*); *P. viscidula* (*f b, p*); *P. Whitlavia* (*f l*); *Polygonum orientale* (*f pi-p* or *w*); *Roseda odorata* (*f y-w, &c.*); *Saponaria calabrica* (*f w*); *Scabiosa atropurpurea* (*f r*) and vars.; *Schizanthus pinnatus* (*f v* or *l*, and *y, &c.*) and vars.; *Silene pendula* (*f pi*); *S. p. compacta* (*f pi*); *Silybum Marianum* (*f pi-p*); *Tagetes erecta* (*f y*); *T. patula* (*f y* or *y-br*); *T. tenuifolia* (*f y*); *Vesicaria grandiflora* (*f y*); *Vicia onobrychioides* (*f p*); *Xeranthemum annuum* (*f p*).

BIENNIALS.—*Althæa caribæa* (*f pi*); *Aster Bigelovii* (*f l* and *y*); *Bromus brizæformis* (*f*); *Campanula Medium* (*f b, p*, and *w*); *C. sibirica divergens* (*f v*); *Centaurea Feuzii* (*f y*); *Chlora grandiflora* (*f y*); *Digitalis purpurea* (*f p*, varying to *w*); *Glaucium flavum* (*f o*); *Grindelia grandiflora* (*f y* or *o*); *Mihauxia lævigata* (*f w*); *Myosotis sylvatica* (*f b, y* throat); *Oenothera biennis* (*f y, sc*); *Oxalis corniculata rubra* (*f y*; fol *p*); *Tragopogon glaber* (*f p*); *Verbascum Chaixii* (*f y*).

PERENNIALS.—*Aconitum album* (*f w*); *A. angustifolium* (*f b*); *A. Anthora* (*f y*); *A. A. nemorosum* (*f y*); *A. autumnale* (*f b-p*); *A. barbatum* (*f c*); *A. chinense* (*f b*); *A. emimens* (*f b*); *A. gracile* (*f b* or *v*); *A. Halleri* (*f v*); *A. H. bicolor* (*f w*, variegated *b*); *A. japonicum* (*f pi*); *A. lycocotnum* (*f w*); *A. Napellus* (*f b*); *A. ochroleucum* (*f c*); *A. Ottonianum* (*f b*, variegated *w*); *A. paniculatum* (*f v*); *A. pyrenaicum* (*f y*); *A. rostratum* (*f v*); *A. tauricum* (*f b*); *A. uncinatum* (*f b*); *A. variegatum* (*f b*); *A. v. albiflorum* (*f w*); *A. v. bicolor* (*f w-b*); *A. vulparia* (*f y*); *A. v. septentrionale* (*f b*); *A. Willdenovii* (*f b-p*); *Actæa alba* (*f w*); *A. spicata* (*f w* or *b*); *A. s. rubra* (*f w* or *b*; fr *r*); *Actinomeris helianthoides* (*f y*); *A. proœra* (*f y*); *A. squarrosa* (*f y*); *Adonis pyrenaica* (*f y*); *A. vernalis* (*f y*); *Agrostemma coronaria* (*f w, r* centre, &c.); *A. flos-Jovis*

Shrubby (Perennials)—continued.

(*fl p* or *r*); *Amsonia salicifolia* (*fl b*); *A. Tabernamontana* (*fl b*); *Anemone decapetala* (*fl c* or *y*); *A. dichotoma* (*fl w*, tinged *r*); *A. fulgens* (*fl r*, *bk* centre); *A. nemorosa* (*fl w*); *A. n. ovarula* (*fl b*); *A. n. flore-pleno* (*fl pi*); *A. n. Robinsoniana* (*fl b*); *A. n. rosea* (*fl pi*); *A. ranunculoides* (*fl y* or *p*); *A. sylvestris* (*fl w*); *A. virginiana* (*fl p* or *p-g*); *Antirrhinum majus* (*fl*); *Apocynum androsaemifolium* (*fl r*); *Aralia edulis* (*fol g*); *A. nudicaulis* (*fol g*); *A. racemosa* (*fol g*); *Artemisia cana* (*fol w*); *Arum italicum* (*fl g-y* or *w*); *A. proboscideum* (*fl g-p*); *A. tenuifolium* (*fl w*); *Asperula longiflora* (*fl w*, *y*, and *r*); *A. montana* (*fl pi*); *A. odorata* (*fl w*); *Astrantia carniolica* (*fl w*; *fol g*, tinged *r*); *A. helleborifolia* (*fl pi*); *A. major* (*fl pi*); *Berkheya purpurea* (*fl p*); *Boltonia asteroides* (*fl pi*); *B. glastifolia* (*fl pi*); *Brodiaea congesta* (*fl b*); *B. c. alba* (*fl w*); *Bulboodium vernum* (*fl v-p*, *w* spot); *Buphthalmum speciosissimum* (*fl y*); *Callirhoe digitata* (*fl r-p*); *C. Papaver* (*fl v-r*); *Conteaurea alpina* (*fl y*); *C. atropurpurea* (*fl p*); *C. aurea* (*fl y*); *C. babylonica* (*fl y*); *C. macrocephala* (*fl y*); *Centranthus ruber* (*fl r*); *Chelone Lyoni* (*fl pi*); *C. nemorosa* (*fl pi-p*); *Cimicifuga americana* (*fl w*); *C. japonica* (*fl w*); *C. racemosa* (*fl w*); *Clematis aromatica* (*fl v-b*, *sc*); *Clintonia Andrewsiana* (*fl pi*); *Cnicus altissimus* (*fl p*); *Convallaria majalis* (*fl w*, *w*); *Coreopsis grandiflora* (*fl y*); *Corydalis bracteata* (*fl y*); *C. cana* (*fl p*); *C. o. albiflora* (*fl w*); *C. Kolpakowskiana* (*fl pi* or *p*); *C. lutea* (*fl y*); *C. Marschalliana* (*fl y*); *C. nobilis* (*fl y*, tipped *g*); *C. solida* (*fl p*); *Crambe cordifolia* (*fl w*); *Datisca cannabina* (*fl y*; *fol g*); *Dolphinium azureum* (*fl b*); *D. cashmirianum* (*fl b*); *D. exaltatum* (*fl b* or *w*); *D. formosum* (*fl b*); *D. grandiflorum* (*fl b*, varying to *w*); *D. nudicaule* (*fl r* and *y*); *Dentaria digitata* (*fl pi*); *D. diphylla* (*fl w* and *p*); *Dicentra spectabilis* (*fl pi-r*); *Digitalis ambigua* (*fl y*, reticulated *br*); *Doronicum plantagineum excolsum* (*fl y*); *Dracunculus vulgaris* (*fl br*); *Epilobium angustifolium* (*fl r*); *E. Dodonai* (*fl pi*); *E. hirsutum* (*fl pi* or *w*); *E. rosmarinifolium* (*fl r*); *Eranthis hyemalis* (*fl y*); *E. sibiricus* (*fl y*); *Erythronium americanum* (*fl w*); *E. dens-canis* (*fl pi-pi* or *w*); *Funkia ovata* (*fl b-l* or *w*); *F. o. marginata* (*fl b-l* or *w*); *F. o. darsiana* (*fl b-l* or *w*; *fol g*, margined *w*); *F. Sieboldiana* (*fl w*, tinged *l*); *F. subcordata* (*fl w*); *Gilanthus Elwesii* (*fl w*, spotted *g*); *G. nivalis* (*fl w*, marked *g*); *G. plicatus* (*fl g-w*); *Gladiolus Breckleyensis* (*fl r*); *Glycerium argenteum* (*fl* silky, sometimes tinted *p* or *y*); *Helenium autumnale* (*fl y*); *Helianthus decapetalus multiflorus* (*fl y*); *H. orgyalis* (*fl y*); *H. rigidus* (*fl br* and *y*); *Hemerocallis Dumortieri* (*fl o-y*, tinged *br*); *H. flava* (*fl o-y*, *sc*); *H. fulva* (*fl y*); *H. Middendorfi* (*fl y*); *H. minor* (*fl y*); *Inula glandulosa* (*fl y*); *I. Hookeri* (*fl y*, *sc*); *Kniphofia aloides* (*fl coral-r*, fading to *g-y*); *K. Burchelli* (*fl r* and *y*, tipped *g*); *K. Leichtlinii* (*r* and *y*); *K. Kooperi* (*fl o-r*, turning *y*); *Leucocium aestivum* (*fl w*, tipped *g*); *L. vernum* (*fl w*, spotted *g*, *sc*); *Lilium bulbiferum* (*fl r*); *L. canadense* (*fl y* to *r*, spotted *r-p*); *L. candidum* (*fl w*, rarely tinged *p*); *L. Catesbui* (*fl o-r*, spotted *p*); *L. chalcodonium* (*fl r*, rarely *y*); *L. columbianum Ruschianum* (*fl r*, spotted *bk* below); *L. croceum* (*fl y*, tinted *r*); *L. davuricum* (*fl r*); *L. elegans* (*fl r*, rarely spotted); *L. o. armeniacum* (*fl r*, spotted *y*); *L. o. atrosanguineum* (*fl blotched r*); *L. o. sanguineum* (*fl r* and *y*); *L. Hansonii* (*fl r-o*, dotted *p*); *L. Kramerii* (*fl w*, tinged *r*, *sc*); *L. Leichtlinii* (*fl y*, marked *p* and *r*); *L. longiflorum* (*fl w*, *sc*); *L. l. oximium* (*fl w*); *L. Martagon* (*fl p-r*, spotted *p*); *L. monadelphum* (*fl y*, tinged *r* at base) and var.; *L. oxypetalum* (*fl l-p*, dotted *p* within); *L. pardalinum* (*fl o-r*, variable); *L. Parryi* (*fl y*, spotted *br-r*, *sc*); *L. philadelphicum* (*fl o-r*, spotted *p* below); *L. pomponium* (*fl r*); *L. pseudo-tigrinum* (*fl r*, spotted *bk* within); *L. pyrenaicum* (*fl y*); *L. roseum* (*fl b*); *L. speciosum* (*fl w*, or spotted *r*); *L. s. albiflorum* (*fl w*); *L. s. punctatum* (*fl w*, spotted *r*); *L. s. roseum* (*fl w*, tinted *pi*); *L. superbum* (*fl o-r*, spotted); *L. tenuifolium* (*fl*); *L. tigrinum* (*fl o-r*, spotted *p-bk*) and vars.; *L. Washingtonianum* (*fl w*, tinted

Shrubby (Perennials)—continued.

p or *l*); *Melittis Melissophyllum* (*fl c-w*, spotted *pi* or *p*); *Mertensia alpina* (*fl b*); *M. lanceolata* (*fl b*); *M. sibirica* (*fl p-l* or *w*); *M. virginica* (*fl p-l*); *Meum athamanticum* (*fl w*); *Myrrhis odorata* (*fl w*); *Narcissus biflorus* (*fl w*, *y* crown); *N. Bulboodium* (*fl y*) and vars.; *N. incomparabilis* (*fl y*) and vars.; *N. Jonquilla* (*fl y*, *sc*); *N. Macleni* (*fl w* and *y*); *N. poeticus* (*fl w*, crown edged *r*, *sc*) and vars.; *N. Pseudo-Narcissus* (*fl y*) and vars.; *N. Tazetta* (*fl w* and *y*, &c., *sc*) and vars.; *N. triandrus* (*fl w* or *y*, &c.) and vars.; *Oenothera acaulis* (*fl w*, turning *r*); *O. californica* (*fl w*, varying to *pi*, *y* centre, *sc*); *O. eximia* (*fl w*); *O. glauca* (*fl y*); *O. g. Fraseri* (*fl y*); *O. linearis* (*fl y*, *sc*); *O. missouriensis latifolia* (*fl y*); *O. pallida* (*fl w*, *y* at base); *O. speciosa* (*fl w*, fading to *r*); *O. taraxacifolia* (*fl w*, fading to *r*); *Omphalodes nitida* (*fl w*); *O. verna* (*fl b*, throat *w*); *Opopordon Acanthium* (*fl p*); *Ornithogalum narboneum* (*fl w*, striped *g*); *O. nutans* (*fl w* and *g*); *O. pyramidale* (*fl w*, striped *g*); *O. umbellatum* (*fl w* and *g*); *Oxalis Acetosella* (*fl w*, veined *p*); *O. lobata* (*fl y*, spotted *r*); *O. tetraphylla* (*fl r* or *p-w*); *Paeonia albiflora* (*fl w*, *p*, &c.) and vars.; *P. Emodi* (*fl w*); *P. officinalis* (*fl r*); *P. tenuifolia* (*fl r*); *P. Wittmanniana* (*fl y-w*); *Panicum virgatum* (*fl*); *Papaver bracteatum* (*fl r*); *P. nudicaule* (*fl y* or *w*); *P. orientale* (*fl r*, spotted *p*); *P. pilosum* (*fl r* or *o*, marked *w*); *Potatis fragrans* (*fl w*, *sc*); *P. frigida* (*fl w*); *Phalaris arundinacea* (*fl p*); *Phlomis herba-venti* (*fl b-w*); *Phytolacca decandra* (*fl w*; *fr p*); *Polemonium caeruleum* (*fl b*; *fol* sometimes variegated); *P. humile* (*fl b* or *y*) and var.; *P. reptans* (*fl b* or *w*); *Polygonatum biflorum* (*fl g*); *P. multiflorum* (*fl w*; *fr bk*) and vars.; *Polygonum affine* (*fl pi-r*); *P. amplexicaule* (*fl pi-r* or *w*); *P. compactum* (*fl w*); *P. cuspidatum* (*fl c-w*); *P. sachalinense* (*fl g-y*); *Potentilla ambigua* (*fl y*); *P. argyrophylla* (*fl y*); *P. congesta* (*fl w*); *P. Hopwoodiana* (*fl* variegated *pi* and *y*); *P. nitida* (*fl pi*); *P. unguiculata* (*fl w*); *Prenanthes purpurea* (*fl p*); *Primula Auricula* (*fl* variable); *P. elatior* (*fl y*); *P. japonica* (*fl* variable); *P. officinalis* (*fl y*); *P. vulgaris* (*fl y*); *Pulmonaria angustifolia* (*fl pi*, at length *b*); *P. saccharata* (*fl pi*); *Pyrethrum Tchihatchewii* (*fl w* and *y*); *Rhous Emodi* (*fol g*); *R. officinale* (*fol g*); *Rudbeckia grandiflora* (*fl y* and *p*); *R. maxima* (*fl y*); *R. pinata* (*fl y*); *R. purpurea* (*fl r-p*, tipped *g*); *R. speciosa* (*fl o* and *bk-p*); *Sanguinaria canadensis* (*fl w*); *Saponaria officinalis* (*fl l* or *w*); *Saussurea pulchella* (*fl p*); *Saxifraga Composi* (*fl w*); *S. Cotyledon* (*fl w*, *fl* edged *w*); *S. crassifolia* (*fl r*); *S. granulata* (*fl w*); *S. hypnoides* (*fl w*); *S. lignata* (*fl r-w*); *S. Stracheyi* (*fl pi*); *S. umbrosa* (*fl w*, marked *r*); *Scabiosa amena* (*fl l* or *pi*); *Scilla amena* (*fl b* or *w*); *S. hispanica* (*fl b*, *w*, &c.); *S. nutans* (*fl b*, *p*, *w*, or *pi*); *S. peruviana* (*fl l*, *r*, or *w*); *S. pratensis* (*fl b*); *S. sibirica* (*fl b*); *Scolymus grandiflorus* (*fl y*); *Soopolia carniolica* (*fl r*, *y* or *g* within); *Sedum acre anreum* (*fl y*); *S. album* (*fl w*; *fol g* and *br*); *S. dasphyllum* (*fl pi*); *S. erythro-stictum* (*fl g*, flushed *pi*); *S. glaucum* (*fl pi-w*; *fol g* and *r*); *S. kumtschatium* (*fl y*; *fol g*); *S. Maximowiczii* (*fl y*; *fol g*); *S. maximum* (*fl w*, spotted *r*; *fol g*); *S. m. hamatodes* (*fol p*); *S. populifolium* (*fl w* or *pi*); *S. reflexum* (*fl y*); *S. Rhodiola* (*fl g* or *r-p*); *S. sexangulare* (*fl y*; *fol g*); *S. spectabile* (*fl pi*); *S. Telephium* (*fl pi* or *w*) and vars.; *Senecio Doria* (*fl y*); *S. Doronicum* (*fl y*); *S. pulcher* (*fl p*, disk *y*); *Sida Napsa* (*fl w*); *Silene pennsylvanica* (*fl pi*); *Solidago Drummondii* (*fl y*); *S. lanceolata* (*fl y*); *S. speciosa* (*fl y*); *S. Virgareia* (*fl y*); *Spiraea Aruncus* (*fl w*); *S. astilboides* (*fl w*); *S. Filipendula* (*fl w* or *p*); *S. palmata* (*fl r*); *S. Ulmaria* (*fl w*); *Stachys grandiflora* (*fl v*); *S. lanata* (*fl* striped); *S. Maweana* (*fl y-w*, blotched *p*); *Stipa pennata* (*fl*); *Streptopus roseus* (*fl p*); *Stylophorum diphyllum* (*fl y*); *Symphytum caucasicum* (*fl b*); *S. officinale bohemicum* (*fl r* or *r-p*); *S. tuberosum* (*fl y*); *Tanaocium leucophyllum* (*fl y*; *fol y-w*); *Teucrium Chamadrya* (*fl pi*, spotted *w* and *r*); *Thalictrum aquilegifolium* (*fl w*); *T. s. atropurpureum* (*fl w* and *p*); *T. flavum* (*fl y*); *T. minus* (*fl y*

Shrubby Perennials—continued.

and *g*); *T. tuberosum* (*f w*); *Tradescantia virginica* (*f v, p, or w*); *Trillium erectum* (*f p*); *T. erythrocarpum* (*f w, striped p*); *T. grandiflorum* (*f w, turning pi*); *T. nivale* (*f w*); *Trollius altaicus* (*f o or y*); *T. asiaticus* (*f y*); *T. europæus* (*f y*); *Tulipa australis* (*f flushed r*); *T. Clusiana* (*f w, r, and bk*); *T. Eichleri* (*f r, marked y and bk*); *T. elegans* (*f r, y eye*); *T. Gesneriana* (*f r, y, &c.*); *T. Greigi* (*f r, blotched bk*); *T. macrospeila* (*f r, blotched bk and y*); *T. Oculus-solis* (*f r, blotched bk*); *T. præcox* (*f r, blotched bk*); *T. pubescens* (*f variable, sc*); *T. retroflexa* (*f y*); *T. suaveolens* (*f r and y, sc*); *T. sylvestris* (*f y, sc*); *T. varieties* (*f*); *Tussilago Farfara variegata* (*fol g and c-w*); *Valeriana Phu aurea* (*f w; fol g and y*); *Veratrum album* (*f w and g*); *V. nigrum* (*f b*); *Veronica gentianoides* (*f b*); *V. incana* (*f b*); *V. longifolia* (*f l*); *V. saxatilis* (*f b*); *V. spicata* (*f b*); *V. Teucrium* (*f b*); *V. virginica* (*f w or b*); *Vesicaria utriculata* (*f y*); *Vicia argentea* (*f pi, spotted bk*); *V. oroboides* (*f b*); *Vinca major* (*f b-p*); *V. minor* (*f v-p, w, or b*); *Viola cornuta* (*f b*); *V. cucullata* (*f v-b or p*) and var.; *V. Munbyana* (*f v or y*) and var.; *V. odorata* (*f b, v, or v-p, sc*) and vars.; *V. pedata* (*f b or w*) and vars.; *V. rothomagensis* (*f b, striped bk*); *V. suavis* (*f b and w, sc*); *V. tricolor* (*f variable*) and vars.

STOVE.—Success in the cultivation of a large proportion of the most beautiful plants can only be secured in a house where a high temperature and a moist atmosphere are constantly maintained. The following lists comprise the choicest Stove plants. The average temperatures of a Stove should range as follows: Winter, day, 60deg. to 70deg.; night 60deg. Summer, day, 70deg. to 85deg.; night, 65deg.

ANNUALS.—*Citrullus vulgaris* (*fr*); *Coccoeypselum repens* (*f b*); *Desmodium gyrans* (*f v; fol g*); *Euryale ferox* (*aq, f w*); *Ipomoea Bona-nox* (*f w*); *I. rubro-erulea* (*f b*); *Mimosa pudica* (*f r*); *Physidium cornigerum* (*f p*); *Sonerila stricta* (*f pi-p*); *Torenia asiatica* (*f b and v*); *T. flava* (*f y, p eye*); *T. Fournieri* (*f v, y, and l*); *Trichosanthes palmata* (*f and fr*); *Victoria regia* (*aq, f w, and p or pi; fol g*).

BIENNIAL.—*Cleome rosea* (*f pi*).

PERENNIALS.—*Achmea calyculata* (*f y and r*); *A. celestis* (*f b*); *A. cœrulescens* (*f b; fr b and w*); *A. discolor* (*f r; fol g and p*); *A. distichantha* (*f pi, p, and r*); *A. fasciata* (*f pi; fol g, banded w*); *A. fulgens* (*f r, tipped b*); *A. glomerata* (*f v and r*); *A. hystrix* (*f r*); *A. Maris-Reginæ* (*f b and pi*); *A. spectabilis* (*f pi and r*); *A. Veitchii* (*f r*); *Agalmyia staminea* (*f r*); *Aglaonema commutatum* (*f w; fol g, blotched gy*); *A. Mannii* (*f w and r; fol g*); *A. pictum* (*f c-y and w; fol g, blotched gy*); *Alpinia albo-lineata* (*fol g, banded w*); *A. nutans* (*f pi, sc; fol*); *A. vittata* (*fol striped g and w*); *Amomum angustifolium* (*f y*); *A. Cardamomum* (*f br*); *A. Granum Paradisi* (*f w, tinged y and pi*); *Amorphophallus Titanum* (*f p and g; fol g*); *Ananas macrodonta* (*fr sc*); *A. Porteana* (*fol g, banded y*); *A. sativa* (*fr r-y*); *A. s. variegata* (*fol g, c-y, and r*); *Anchomanes Hookeri* (*f p and w; fol g*); *Angelonia salicariifolia* (*f b*); *Anthurium acule* (*f b, sc; fol g*); *A. Andreanum* (*f y and o-r; fol g*); *A. Bakeri* (*f g, pi, and r; fol g*); *A. crystallinum* (*fol g and w*); *A. ferrierense* (*f r and w; fol g*); *A. Harrisii pulchrum* (*f c-w and r; fol g and w*); *A. insigne* (*fol bronzy g*); *A. Kalbreyeri* (*fol g*); *A. Lindenianum* (*f w and p, sc; fol g*); *A. macrolobum* (*fol g*); *A. ornatum* (*f w and p; fol g*); *A. regale* (*fol g, veined w*); *A. Scherzerianum* (*f r and o; fol g*) and vars.; *A. spleridium* (*fol g and g-y*); *A. subsignatum* (*fol g*); *A. Veitchii* (*fol g*); *A. Waluiewi* (*fol g or r*); *A. Waroqueanum* (*fol g*); *Begonia albo-coccinea* (*f pi and w*); *B. gogoensis* (*f pi; fol bronzy, r beneath*); *B. heracleifolia* (*f pi; fol g*) and vars.; *B. manicata* (*f pi; fol g*); *B. prismatocarpa* (*f o and y; fol g*); *B. Rex* (*fol*) and vars.; *B. socotrana* (*f pi; fol g*);

Stove Perennials—continued.

B. Thwaitesii (*fol g, r-p, w, and r*); *Bertolonia maculata* (*f v-p; fol g*); *B. marmorata* (*fol g and w, p beneath*); *B. pubescens* (*fol g and br*); *Billbergia Barauquiniana* (*f g; fol g and w*); *B. iridifolia* (*f r and y, tipped b*); *B. Liboniana* (*f r, w, and p*); *B. marmorata* (*f b and r; fol g and r-br*); *B. Moreli* (*f r and p-w*); *B. pyramidalis* (*f r, bracts pi*); *B. Quesneliana* (*f p and pi; fol g*); *B. rosea-marginata* (*f b and pi; fol g*); *B. Saundersii* (*f r, y, and b; fol g, w, and p*); *B. thyrsoidea* (*f*); *B. zebrina* (*f g and pi; fol g, zoned gy*); *Brachyspatha variabilis* (*f g-p, w, and r; fol g*); *Bromelia bicolor* (*f r; fol g and r*); *B. bracteata* (*f pi and r*); *B. Fernandæ* (*f y and o-r*); *Burbidgea nitida* (*f o-r*); *Caladium argyrites* (*fol g, &c.*); *C. Chantini* (*fol r, w, and g*); *C. Devonianum* (*fol g, blotched w and pi*); *C. Kochii* (*fol g, spotted w*); *C. Lemaireanum* (*fol g, veined w*); *C. Leopoldi* (*fol g, r, and pi*); *C. macrophyllum* (*fol g, blotched g-w*); *C. maculatum* (*fol g, spotted w*); *C. marmoratum* (*fol g, and gy or st*); *C. rubrovenium* (*fol g-gy, veined r*); *C. sanguinolentum* (*fol g, w, and r*); *C. Schomburgkii* (*fol g, veined w*); *C. Verschaffeltii* (*fol g, spotted r*); *C. varieties* (*fol*); *Calathea arrecta* (*fol g, r beneath*); *C. Barauquinii* (*fol g, banded st-w*); *C. bella* (*fol g and gy-g*); *C. fasciata* (*fol g, w, and p*); *C. illustris* (*fol g and pi*); *C. Kerchoviana* (*fol gy-g, blotched p*); *C. leopardina* (*fol y-g, blotched g*); *C. Lindeni* (*fol g, p-pi beneath*); *C. Makoyana* (*fol g, c-y, and w*); *C. Massangeana* (*fol g, st, r*); *C. micans* (*fol g, striped w*); *C. nitens* (*fol g*); *C. ornata* (*fol y-g, p beneath*) and vars.; *C. pardina* (*f y; fol g, blotched br*); *C. princeps* (*fol g and y-g, p beneath*); *C. tubispatha* (*fol g-y, blotched br*); *C. Vanden Heckeii* (*fol g and st, p-r beneath*); *C. Veitchii* (*fol g, blotched y, p beneath*); *C. Wallisii* (*fol g*); *C. Warszewiczii* (*fol g, striped y-g*); *C. zebrina* (*fol g, barred g-p, g-p beneath*); *Canistrum aurantiacum* (*f o-y*); *C. eburneum* (*f w and g; fol c and g*); *Canna iridiflora* (*f pi, y spot*); *Caraguata Van Volkemii* (*f y*); *C. Zahni* (*f y; fol y, striped r*); *Carludovica atrovirens* (*fol g*); *C. palmata* (*fol g*); *C. rotundifolia* (*fol g*); *Centropogon Luoyanus* (*f pi-r*); *Centrosolenia bullata* (*f y-w; fol bronzy g, r beneath*); *C. picta* (*f w*); *Ceropegia elegans* (*f pi*); *C. Thwaitesii* (*f y, spotted r*); *Chirita lilacina* (*f b and w, blotched y*); *C. Moonii* (*f pi*); *Coelhostema Jacobinianum* (*f b, sc*); *C. odoratissimum* (*f y-g, r, b, and w, sc*); *Colocasia antiquorum* (*f g; fol g*); *C. indica* (*f br; fol g*); *C. odorata* (*f w, sc; fol g*); *Columnea Schiedeana* (*f y and br*); *Cordylina albo-rosea* (*fol g, edged pi*); *C. amboynensis* (*fol g, r, and p*); *C. Baptistii* (*fol g, y, and pi*); *C. gloriosa* (*fol g and o*); *C. Guilfoylei* (*fol r, pi, w, and y*); *C. imperialis* (*fol g, rayed r or pi*); *C. magnifica* (*fol pi*); *C. ornata* (*fol g, margined pi*); *C. Robinsoniana* (*fol g and br-r*); *C. terminalis* (*fol g or bronzy, and r*); *Corynophallus Afzelii* (*f w and p; fol g*) and vars.; *Costus igneus* (*f o-r, C. Malortieanus* (*f y, banded o-r*); *Crinum amabile* (*f r. sc*); *C. Balfourii* (*f w, tube g*); *C. eruentum* (*f r*); *C. giganteum* (*f w, sc*); *C. Kirkii* (*f w, striped r*); *C. purpurascens* (*f r-p*); *C. zeylanicum* (*f g or tinted r*); *Cryptocoryne ciliata* (*f g and p, sc*); *Cureuligo recurvata* (*f y; fol g*); *C. r. striata* (*fol g, banded w*); *C. r. variegata* (*fol g, variegated w*); *Curcuma albiflora* (*f w and y*); *C. australasica* (*f y, bracts pi*); *C. cordata* (*f r-y*); *C. petiolata* (*f y, bracts pi-p*); *C. Roscoeana* (*f r, bracts o*); *C. rubricaulis* (*f r*); *Cyanophyllum magnificum* (*fol g and w, r-p beneath*); *Cyanotis kewensis* (*f pi*); *Dalochampia Roëliana* (*f bracts pi, sc*); *Desmodium Skinneri* (*albo-nitens*) (*f p; fol g, lined w*); *Dichorisandra leucophthalmus* (*f b-p*); *D. musacea* (*f b; fol g and w, r-p beneath*); *D. thyrsoiflora* (*f b*); *Dichrotrichum ternatum* (*f r*); *Didymocarpus primulæfolia* (*f l*); *Dieffenbachia amœna* (*fol g, blotched w and y*); *D. Barauquiniana* (*fol g and w*); *D. Bausei* (*fol g and y-g, spotted w*); *D. brasiliensis* (*fol g, blotched w*); *D. chelsoni* (*fol g, gy, and y-g*); *D. eburnea* (*fol g, spotted w*); *D. latimauculata* (*fol g, y-g,*

Stove (Perennials)—*continued*.

and *w*); *D. Leopoldii* (*fol g* and *w*); *D. magnifica* (*fol variegated g* and *w*); *D. majestica* (*fol g, y, and si*); *D. nobilis* (*fol g*, blotched *w*); *D. princeps* (*fol g, y, and si-gy*); *D. Regina* (*fol g-w* and *g*); *D. Rex* (*fol g*, blotched *w*); *D. Wallisii* (*fol variegated g* and *gy*); *Dioscorea bulbifera* (*fol g*); *D. multicolor* (*fol variegated*) and vars.; *Dorstenia argontata* (*fol g*, banded *si*); *D. Mannii* (*fol g*); *Dracontium asperum* (*fl p-br*; *fol g, p, and w*); *Eichhornia azurea* (*aq, fl b*; *fol g*); *E. crassipes* (*aq, fol g*); *Epiprioum varabile* (*fol g*); *Episcia bicolor* (*fl w* and *p*); *E. chontalensis* (*fl l, y, and w*); *E. fulgida* (*fl r*); *E. villosa* (*fl w*, marked *p*); *Eucharis candida* (*fl w*); *E. grandiflora* (*fl w*); *E. Sanderiana* (*fl w*); *Eulophia macrostachya* (*fl lip y, striped r-p*); *Eurycoles amboinensis* (*fl w*); *Fittonia gigantea* (*fl r*; *fol g*, veined *r*); *T. Verschaffeltii* (*fol g*, veined *r*) and vars.; *Gesneria Cooperi* (*fl r*, throat spotted); *G. discolor* (*fl r*); *G. Donkela-riana* (*fl r*; *fol g*, tinged *p* and *r*); *G. exoniensis* (*fl o-r*, throat *y*); *G. usagelioides* (*fl pi, r, and y*); *G. pyramidalis* (*fl o-r* and *o*, spotted); *G. varietios* (*fl*); *Globba atrosanguinea* (*fl y* and *r*); *G. Schomburgkii* (*fl o-r*); *Gloriosa superba* (*fl o* and *r*) and var.; *Gloxinia diversifolia* (*fl*); *G. genoroides* (*fl r*); *G. glabra* (*fl w*, and *y*, spotted *p*); *G. maculata* (*fl p b*); *G. pallidiflora* (*fl b*); *G. varictios* (*fl*); *Gravasia gntata* (*fol g*, dotted *pi*) and vars.; *Guzmania erythrolopis* (*fl w* and *p-r*); *G. tricolor* (*fl w, y-g, r, and bk*); *Gymnostachyum cyanicum* (*fl w*, tipped *g* and *y*; *fol g* and *w*); *G. venusta* (*fl p*); *Hemanthus abyssinicus* (*fl r*); *H. cinnabarinus* (*fl r*); *H. Kallreyeri* (*fl r*); *H. Katherina* (*fl r*); *H. puniceus* (*fl o-r*, stamens *y* or *o*); *Hedychium angustifolium* (*fl r*); *H. coronarium* (*fl w, sc*); *H. flavosum* (*fl y, sc*); *Holiconia aureo-striata* (*fol g*, lined *y*); *H. Bihai* (*fol*); *H. psittacorum* (*fol*); *H. triumphans* (*fol g*, striped *bk*); *Homalomena Kozlilii* (*fl br* and *c*; *fol g*, blotched *y*); *H. Wallisii* (*fl r*; *fol g*, edged *w*, blotched *y*); *Hymenocallis amona* (*fl w, sc*); *H. macrostophanum* (*fl w, sc*); *H. speciosa* (*fl w, sc*); *Hypoestes sanguinolenta* (*fl p* and *w*; *fol g*, banded *p*); *Hypocyrtum latifolium* (*fl br*); *Imantophyllum cyrtanthiflorum* (*fl pi*); *I. miniatum* (*fl o* and buff); *Impatiens Hookeriana* (*fl w*, streaked *r*); *I. Jordanæ* (*fl y* and *r*); *I. Sultani* (*fl r*); *I. Walkeri* (*fl r*); *Isoloma Cecilie* (*fl pi*); *I. hondense* (*fl y, r-hairy*); *Justicia marmorata* (*fol g* and *w*); *J. peruviana* (*fl w*); *J. ventricosa* (*fl pi*); *Kanupferia Gilbertii* (*fl g*, margined *w*); *K. ornata* (*fl y* and *o*; *fol g, p* beneath); *Mantisia saltatoria* (*fl y* and *p*); *Maranta bicolor* (*fol gl-g*, blotched *g, pi-p* beneath); *M. concinna* (*fl y*; *fol g*); *M. Portana* (*fol g*, burrod *w, p* beneath); *M. sagoriana* (*fl g*); *Masseana hieroglyphica* (*fol g*, banded *v-bk*); *M. musica* (*fl w* and *br*; *fol y-g* and *g*); *Momordica Charantia* (*fl y*); *Nargelia cinnabarina* (*fl r*); *N. fulgida* (*fl r*); *N. f. bicolor* (*fl r* and *w*); *N. Geroltiana* (*fl o-r*); *N. multiflora* (*fl w* or *c*); *N. zebрина* (*fl o-r*); *Nepenthes atrosanguinea* (pitchers *r, y, and bk*); *N. bicalcarata* (pitchers); *N. coccinea* (pitchers *r*, speckled *y*); *N. Courtii* (pitchers *gy-g*, spotted *r*); *N. Dormanniana* (pitchers *g*, blotched *r*); *N. Hookeriana* (pitchers *r* or *g*); *N. intermedia* (pitchers *g*, spotted *r*); *N. Khasiana* (*fl g* and *y*; pitchers *g* and *p*); *N. Lawrociiana* (pitchers *g*, spotted *r*); *N. malagascariensis* (pitchers *r, c* throat); *N. Masteriana* (pitchers *r, p, and pi-c*); *N. Morgania* (pitchers *r* and *g*); *N. Northiana* (pitchers *p* and *bk* spotted); *N. Rafflesiana* (*fl y* and *br*; pitchers *g-y* and *br*); *N. Rajah* (pitchers *p*); *N. Ratoliffiana* (pitchers *g*, spotted *r*); *N. rubro-maculata* (pitchers *y-g*, spotted *r*); *N. sanguinea* (pitchers *r*); *N. Sedoni* (pitchers *g*, freckled *br-r*); *N. Veitchii* (pitchers); *N. Williamsii* (pitchers *g*, spotted *r*); *Nymphaea Devoniensis* (*aq, fl pi-r*); *N. Lotus* (*aq, fl r* or *w*) and var.; *N. stellata* (*aq, fl b, sc*) and vars.; *N. Starkevanti* (*aq, fl pi*); *N. thermalis* (*aq, fl w, sc*); *Orthosiphon staminosus* (*fl l-b*); *Onvrandra fenestralis* (*aq, fl g-w; fol g*); *Papyrus antiquorum* (*aq, stems and fol g*);

Stove (Perennials)—*continued*.

Peperomia clusiefolia (*fol g*, margined *r*); *P. maculosa* (*fol g*); *P. marmorata* (*fol variegated g* and *w*); *P. nummulariifolia* (*fol g*); *P. Saundersii* (*fol g* and *w*); *Peristrophe speciosa* (*fl p* and *r-p*); *Philodendron grandifolium* (*fl buff, g, pi, &c.*; *fol g*); *P. Mamei* (*fl variegated g* and *w*); *P. Selloum* (*fl g* and *w*; *fol g*); *P. Simsii* (*fl r*); *Plinsea albo-lineata* (*fl w*); *P. rubida* (*fl r*); *Pilea microphylla* (*fol g*); *Pistia Stratiotes* (*aq, fol g*); *Pitcairnia Andreana* (*fl y* and *r*); *P. corallina* (*fl r*, edged *w*); *P. fulgens* (*fl r*); *P. Karwinskiana* (*fl r*); *P. muscosa* (*fl r*); *P. pungens* (*fl r*); *P. tubuliformis* (*fl r*); *P. xanthocalyx* (*fl y*); *P. zeifolia* (*fl w* and *r-y*); *Plagiolirion Horsmanni* (*fl w*); *Plumbago rosea* (*fl r-pi*); *Portea kermesina* (*fl b* and *pi*); *Pothos celatocaulis* (*fol g*); *Rhco discolor* (*fl b* or *p*; *fol g*, or *p* beneath); *Ronbergia Morreniana* (*fl b*; *fol g*); *Kuella Portella* (*fl pi*; *fol g, r-p* beneath); *R. spectabilis* (*fl p-b*); *Saccharum egyptiacum* (*fl si*; *fol gy-g*); *Sanchezia longiflora* (*fl r-p*); *S. nobilis* (*fl y* and *r*); *S. n. glaucophylla* (*fol gl-g*, striped *w* or *y*); *Schismatoglottis crispata* (*fl g* and *c-w*; *fol g*, banded *gy*); *S. Lavalleyi* (*fol g* and *y-g, r-p* beneath); *S. pulchra* (*fol gl-g*, spotted *si-g*); *S. variegata* (*fl gl-g* and *y-g*; *fol g*, banded *si*); *Sentellaria costaricana* (*fl p, y-r, and y*); *S. Lehmanni* (*fl r*); *S. splendens* (*fl r*; *Sinningia barbata* (*fl w*, marked *r*; *fol g, r* beneath); *S. concinna* (*fl p* and *y*; *fol g*, nerved *r* and var.; *S. conspicua* (*fl y*, marked *p*); *S. speciosa* (*fl v, &c.*; *fol g, &c.*) and vars.; *S. Youngiana* (*fl v* or *p*, and *y-w*; *fol g, g-w* below); *Siphocampylus betulifolius* (*fl r*); *S. glandulosus* (*fl pi*); *S. Humboldtianus* (*fl r*); *S. longepedunculatus* (*fl p*); *Spathiphyllum ocaudium* (*fl w*); *S. cannaefolium* (*fl w*); *S. pictum* (*fol g* and *y-g*); *Spigelia splendens* (*fl r*); *Tacca integrifolia* (*fl g*, variegated *p* and *y*; *fol g*); *T. pinnatifida* (*fl p*; *fol g*); *Thunbergia coccinea* (*fl r*, varying to *o-pi*); *T. erecta* (*fl b, o*, and *y*); *T. fragrans* (*fl w, sc*); *T. laurifolia* (*fl b*); *Tillandsia carinata* (*fl y, r, and g*); *T. corallina* (*fl g* and *p-r*); *T. glaucophylla* (*fl g-w, p, r, and y*); *T. Hamaleana* (*fl g, w, v, and p*); *T. ionantha* (*fl w*); *T. Lindenii* (*fl g, r, and b-p*); *T. Morreni* (*fl br* and *y-g*); *T. psittacina* (*fl g, r, and y*); *T. pulchra* (*fl g-w, w, and r*); *T. Regina* (*fl w* and *pi, sc*); *T. Saundersii* (*fl g-y*); *T. splendens* (*fl y* and *p*; *fol g*, zoned *br* beneath); *T. umbellata* (*fl b, w, and g*); *T. virginialis* (*fl w* and *g*); *T. xiphioides* (*fl w*); *T. xiphostachys* (*fl p, g, y, and r*); *Turnera ulmifolia* (*fl y*); *Tydeea amabilis* (*fl pi*, dotted *p*); *Typhonium divaricatum* (*fl p*); *Utricularia montana* (*fl w* and *y*); *Xanthosoma Burilletii* (*fol g*); *X. Lindenii* (*fol g*, veined *w*); *X. violaceum* (*fl v* and *w*; *fol g*).

TRAILING.—Lists of the best Herbaceous Creepers and Trailers are here given. Many of them will be found useful for growing in baskets; and amongst the hardy kinds, plants for covering exposed parts of the rockery may be readily selected. Those Creepers and Trailers which are of a shrubby nature are classified under the heading **Shrubs**.

Hardy.—**ANNUALS.**—*Blumenbachia insignis* (*fl w* and *r-y*); *Lagenaria vulgaris* (*fl w*; *fr y*); *Limnanthes Douglasii* (*fl y*, changing to *w* and *g*); *Loasa prostrata* (*fl y*); *Mesembryanthemum crystallinum* (*fl w*; *fol*); *Nolana paradoxa* (*fl*); *Nonnea rosea* (*fl pi* and *y-w*); *Silene pendula* (*fl pi-w*); *Wahlenbergia hederacea* (*fl b*).

PERENNIALS.—*Ajuga reptans* (*fl b*, varying to *pi*); *Angallis tenella* (*fl pi*); *Androsace lanuginosa* (*fl pi*); *Arabis alba* (*fl w*); *A. arenosa* (*fl pi, w, or b*); *A. lucida* (*fl w*); *A. l. variegata* (*fol edged y*); *A. petraea* (*fl w*); *A. rosea* (*fl pi-p*); *Arunaria balaerica* (*fl w*); *A. purpurea* (*fl p*); *Astragalus austriacus* (*fl b* and *p*); *A. glycyphyllos* (*fl g-y*); *A. hypoglottis* (*fl p, b, and w*); *Centaurea dealbata* (*fl pi*); *Claytonia sibirica* (*fl pi*); *Convolvulus cantabricus* (*fl r*); *Coronilla ibérica* (*fl y*); *Leptinella dioica* (*fl y*); *Linaria Cymbalaria* (*fl b* or *l*);

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Trailing (Hardy Perennials)—*continued.*

Lysimachia Nummularia (fl y; fol g); *Mimulus moschatus* (fl y); *Mitchella repens* (fl w and p); *Nertera depressa* (fr o or r); *Nierembergia rivularis* (fl w and y); *Omphalodes verna* (fl b and w); *Ourisia coccinea* (fl r); *Oxalis corniculata* (fl y); *O. c. rubra* (fol p); *O. enneaphylla* (fl w or pi, veined p); *Phlox reptans* (fl p or v); *Potentilla ambigua* (fl y); *Pratia angulata* (fl w); *P. repens* (fl w, tinted v); *Pyxidantha barbulate* (fl w or pi); *Saponaria ocymoides* (fl r or pi); *Saxifraga oppositifolia* (fl p); *Scutellaria orientalis* (fl y, or y and p); *Sedum album* (fl w; fol g); *S. anglicum* (fl w or pi; fol g); *S. reflexum* (fl y); *Tiarella cordifolia* (fl w); *Trifolium uniflorum* (fl b and p); *Tropaeolum polyphyllum* (fl y); *Vinca herbacea* (fl p-b; fol g); *V. major* (fl b-p; fol g); *V. m. elegantissima* (fol g, marked w); *V. media* (fl b); *V. minor* (fl v-p, w, or b; fol g); *Waldsteinia fragarioides* (fl y).

Half-hardy.—ANNUALS.—*Abronia umbellata* (fl pi, sc); *Calandrinia Menziesii* (fl p-r).

BIENNIAL.—*Calandrinia umbellata* (fl r).

PERENNIALS.—*Abronia arenaria* (fl y, sc); *Boussingaultia baselloides* (fl w, changing to bk); *Nierembergia*

Trailing (Half-hardy Perennials)

calycina (fl y and w); *Saxifraga sarmentosa* (fl w, dotted y and r; fol r beneath).

Tender.—ANNUAL.—*Ipomœa siliacaulis* (i-h, fl w or c, and p).

PERENNIALS.—*Ancilema biflora* (c-h, fl b); *Arabis blepharophylla* (c-h, fl pi-p); *Batatas edulis* (i-h, fl w and p); *Begonia amabilis* (i-h, fl pi or w; fol g or variegated); *B. hydrocotylifolia* (i-h, fl pi); *B. prismatocarpa* (st, fl and y; fol g); *Convolvulus mauritanicus* (c-h, fl b, throat w, anthers y); *Cyanotis kowensis* (st, fl pi); *Episcia bicolor* (st, fl w, bordered p); *Fragaria indica* (c-h, fl y; fr r); *Guzania splendens* (c-h, fl o, marked bk and w); *Kennedy pro-trata* (c-h, fl r); (*E. acaulis* (c-h, fl w, fading to r); (*E. taraxacifolia* (c-h, fl w, fading to r); *Oleandra nodosa* (st, fol g); *Pelargonium peltatum* (c-h, fl varying from w to r); *Pollinia Duvoureauxii* (i-h, fl g; fol g, tinted v); *P. pulchra* (i-h, fol y, bk, and p); *Peperomia nummulariaefolia* (st, fol g); *Selaginella albonitens* (c-h, fol g); *S. apus* (c-h, fol g); *S. denticulata* (c-h, fol g, turning r); *S. Kraussiana* (c-h, fol g); *S. Martensii* (c-h, fol g); *S. uncinata* (c-h, fol g); *Stenotaphrum americanum variegatum* (st, fol g, striped w).



COLOURS OF FLOWERS OF HERBACEOUS PLANTS.

AN attempt is here made to classify, under definite headings, according to the colours of their flowers, the most desirable of the herbaceous plants described in this work, with a view to facilitating the selection of plants when blossoms of certain hues are required for any special purpose. Many good, and in some cases popular, subjects are perforce omitted owing to the profusion of tints exhibited by individual flowers (a large number of the Orchids might be cited as examples); but wherever possible, plants whose flowers are not self-coloured are classed under the heading to which their *prevailing* colour most nearly approximates, and their markings briefly indicated.

Where a plant bears flowers in two or more distinct varieties or strains of colour, its name will be found under each—*e.g.*, *Delphinium Ajacis* is classed under Blue, Red, and White. It has not been thought necessary to make provision for the few green-flowered subjects—mostly Orchids—in cultivation, as it is unlikely that such a list would be sought by any reader.

The height of each plant is given in feet and fractions of a foot.

The following abbreviations are employed throughout this section of the Supplement:—

aq., aquatic; *b.*, blue; *bk.*, black; *br.*, brown; *c.*, cream; *c-h.*, cool house; *g.*, green; *gl.*, glaucous; *gy.*, grey; *i-h.*, intermediate house; *l.*, lilac; *m.*, magenta; *mv.*, mauve; *o.*, orange; *p.*, purple; *pi.*, pink; *r.*, red; *s-aq.*, semi-aquatic; *sc.*, scented; *si.*, silvery; *st.*, stove; *v.*, violet; *w.*, white; *y.*, yellow.

Others have, however, been deemed necessary, in order to more clearly indicate the exact shades or tints—*e.g.*, under Pink there are *d* (dark), *fl* (flesh), *pa* (pale), *ro* (rose), and *sa* (salmon)—but, to avoid confusion, the additional abbreviations are confined to the section to which they refer.

BLUE.—The shades are indicated by the following abbreviations: *am* (amethystine), *d* (dark), *pa* (pale), *sk* (sky).

Hardy.—**ANNUALS**—*Anagallis grandiflora* (varying to *r*; $\frac{1}{2}$); *Asperula orientalis* (*sk*; 1); *Borago longifolia* (1); *B. officinalis* (*b*, *p*, or *w*; 1-2); *Centaurea Cyanus* (variable; 2-3); *Delphinium Ajacis* (*b*, *r*, or *w*; 1-1 $\frac{1}{2}$); *Gilia achilleifolia* (*p-b*; 1); *G. capitata* (1-2); *Moricandia sonchifolia* (*p-b*; 1-2); *Nemophila insignis* (*sk*; 1 $\frac{1}{2}$); *N. M*

Blue (Hardy)—*continued.*

vars. (*pa*; $\frac{1}{2}$); *Nicandra physaloides* (2); *Nigella damascena* (*b* or *w*; 1-2); *N. hispanica* (*d*; 1-2); *Nolana tenella* (*pa*); *Phacelia campanularia* (*d*, spotted *w*; $\frac{1}{2}$ - $\frac{3}{4}$); *P. viscida* (*p-b*; 1); *P. Whitlavia* (2); *Sedum cœruleum* ($\frac{1}{2}$); *Wahlenbergia hederacea* (*pa*).

BIENNIALS.—*Anarrhinum bellidifolium* (*pa*, or *w*; 2); *Myosotis sylvatica* (throat *y*; 1-2).

PERENNIALS.—*Accניתum angustifolium* (*d*; 2-3).

Blue (Hardy Perennials)—continued.

A. biflorum (pa; †); *A. chinense* (d; 4-6); *A. eminens* (2-4); *A. gracile* (pa, or v; 2); *A. Napellus* (3-4); *A. Ottonianum* (variegated w; 2-4); *A. tauricum* (d; 3-4); *A. variegatum* (1-6); *A. vulparia septentrionale* (4); *Actaea spicata* (pa, or w; 1) and var.; *Adenophora coronopifolia* (1-2); *A. denticulata* (1‡); *A. Fischeri* (1‡); *A. Lamarckii* (1-2); *A. pereskiaefolia* (1‡); *A. stylosa* (pa; 1-1‡); *A. verticillata* (pa; 2-3); *Ajuga orientalis* (1-1‡); *A. pyramidalis* (b or p; †); *Allium azureum* (sk; 1-2); *A. caeruleum* (‡); *Amphicome salicifolia* (pa; 1‡-2‡); *A. Tabernemontana* (pa; 1‡-2‡); *Anemone angulosa* (sk; †-1); *A. apennina* (‡); *A. blanda* (d; †); *A. Hepatica* vars. (‡); *A. nemorosa caerulea* (‡); *A. n. Robinsoniana* (sk; †); *Aphyllanthus monspeliensis* (1); *Aster aestivus* (2); *A. elegans* (2); *A. laevis* (2); *A. novae-belgii* (pa; 4); *A. paniculatus* (pa; 4); *A. spectabilis* (2); *Astragalus arenarius* (‡); *A. austriacus* (b and p; †); *Baptisia australis* (2); *B. exaltata* (d; 3-4); *Borago laxiflora* (pa); *Brodiaea capitata* (v-b; 1-2); *B. congesta* (1); *Calophanes oblongifolia* (1); *Camassia esculenta* (d, varying to w; 1‡); *C. Fraseri* (pa; 1); *Campanula Allionii* (rarely w; †); *C. alpina* (d; †-2‡); *C. barbata* (pa; †-1‡); *C. betonicifolia* (p-b; 1‡); *C. caespitosa* (d; †-‡); *C. carpathica* (‡); *C. cenisia* (d; †); *C. collina* (d; 1); *C. garganica* (‡-‡); *C. grandis* (pa v-b; 1-2); *C. isophylla* (l-b); *C. lactiflora* (b or c; 2-6); *C. latifolia macrantha* (p-b; 1-2); *C. nitida* (b or w; †-‡); *C. persicifolia caerulea coronata* (1-3); *C. primulaefolia* vars. (1-3); *C. pulla* (v-b; †-‡); *C. pusilla* (d, varying to w; †-‡); *C. pyramidalis* vars. (4-5); *C. Ranunculus* (b or w; 2-3); *C. rotundifolia* (d; †-1); *C. r. Hostii* (‡-1); *C. r. soldanellaeflora* (1); *C. sarmatica* (pa; 1-2); *C. Schenckeri* (d; †-‡); *C. speciosa* (b, w, or p; 1-1‡); *C. Tommasiniana* (pa; †-1); *C. Trachelium* vars. (2-3); *C. Van Houttei* (d; 2); *C. Waldsteiniana* (v-b; †-‡); *C. Zoyssii* (pa; †); *Centaurea montana* (2); *Chionodoxa Luciliae* (d, w centre; †); *Clematis aromatica* (v-b; 4-6); *Commelina virginica*; *Delphinium cashmirianum* (pa; 1-1‡); *D. dasycarpum* (petals br; 4-6); *D. exaltatum* (b or w; 3-6); *D. formosum* (1‡-3); *D. grandiflorum* (varying to w; 1-2); *Draacocephalum altaianse* (‡-‡); *D. austriacum* (1‡); *D. peregrinum* (‡); *D. speciosum* (pi-b; 1‡); *Eryngium alpinum* (1‡-2); *E. amethystinum* (am; 1-2); *E. Bourgati* (1-2); *E. giganteum* (3-4); *Fritillaria persica* (v-b; 3); *F. tulipifolia* (1); *Galega officinalis* (3-4); *G. orientalis* (2-4); *Gentiana acaulis* (marked y; †); *G. affinis* (‡-1); *G. Andrewsii* (1-2); *G. asclepiadea* (‡-1‡); *G. bavaria* (d; †); *G. cruciata* (pa, throat dotted g; †); *G. Kurroo* (sk, sprinkled w); *G. ornata* (d, tube striped w; †); *G. Pneumonanthe* (d; †-1); *G. pyrenaica* (d, pa g outside; †); *G. septemfida* (sk; †-1‡); *G. verna* (sk; †); *Geranium ibericum* (1); *G. pratense* (2-3); *G. sylvaticum* (b or p, veined r); †); *Globularia nudicaulis* (‡); *G. vulgaris* (‡-1); *Glycyrrhiza glabra* (3-4); *Houstonia caerulea* (pa; †); *Hyacinthus amethystinus* (‡-1); *H. varieties* (sc; ‡-1); *Iris sibiricus* (l-b and v; 1-2‡); *Lactuca alpina* (p-b; 3); *L. tuberosa* (pa; 1-1‡); *Linaria Cymbalaria* (b or l); *Linum alpinum* (‡); *L. narbonneense* (2); *Lithospermum Gastoni* (sk, 1-1‡); *L. purpureo-caeruleum* (r at first; 1); *Lobelia siphilitica* (pa; 1-2); *Lophanthus anisatus* (3); *Lupinus lepidus* (p-b, w spot; †); *L. nootkatensis* (mixed p, w, or y; 1-1‡); *L. perennis* (2); *L. polyphyllus* (usually d; 4); *L. subcarnosus* (d; 1); *Mandragora vernalis* (b or w; 1); *Mertensia alpina* (pa; †-‡); *M. lanceolata* (‡-1); *M. sibirica* (p-b, &c.; †-1‡); *M. virginica* (p-b; 1-2); *Muscari botryoides* (d sk; †-1); *M. b. pallidum* (pa †-1); *M. Elwesii* (‡); *M. Heldreichii* (‡); *M. neglectum* (d, sc; ‡-1); *M. paradoxum* (b-bk; †-‡); *M. racemoseum* (d, changing to r-p, sc; †-‡); *M. Szovitsianum* (sk; †); *Myosotis alpestris* (y eye, sc; †); *M. dissitiflora* (d sk; †-1); *M. palustris* (s-ag, throat y; †-1); *M. sylvatica* (throat y; 1-2); *Omphalodes Luciliae* (l-b; †-‡); *O. verna* (throat w; †); *Oxytropis montana* (calyx p; †); *O. pyrenaica* (sk; †-‡); *Pentstemon azureus* (sk; 1); *P.*

Blue (Hardy Perennials)—continued.

glaber (b, p, or v, †-1); *P. varieties*; *Phlox divaricata* (b or pa l; †-1‡); *Phyteuma comosum* (b or p, †-‡); *P. humile* (b; †); *Pinguicula grandiflora* (s-ag, v-b); *Platyodon grandiflorum* (‡-1); *Polemonium caeruleum* (2); *P. confertum* (‡); *P. humile* (b or p; †); *P. reptans* (b or w; †); *Primula capitata* (v-b); *P. sapphirina* (pa; †); *Pulmonaria angustifolia* (at first pi; 1); *Salvia hians* (2); *Scabiosa caucasica* (pa; 1); *Soilla amona* (b or w; †-‡); *S. bifolia* (b, r, or w; †); *S. hispanica* (often turning pi-p or w; ‡-1); *S. h. aperta* (pa; ‡-1); *S. nutans* vars.; *S. pratensis*; *S. sibirica* (d; †-‡); *Statice elata* (2); *S. floribunda* (v-b); *S. latifolia* (1); *Symphlytum caucasicum* (3); *Veronica incana* (2); *V. spicata* (‡-1‡); *V. virginica* (b or w; 2-6); *Vinca media*; *V. pedata* vars.; *Viola cornutâ* (pa); *V. odorata* vars. (sc); *V. pedata* (b or w); *V. ruthomagensis* (striped bk); *V. tricolor* vars.; *Wahlenbergia Kitaibelii* (tinged p; †); *W. tenuifolia* (v-b, w at base; †-‡); *Wulfenia carinthiaca* (1-2).

Half-hardy.—ANNUALS.—*Ageratum mexicanum* (l-b; 2) and vars.; *Brachyocome iberidifolia* (b or w; 1); *Callistephus chinensis* vars. (‡-2); *Downingia elegans* (w streak; †); *D. pulchella* (y eye; †); *Ipomoea hederacea* (pa; 10); *Sweetia corymbosa* (pa, or w and b; ‡-1‡).

PERENNIALS.—*Anagallis linifolia* (‡-1) and vars.; *Bollis rotundifolia caerulea* (sc, pa, or w); *Calotis cuneifolia* (1); *Coleostina agoratoidea* (1); *Commelina caelestis* (1‡); *Dianella laevis* (2); *D. tasmanica* (pa, 3-5); *Herbertia caerulea* (claws w; †); *Heteranthera limosa* (s-ag, v-b); *Myosotis azorica* (y eye; †-‡); *Salvia patens* (2‡); *Triteleia laxa* (1-1‡); *Verbena venosa* (b or l; 2); *Viola hederacea* (b or rarely w).

Tender.—ANNUALS.—*Browallia demissa* (c-h, pa; †-1); *B. elata* (c-h, d; 1‡); *B. e. grandiflora* (c-h, pa; 1‡); *Coccylopselium repens* (st); *Solanum Melongena* (c-h; 2-8); *S. sisymbriifolium* (c-h, pa, or w; 4); *Torenia asiatica* (st, lateral lobes d v).

BIENNIALS.—*Anchusa caespensis* (c-h; 1‡); *Blopharis caespensis* (c-h; 1); *Echium candicans* (c-h, 2-4).

PERENNIALS.—*Aechmea caelestis* (st, sk); *Aganisia caerulea* (st); *Agapanthus umbellatus* (c-h; 2-3); *A. u. flore-pleno* (c-h); *A. u. Leichtlinii* (c-h, da); *A. u. maximum* (c-h); *A. u. minor* (c-h, da); *A. u. Mooreana* (c-h, da); *Agathaea caelestis* (c-h; 1‡); *Aneiloma biflora* (c-h; †); *Angelonia salicariaefolia* (st; 1‡-3); *Anthurium acule* (st; 1-3); *Babiana disticha* (c-h, pa, sc; †); *B. pinnata* (c-h, v-b, sc; †); *Bæa hygrometrica* (c-h, pa; †); *Billbergia marmorata* (st, d, bracts r); *B. rosea marginata* (st, pa, bracts pi; 1‡); *Chirita lilacina* (st, pa, tube w); *Cineraria varieties* (c-h); *Convolvulus mauritanicus* (c-h, throat w); *Cyanella odoratissima orchidiformis* (c-h, sc; 1); *Dendrobium MacCarthii* (st, corise-b, lip veined p; 1‡-2); *Dichorisandra musica* (st, sk; 1‡); *D. thyrsoflora* (st, d, anthers y; 4); *Goisorrhiza Rochensis* (c-h, spotted r; †); *Gentiana Fortunei* (c-h, d, spotted w; †); *Gloxinia varieties* (st); *Griffinia hyacinthina* (c-h, w at base; †); *Hyacinthus varieties* (c-h, sc, ‡-1); *Lachenalia purpureo-caerulea* (c-h, p-b; †-‡); *Lobelia Erinus* (c-h, throat w or y; †); *Nymphaea gigantea* (c-h ag, stamens y); *N. scutifolia* (c-h ag, sc); *N. stellata* (st ag, sc); *N. s. zanzibarensis* (st ag, d); *Orthosiphon stamineus* (st, pa l-b; 2); *Portea kormenina* (st, bracts pi; 1‡); *Rhoeo discolor* (st, b or p); *Ronnbergia Morreniana* (st); *Ruellia spectabilis* (st, p-b, d veined; 2); *Saccolabium caeleste* (st); *Salvia caelestifolia* (c-h, d; 3); *Solanum sisymbriifolium* (c-h, pa, or w; 4); *Stokesia cyanea* (c-h, 1-1‡); *Streptocarpus Rexii* (c-h; †); *S. Saundersii* (c-h, pa; 1); *Thunbergia erecta* (st, d, o and y below; 6); *T. laurifolia* (st); *Tillandsia umbellata* (st, centre w; 1); *Tropaeolum azureum* (c-h, sk); *Vanda caerulea* (st; 2-3); *Wigandia Vigieri* (c-h, l-b; 6).

BROWN.—The shades are indicated by the following abbreviations: cho (chocolate), d (dark), pu (pale).

Brown—continued.

Hardy.—PERENNIALS.—*Aira flexuosa* (1); *Aplectrum hymale* (*g-br*; 1); *Arisaema triphylla* (*p-br* and *g*; $\frac{3}{4}$ -1); *Asarum canadense* (1); *Cheiranthus Choiri* vars. (*sc*; 1-2); *Dracunculus vulgaris* (3); *Fritillaria graeca* ($\frac{3}{4}$); *Geranium phaeum* (*bk-br*, spotted *w*); *Helicodiceros crinitus* (*p-br*; 1-1 $\frac{1}{2}$); *Iris fulva* (2-3); *Primula Auricula* vars. ($\frac{3}{4}$); *P. officinalis* vars. ($\frac{3}{4}$ -1).

Half-Hardy.—PERENNIALS.—*Calceolaria varietes* (1); *Eucemis nana* ($\frac{3}{4}$); *Ferraria Ferrariola* (*g-br*);

Tender.—PERENNIALS.—*Anomum Cardamomum* (*st*; 8); *Bulbophyllum barbigerrum* (*st*, *g-br*; $\frac{3}{4}$); *Cattleya guttata Leopoldii* (*st*, *d*, spotted *r*, lip *r-p*; 1 $\frac{1}{2}$ -2); *Colocasia indica* (*st*; 5); *Cymbidium Devonianum* (*st*, *pa*, marked *mv-p*, lip *p* and *w*; 1 $\frac{1}{2}$); *C. giganteum* (*st*, lip marked *y* and *p*; 2 $\frac{1}{2}$); *C. Hutoni* (*st*, *cho* and *w*); *Dracontium asperum* (*st*, *p-br*; 5-6); *Houlletia picta* (*st*, column *y*); *Hypolytrum latifolium* (*st*; 2-4); *Musdevallia ophippium* (*c-h*, *p-br*, marked *y*, *y* tails); *Odontoglossum tripudians* (*c-h*, marked *v-v*); *Oncidium annulare* (*i-h*, marked *y*); *O. bicallosum* (*st*, *d*, lip *y*); *O. cucullatum* (*c-h*, *p-br*); *Vanda insignis* (*st*, lip *w* and *p-pi*); *Zygopetalum Clayi* (*i-h*, *p-br*, lip *p*).

LAVENDER, LILAC, AND MAUVE.—The shades are indicated by the following abbreviations: *d* (dark); *la* (lavender); *pa* (pale).

Hardy.—ANNUALS.—*Gilia androsacea* (*l*, *pi*, or nearly *w*; $\frac{3}{4}$ -1); *G. densiflora* (*l* or nearly *w*; $\frac{3}{4}$); *Ionopsidium acule* (*l*, or *w* tinged *w*; $\frac{3}{4}$); *Lunaria annua* (*v-l*; 1 $\frac{1}{2}$ -3); *Lupinus nanus* (*l* and *b*; 1); *Malcolmia maritima* vars. ($\frac{3}{4}$ -1); *Papaver somniferum* vars. (3-4); *Statice Suworowi* (*l*).

glandulosa (*l-b*, petals *w*; $\frac{3}{4}$ -6); *Bigelovii* (*l*, disk *y*; $\frac{3}{4}$); *Lunaria annua* (*v-l*).

PERENNIALS.—*Aconitum uncinatum* (*l*; 4-8); *Aethionema cordifolium* (*pi-l*; $\frac{3}{4}$); *Anemonopsis macrophylla* (*l* and *p*; 2-3); *Aquilegia olympica* (*mv-b*, petals *w*; 1 $\frac{1}{2}$); *A. pyrenaica* (*l-b*; $\frac{3}{4}$ -1); *A. sibirica* (*l*; 1); *Armeria vulgaris* (*l*, variable; $\frac{1}{2}$ -1); *Asclepias Douglasii* (*p-l*, *sc*; 2-3); *Aster pyrenaeus* (*l-b*, disk *y*; 1-1 $\frac{1}{2}$); *Campanula carpathica polviformis* (*l*, *sc*; $\frac{3}{4}$ -1 $\frac{1}{2}$); *C. e. turbinata Hendersonii* (*mv*; 1); *Chrysanthemum* varieties; *Convolvulus althaeoides* (*l* or *pa r*); *Coris monspeliensis* (*l*; $\frac{1}{2}$); *Crocus biflorus* (*pa la*, varying to *w*; $\frac{3}{4}$); *C. speciosus* (*l*, striped *p*); *C. vernus* (*l*, *v*, or *w*; $\frac{3}{4}$); *C. varieties*; *Dahlia* varieties; *Dodecatheon Meadia* (*l*, *pi-p*, or *w*; $\frac{3}{4}$ -1 $\frac{1}{2}$); *Fritillaria Hookeri* (*pa*; $\frac{3}{4}$); *Funkia ovata* (*b-l* or *w*; 1-1 $\frac{1}{2}$); *Geranium Lambertii* (*l*; $\frac{3}{4}$); *G. maculatum* (*pa la*; 1 $\frac{1}{2}$); *Hamblecia rhodopensis* (*pa l*; $\frac{3}{4}$); *Hyacinthus* varieties (*l* and *mv*; $\frac{3}{4}$ -1); *Iris cretensis* (*l*; $\frac{3}{4}$); *I. cristata* (*l*, marked *y*; $\frac{1}{2}$); *I. ferdinandiana* (*s-ag*, *b-l*; 2-3); *I. Histrio* (*l* and *p*); *I. neglecta* (*l* and *w*; 1 $\frac{1}{2}$ -2); *I. nepalensis* (*l*; $\frac{1}{2}$ -1); *I. tectorum* (*l* and *w*; 1 or more); *I. unguicularis* (*l*, keeled *y*); *Lilium roseum* (*l*; 1 $\frac{1}{2}$); *Linaria Cymbalaria* (*l* or *b*); *Morodora Bulboodium* (*pi-l*; $\frac{3}{4}$); *Phlox caschmeriana* (*pa l*; 2); *Phlox divaricata* (*pa l* or *b*; $\frac{3}{4}$ -1 $\frac{1}{2}$); *P. varieties* (*l* and *mv*); *Primula Allionii* (*mv*, *w* eye); *P. altaica* (*mv* or *p-r*, *y* centre; $\frac{3}{4}$ -1); *P. denticulata* (*l*; $\frac{3}{4}$ -1); *P. d. pulcherrima* (*d l*; $\frac{3}{4}$ -1); *P. japonica* vars. (*l*; 1-1 $\frac{1}{2}$); *P. obeonica* (*pa l* or *p*; $\frac{1}{2}$ -1); *P. sinensis* (*pa l* or *w*; $\frac{3}{4}$); *Salvia caruaceae* (*la*; 1); *Saponaria officinalis* (*l* or *w*; 1-3); *Saxifraga oppositifolia pyrenaica*; *S. snperba* (*pi-l*); *Scabiosa amona* (*l* or *pi*; 2-3); *Scilla hyacinthoides* (*b-l*; 1 $\frac{1}{2}$ -3 $\frac{1}{2}$); *S. peruviana* (*l*, *r*, or *w*; 1-1 $\frac{1}{2}$); *Veronica longifolia* (*l*; 2); *Viola odorata* vars. (*la*, *sc*).

Half-hardy.—ANNUALS.—*Callistephus chinensis* vars. ($\frac{3}{4}$ -2); *Schizanthus Grahami* (*l* or *pi*; 2); *Verbena varieties* (*mv*).

PERENNIALS.—*Gladiolus* varieties (*l* and *mv*; 1-3); *Ophiopogon japonicus intermedius* (*l*; 1 $\frac{1}{2}$); *Petunia* varieties (*l* and *mv*); *Triteleia uniflora* (*pa l*; 1); *Verbena venosa* (*l* or *b*; 2).

Lavender, Lilac, and Mauve—continued.

Tender.—ANNUAL.—*Browallia grandiflora* (*c-h*, *pa l* or *w*; 1-3).

PERENNIALS.—*Achimenes Kleisi* (*i-h*, *l*, marked *y*; $\frac{3}{4}$); *A. multiflora* (*i-h*, *l*; 1); *Barkeria Lindleyana Centre* (*c-h*, *pi-l*, lip blotched *p*; 2); *B. melanocaulon* (*c-h*, *pi-l*, lip *r-p* and *g*; 1); *B. spectabilis* (*c-h*, *pi-l*, lip marked *p* and *r*; 1); *Calanthe Dominyi* (*st*, *l*, lip *d p*; 1); *Calochortus coruleus* (*c-h*, *l*, marked *d b*; $\frac{3}{4}$ -1); *C. Gunnisoni* (*c-h*, *pa l*, *y-y*, and *p*); *C. splendens* (*c-h*, *l*; 1 $\frac{1}{2}$); *Didymocarpus primulefolia* (*st*, *l*; $\frac{3}{4}$ -1); *Epidendrum nemorale* (*st*, *mv* or *pi-l*, lip striped *w*); *Episcia chontalensis* (*st*, *l*, *y* centre; $\frac{3}{4}$); *Gladiolus varieties* (*c-h*; 1-3); *Gloxinia varieties* (*st*); *Griffinia dryades* (*i-h*, *p-l*, *w* centre; 1 $\frac{1}{2}$); *G. ornata* (*i-h*, *b-l*; 1-1 $\frac{1}{2}$); *Hya-cinthus* varieties (*c-h*, *l* and *mv*, *sc*; $\frac{3}{4}$ -1); *Ixia capillaris* (*c-h*, *l* or *pi*; 1 $\frac{1}{2}$); *Lachenalia lilacina* (*c-h*; $\frac{3}{4}$ -1 $\frac{1}{2}$); *Laelia anceps* (*c-h*, *pi-l*, lip *p* and *l*, *sc*; 1 $\frac{1}{2}$); *L. majalis* (*c-h*, *l*, lip marked *r-p* and *w*; $\frac{3}{4}$); *Niobergia filicalia* (*c-h*, *y* centre; $\frac{3}{4}$ -1); *Odontoglossum Cervantesii* (*i-h*, *pi-l*, barred *r-br* at base); *Podolepis gracilis* (*c-h*, *l*, *p*, or *w*; 3); *Pogonia Gammiana* (*i-h*, *pa l*, *pi*, and *g*); *Pterodiscus speciosus* (*c-h*, *l* or *r*; 2); *Sparaxis pendula* (*c-h*, *l*; 4); *Wahlenbergia saxicola* (*c-h*, *pa l*; $\frac{3}{4}$ -1); *Wigandia macrophylla* (*c-h*; 10).

LILAC. See **Lavender, Lilac, and Mauve.**

MAUVE. See **Lavender, Lilac, and Mauve.**

PINK.—The shades are indicated by the following abbreviations: *d* (dark), *fl* (flesh), *pa* (pale), *ro* (rose), *sa* (salmon).

Hardy.—ANNUALS.—*Agrostemma cœli-rosa* (*pi* or *l*); *Armeria cephalotes* (*ro* or *r*; 1-1 $\frac{1}{2}$); *Campanula Erinus* (*b-pi*; $\frac{3}{4}$ -3); *Centaurea Cyanus* (varying to *b* and *w*; 2-3); *Clarkia elegans* vars. (2); *Gilia androsacea rosacea* (*ro*; $\frac{3}{4}$ -1); *G. micrantha* (*ro*; $\frac{3}{4}$); *Iberis umbellata carnea* (*pa* or *fl*; $\frac{1}{2}$ -1); *Lathyrus grandiflorus* (*ro*); *Linum grandiflorum* ($\frac{1}{2}$ -1); *Malcolmia maritima* vars. (*ro*; $\frac{3}{4}$ -1); *Nonnea rosea* (throat *y-m*; $\frac{1}{2}$ -1); *Oenothera amena* (*ro*, spotted *r*; 1-2); *Papaver somniferum* vars. (3-4); *Sabbatia campestris* (*s-ag*, *ro*; 1); *Saponaria calabrica* (*ro*; $\frac{1}{2}$ -1); *Silene Aconion* ($\frac{1}{2}$ -1); *S. pendula* (*fl*); *S. p. compacta* ($\frac{1}{2}$).

BIENNIALS. *Aithya caribaea* (*ro*, *y* base; 3); *A. rosea* (*ro*, &c.; 8).

PERENNIALS.—*Acantholimon glutaceum* (*ro*; $\frac{3}{4}$); *A. venustum* (*ro*; $\frac{3}{4}$ -3); *Acanthus longifolius* (*pi* or *p*; 3-4 $\frac{1}{2}$); *A. mollis* (*pi* or *w*; 3-4) and var.; *A. spinosissimus* (3 $\frac{1}{2}$); *Achillea asplenifolia* (*ro*; 1 $\frac{1}{2}$); *A. Millefolium roseum* (*ro*; 1-3); *Acis roseus* (*ro*; $\frac{3}{4}$); *Aconitum japonicum* (*fl*; 6); *Aethionema grandiflorum* (*ro*; 1 $\frac{1}{2}$); *Alisma Plantago* (*aq*, *pa ro*); *Allium acuminatum* (*d ro*; $\frac{3}{4}$ - $\frac{3}{4}$); *A. Bidwellii* (*ro*; $\frac{3}{4}$); *A. Brewerii* (*d ro*; $\frac{3}{4}$); *A. falcofolium* (*pa ro*; $\frac{3}{4}$); *A. roseum* (*l-ro*; 1-1 $\frac{1}{2}$); *Alströmoria chilensis* (*pi* or *r*, marked *y*; 2-3); *Althea cœnabalis* (*ro*; 5-6); *Anagallis tenella* (*s-ag*; $\frac{3}{4}$); *Androsace Laggeri* (1); *Anemone japonica elegans* (*pa ro*; 2-3); *A. nemorosa rosea* (*ro*; $\frac{3}{4}$); *Antennaria dioica* (1); *Anthyllis montana* (*pi* or *p*; $\frac{3}{4}$ -1 $\frac{1}{2}$); *Arabis arenosa* (*ro*, rarely *w* or *p*; $\frac{3}{4}$); *Armeria dianthoides* (*pa*; $\frac{3}{4}$); *A. juncea* (*ro*; $\frac{3}{4}$); *A. juniperifolia* (*d ro*; $\frac{3}{4}$); *A. plantaginosa* (*ro*; 1); *A. setacea* (*pa ro*; $\frac{3}{4}$); *A. vulgaris* *Lauchiana* (*da*; $\frac{1}{2}$ -1); *Asperula montana* ($\frac{3}{4}$ -1 $\frac{1}{2}$); *Aster longifolius formosus* (1 $\frac{1}{2}$ -2); *A. novæ-angliæ rubra* (*da*; 6); *A. pendulus* (*ro*, at first *w*; 2); *Astilbo rubra* (*ro*; 4-6); *Astragalus pannosus* ($\frac{3}{4}$ - $\frac{3}{4}$); *Astrantia helleborifolia* (1); *A. major* (1-2); *Bellis perennis* var. ($\frac{3}{4}$); *Boltoni* (*d*, 2); *B. glastifolia* (1 $\frac{1}{2}$); *Batomus umbellatus* (*aq*, *ro*); *Calystegia pubescens flore-pleno* (*fl*, turning *ro*); *Centaurea dealbata* (*ro*; 1-1 $\frac{1}{2}$); *Chrysanthemum* varieties; *Claytonia sibirica* (*ro*; $\frac{3}{4}$ -1); *Clintonia Andrewsiana* (*d ro*; 2); *Colchicum byzantinum* (*pa ro*; $\frac{3}{4}$); *Corydalis Kolpakowskiana* (*pi* or *p*; $\frac{3}{4}$); *Cyananchem roseum* (*pi-r*; 1-1 $\frac{1}{2}$); *Dahlia* varieties; *Dianthus alpinus* (*d ro*, spotted *r*; $\frac{3}{4}$); *D. casius* (*ro*, *sc*; $\frac{3}{4}$ -1); *D. Caryophyllus* vars. (*sc*; 1 $\frac{1}{2}$ -2); *D. deltoides* (*ro*; $\frac{3}{4}$ -3); *D. fimbriatus* (*ro*; 1); *D. Fischeri*

Pink (Hardy Perennials)—continued.

(ro; 1); *D. neglectus* (d ro; 1); *D. superbus* (ro, sc; 1-1½); *Dodecatheon Meadia lancifolium* (y at base; 1-1½); *Douglasia nivalis* (1); *Drypis spinosa* (pa pi or w; 1); *Echinacea angustifolia* (ro or pa p; 2-4); *Epilobium Dodonsei* (d ro; 1); *E. hirsutum* (pa pi or w; 3-5); *Eremurus robustus* (peach; 8-9); *Erythraea diffusa* (d ro; 1); *E. Muhlenbergi* (d, g-w star; 1); *Erythronium dens-canis* (p-pi or w; 1); *Fritillaria macrophylla* (3); *Geranium striatum* (d veins; 1); *Habenaria psychodes* (ro, varying to r); *Helianthemum vulgare* vars.; *Hesperis matronalis* vars. (sc; 2-3); *Hyacinthus corymbosus* (l-ro; 1-1½); *H. varieties* (sc; 1-1); *Incarvillea Olgæ* (ro; 3-4½); *Lathyrus roseus* (ro); *L. rotundifolius*; *L. sylvestris platyphyllus* (ro); *Lavatera trimestris* (ro; 3-6); *Lilium speciosum roseum* (ro; 1-3); *Lupinus leucophyllus* (2-3); *Lychnis alpina* (1); *L. diurna* (p-pi; 1-3); *L. Lagascea* (ro, w centre; 1); *L. pyrenaica* (pa fl; 1); *L. Viscaria* (ro; 1); *Malva moschata* (ro; 2-2½); *Mimulus Lewisii* (ro; 1); *Morina longifolia* (pa; 2); *Nymphaea alba rosea* (aq, ro); *Eriogonum californicum* (varying to w, y centre, sc; 2); *Pæonia albiflora* (2-3); *P. varieties* (sc); *Papaver alpinum* (ro, y, or w; 1); *Pedicularis verticillata* (pi or w; 1-1); *Pentstemon breviflorus* (fl or y, striped pi within; 3-6); *P. campanulatus* vars. (1½); *P. heterophyllus* (pi or pi-p; 1½); *P. varieties*; *Phlox amœna* (pi, p, or w; 1-1½); *P. glaberrima suffruticosa* (ro; 2); *P. pilosa* vars. (1-2); *P. subulata* (d centre); *P. varieties*; *Phloxis stylosa* (1); *Phylostegia virginiana* (fl or p; 1½-4) and var.; *Polygonum vacciniifolium* (ro); *Potentilla nitida* (ro); *Primula cortusoides* (d ro; 1-1½); *P. c. Sieboldii* (d ro, w eye; 1-1); *P. marginata* (v-ro; 1); *P. minima* (ro or w; 1); *Pulmonaria saccharata* (1); *Pyrethrum roseum* (ro, disk y; 1-2) and vars.; *Saponaria ocyroides* (pi or r); *Saxifraga peltata* (pa pi or w); *S. Stracheyi* (1-2); *Scabiosa amœna* (ro or l; 2-3); *Scilla hispanica carnea* (fl; 1-1); *S. nutans rosea* (ro); *Scorzonera undulata* (p-ro; 1-2); *Sedum lydium* (1-1); *S. spectabile* (1½-2); *Sempervivum Lamottei* (pa, filaments p; 1); *Silene acaulis* (rarely w; 1); *S. Elizabethæ* (ro, claws w; 1); *S. Hookeri* (pa); *S. pennsylvanica* (1-1); *Teucrium Chamadrys* (ro, lower lip spotted w and r; 1-1); *Trillium grandiflorum* (at first w; 1-1½); *Tulipa varieties*; *Vicia argentea* (keel spotted bk; 1).

Half-hardy.—**ANNUALS**.—*Abronia umbellata* (ro, sc; 1-2); *Acroclinium roseum* (1-2); *Calandrinia grandiflora* (ro; 1); *Callistephus chinensis* vars. (1-2); *Gomphrena globosa carnea* (1½); *Impatiens Balsamina* vars. (1-2); *Phlox Drummondii* vars. (1); *Schizanthus Grahami retusus* (d ro; 2); *Verbena varieties*; *Zinnia elegans varieties* (2).

BIENNIAL.—*Adlumia cirrhosa* (pa; 15).

PERENNIALS.—*Androsace carnea* (y eye; 1); *A. Chamæjasme* (y eye; 1); *A. lanuginosa* (pa ro, y eye; 1-1½); *A. sarmentosa* (ro, w eye; 1); *A. villosa* (sc; 1); *Aponogeton spathaceum junceum* (aq, pa); *Caloscorum nerinaeflorum* (ro; 1); *Conandron ramondioides* (p eye, or w; 1); *Frankoa sonchifolia* (2); *Gladiolus floribundus* (fl, varying to w; 1); *G. varieties* (fl, ro, &c.; 1-3); *Lathraea squamaria* (fl or b, streaked p or d r; 1-1); *Petunia varieties*; *Sedum Sieboldii* (1); *Statice callicoma* (1); *Zephyranthes carinata* (tube g; 1); *Z. rosea* (ro, g below; 1).

Tender.—**ANNUALS**.—*Drosera peltata* (c-h; 1); *Waitzia nivea* (c-h, pi, w, or pa y; 1½).

BIENNIALS.—*Cleome rosea* (st, ro; 1½); *Convolvulus arvensis* (c-h, r-pi); *Humea elegans* (c-h, pi or r; 5-6).

PERENNIALS.—*Abronia umbellata* (c-h, ro, sc; 1-2); *Zohnea fasciata* (st); *Acerides affine* (st, ro; 3); *A. roseum* (st, ro, spotted; 1); *A. r. superbum* (st); *Alpinia nutans* (st, sc; 13); *Amomum Molegueta* (st, pa; 1-2); *Amorphophallus Rivieri* (st, g-pi, &c.); *Barkeria elegans* (c-h, d ro, lip r; 2); *B. Skinneri* (c-h, d ro; 1½); *B. S. superbum* ro, lip streaked y; 1½); *Begonia amabilis* (c-h, pi or B. amœna (i-h, pa ro); *B. Berkeleyi* (i-h, ro); *B.*

Pink (Tender Perennials)—continued.

coriacea (i-h, ro; 1); *B. Evansiana* (i-h, fl; 2); *B. gogoensis* (i-h, pa ro); *B. gracilis* (i-h; 1-2); *B. hydrocotylifolia* (i-h, ro; 1); *B. malabarica* (i-h, ro; 2); *B. manicata* (i-h; 2); *B. natalensis* (i-h, pa ro; 1½); *B. picta* (i-h, pa ro; 1-1); *B. Richardsiana diadema* (i-h, ro; 1); *B. rosiflora* (i-h, ro; 1); *B. semperflorens* (i-h, pi or w; 2); *B. socotrana* (i-h, ro); *B. Verschaffeltiana* (i-h, ro; 2); *varieties* (i-h); *Billbergia Lietzei* (st, ro); *Bletia florida* (st, pa ro; 2); *Bomarea Corderi* (c-h, ro, spotted p-br); *B. Williamsii* (c-h, ro); *Bromelia bracteata* (st, bracts r; 2); *Brunsvigia toxicaria* (i-p; 1); *Burlingtonia deoora* (st, pi or w, spotted r); *B. d. picta* (st, blotched p); *Calanthe Veitchii* (st, throat w; 3); *Calochortus lilacinus* (c-h, pa; 1-1½); *Canna Annæi* (st, sa; 6); *C. Rendatleri* (st, sa-r; 6-8); *Cattleya dolosa* (i-h, lip marked y); *C. Dominiana lutea* (i-h, pa, lip w and y); *C. eldorado* (i-h, pa, lip marked p-r and o); *C. e. splendens* (i-h, ro, lip o, w, and v-p); *C. Harrisonii* (i-h, ro, lip tinged y; 2); *C. intermedia* (i-h, ro or ro-p, lip blotched v-p; 1); *C. i. superba* (i-h, ro, lip p; 1); *C. labiata* (i-h, d ro, lip r; 1½-2); *C. l. Pescatorei* (i-h, pa ro, lip r; 1½-2); *C. maxima* (i-h, ro, lip pa, marked p-r and o; 1-1½); *C. Mendelli* (i-h, pa, varying to w, lip m); *C. Mossii* (i-h; 1) and vars.; *C. Sedeniana* (i-h, pa, shaded g, lip p and w); *C. speciosissima* (i-h, fl, lip b, w, and y); *C. Triana* (i-h, marked o or y, and p) and vars.; *C. Walkeri* (i-h, ro, lip tinged y, sc; 1-1); *C. Warneri* (i-h, d ro, lip d r); *Centropogon fastuosus* (c-h, ro; 2); *Chironia floribunda* (c-h; 2); *Chysis aurea Lemminghei* (st, ro; 1); *Cœlogyne Wallichiana* (i-h, ro, lip banded w, sc; 1); *Comprentia macropleuron* (i-h, pa ro, speckled r; 1); *Crassula Bolusii* (c-h, pa fl; 1-1½); *Cyanella odoratissima* (c-h, sc; 1); *Cyanotis kawensis* (st, ro); *Dendrobium bigibbum superbum* (c-h, ro; 1); *D. Parishii* (st, ro; 1-1); *D. Pierardii* (c-h, pa, or c, lip y and p); *D. superbum anosum* (st, ro, lip p); *Epidendrum dichromum* (c-h, pa ro, lip r; 2-3); *Gesneria ægelioides* (st, ro, marbled r, throat y and r); *Gladiolus varieties* (c-h; 1-3); *Gloxinia varieties* (st); *Hesperis crispa* (c-h; 1); *Hippenstrum reticulatum* (i-h, pi and w; 1); *Hyacinthus varieties* (c-h, sc; 1-1); *Isoloma Cecilæ* (st, ro; 1-1½); *Ixia capillaris* (c-h, fl or l; 1½); *I. patens* (c-h; 1); *Iulia anceps Lecana* (i-h, ro, lip w and p, sc; 1½); *L. a. Warneri* (i-h, ro, lip r, sc; 1½); *L. autumnalis* (i-h, ro, lip ro-w and y, sc; 1); *L. elegans Turneri* (i-h, ro, lip m-ro; 1); *L. præstans* (i-h, d ro, lip r-p); *L. superbians* (i-h, ro, streaked r, lip r and y; 5); *L. Wallisii* (i-h, ro, lip marked y); *Lotus australis* (c-h, variable; 2); *L. gobolia* (c-h, ro); *Miltonia Regnellii* (st, pa ro; 1); *M. vexillaria* (st, ro and w); *Nerine flexuosa excellens* (c-h, ro, ribbed r; 1); *N. f. pulchella* (c-h, pa, striped r; 2); *N. sarniensis* (c-h, pa sa; 2-2½); *N. undulata* (c-h, fl; 1); *Nymphaea Starkevanti* (st aq); *Oxalis rosea* (c-h, ro; 1-1); *Polargonium fissum* (c-h, pa; 1); *P. varieties* (c-h); *Phalanopsis Emeraldæ* (st; 1); *P. Sanderiana* (st, ro, lip w, br, p, and y); *P. Schilleriana* (st, ro, centre of lip w and y); *Primula mollis* (c-h, ro and r; 1-1½); *Rivina humilis* (st, pa ro; 1-2); *R. laevis* (st, pa ro; 7-8); *Romulea speciosa* (c-h, ro, striped w and y at base; 1); *Ruellia Portellæ* (st, ro; 1); *Saccolabium rubrum* (st, d ro; 1); *Satyrium nepalense* (c-h, ro; 1); *Sedum Ewersii* (c-h, pi or pa v; 1); *S. Sieboldii* (c-h; 1); *Siphocampylus glandulosus* (st, ro; 3); *Spathoglottis rosea* (st, ro); *Streptocarpus Dunnii* (c-h, ro, tinged r; 1); *Stylidium graminifolium* (c-h; 1-1½); *Swainsona Greyana* (c-h; 2-3); *Tydemæ amabilis* (st, d ro, spotted p; 1-2); *Watsonia rosea* (c-h, ro; 2).

PURPLE AND VIOLET.—The shades are indicated by the abbreviations d (dark) and pa (pale).

Hardy.—**ANNUALS**.—*Æthionema saxatile* (p; 1); *Agrostemma cœli-rosa purpurea* (p; 1); *Amarantus caudatus* (d p; 2-3); *Borago officinalis* (p, b, or w; 1-2); *Cerinth retorta* (p, tube y; 1½); *Clarkia pulchella* (p; 1½-2); *Collinsia grandiflora* (p; 1); *Eucharidium concin-*

Purple and Violet (Hardy Annuals)—continued.

num (l-p; 1); *Gilia tricolor* vars. (v; 1); *Iberis umbellata* (p; 1-1) and vars.; *Impatiens amphorata* (p, marked pi-r; 3-6); *I. Roylei* (p; 10); *Ipomœa purpurea* (p); *Lathyrus odoratus* vars. (p and v, sc); *Linaria bipartita* (v-p; 1); *L. reticulata* (d p; 2-4); *Lopezia coronata* (pi-p; 1½); *Melope trifida* (p or w; 1); *Mathiola annua* vars. (1-2); *Oenothera amana rubicunda* (l-p, blotched; 2); *Papaver somniferum* vars. (v; 3-4); *Polygonum orientale* (pi-p or w; 3-10); *Scabiosa atropurpurea* vars. (sc; 2-3); *Sedum farinosum* (pa r-p); *Vicia onobrychioides* (p; 2); *Xeranthemum annuum* (p; 2).

BIENNIALS.—*Campanula sibirica divergens* (v; 1½); *Digitalis purpurea* (p, varying to w; 3-5); *Hesperis grandiflora* vars. (p, sc; 4); *H. tristis* vars. (d p, sc; 1-2); *Silybum Marianum* (pi-p; 1-4); *Tragopogon glaber* (p; 1½).

PERENNIALS.—*Acanthus longifolius* (p or pi; 3-4½); *Aconitum autumnale* (l-p; 3-4); *A. delphinifolium* (b-p; 4-2); *A. Halleri* (v; 4-6); *A. lycoctonum* (v; 4-6); *A. paniculatum* (v; 2-3); *A. rostratum* (v; 1-2); *A. Willdenovii* (b-p; 2-3); *Agrostemma flos-Jovis* (p or r; 1½); *Ajuga pyramidalis* (p or b; ½); *Allium Murrayanum* (pi-p; 1); *A. nigrum* (v or w; 2½-3½); *A. pedemontanum* (pi-p; 1); *Anemone Halleri* (p; ½); *A. patens* (p or y; 1); *A. p. Nuttalliana* (p or c; 1); *A. pratensis* (d p; ½-1); *A. Pulsatilla* (v; ½-1); *A. ranunculoides*, Pyrenean var. (p; ½); *A. stellata* (p, pi-r, or w; ½); *A. virginiana* (pa p or g-p; 2); *Anthyllis montana* (p or pi; ½-¾); *Antirrhinum tortuosum* (p; 1-1½); *Apios tuberosus* (br-p, sc); *Aquilegia Bertoloni* (b-v; 1); *Arabis blepharophylla* (pi-p; ½); *A. rosea* (pi-p; 1); *Arenaria purpurascens* (p; ½); *Arctostaphylos bulbosa* (pi-p; ¾); *Arisœma Griffithii* (br-v; 1-1½); *Arum proboscideum* (g-p; ½); *Asclepias amœna* (p, corona r; 2-3); *A. incarnata* (p or r; 2); *A. syriaca* (pa p, sc; 3-5); *Aster alpinus* (p; ½-¾); *A. alpinus* (b-p; 1); *A. Amellus* (p; 2); *A. A. Bessarabicus* (p; 2½); *A. argentus* (p; 1); *A. caucasicus* (p; 1); *A. concinnus* (p; 2); *A. Douglasii* (p; 3-4); *A. floribundus* (pa p; 4); *A. grandiflorus* (p; 2); *A. novae-angliæ* (p; 6); *A. peregrinus* (b-p; 1); *A. pulchellus* (p; 1); *A. salsuginosus* (r-p; ¾-1½); *A. s. elatior* (v-p; 2); *A. sikkimensis* (p; 3); *A. versicolor*, at first w; 3); *Astragalus adsurgens* (b-p; ½); *A. onobrychioides* (p; ¾-1); *A. sulcatus* (pa v, marked br and w; 2-3); *Berkheya purpurea* (p; 3); *Biarum tenuifolium* (d br-p; ½); *Bletia hyacinthina* (p; 1); *Brodiaea grandiflora* (b-p; 1½); *B. Howellii* (b-p; 1½-2); *B. multiflora* (b-p; 1-1½); *Bulboodium vernum* (v-p, spotted w; ½); *Calamintha grandiflora* (p; 1); *Callirhoe digitata* (r-p; 2-3); *Calopogon pulchellus* (p, lip bearded y; 1½); *Calystegia dahurica* (pi-p); *Campanula bononiensis* (b-v; 2-3); *C. Burghalti* (pa p; 2); *C. carpathica pallida* (pa p; ½-1); *C. c. turbinata* (d p; ½-1); *C. Elatines* (b-p; ½-¾); *C. fragilis* (l-p; ½-¾); *C. glomerata* (b-v or w; 1-2); *C. nobilis* (r-v or w; 2); *C. peregrina* (v; 2); *C. Portenschlagiana* (pa b-p; ½-¾); *C. rapunculoides* (b-v; 2-4); *C. speciosa* (p, b, or w; 1-1½); *Cardamine pratensis* (pa p; 1-1½); *C. rhomboides-purpurea* (pi-p); *Cedronella cordata* (pa p; ½-¾); *Centaurea atropurpurea* (d p; 3); *Chelone Lyoni* (p; 3-4); *C. nemorosa* (pi-p; 1); *C. obliqua* (pa p; 2-3); *Chrysanthemum* varieties; *Cucis acanthis* (p; 2); *C. altissimus* (p; 3-10); *C. undulatus* (p; 1); *Colchicum autumnale* (p; ½) and vars.; *C. Bivone* (checkered p and w); *C. montanum* (l-p or w; ½); *C. Parkinsoni* (tessellated p and w); *Convolvulus lineatus* (r-p; ½); *Corydalis cava* (p; ½); *C. Kolkapowskiana* (p or pi; ½); *C. solida* (p; ½); *Crocus Imperati* (l-p, sc); *C. iridiflorus* (p, inner segments l; ½); *C. nudiflorus* (pa p or y; ½); *C. vernus* (v, l, or w; ½); *C. varieties*; (pi) *Cyripedium macranthum* (d p; ½-1); *Dahlia* varieties; *Dentaria digitata* (p; 1½); *Dianthus Caryophyllus* vars. (p, &c., sc; 1½-2); *D. plumarius* (p, &c., sc; ½-1); *D. Seguierii* (pi-p; 1); *Dicentra eximia* (r-p; ½-1½); *Dietamnus albus* var. (pa p; 1-1½); *Dodecatheon Meadia* (pi-p, w, or l; ½-1½); *D. M. frigidum* (d r-p; ½-1½); *Draba violacea* (v-p; ½-1); *Echinacea angustifolia* (pa p or pi; 2-4); *E. purpurea*

Purple and Violet (Hardy Perennials)—continued.

(r-p, tipped gy-g; 3-4); *Epilobium obovatum* (pi-p); *Epimedium macranthum violaceum* (v; ¾-1½); *Erigeron glaucus* (p; ½-1); *E. grandiflorus* (p or w; ½-¾); *E. multiradiatus* (p, disk y; ½-2); *E. Roylei* (b-p, disk y; ½-¾); *E. speciosus* (v, disk y; 1½); *Erinus alpinus* (p; ½); *Erodium macradenum* (pa v; ¾); *Fritillaria delphinensis* (p; ½-1); *F. Melegris* (1); *F. pyrenaica* (d p; 1½); *Geranium atlanticum* (p, veined r; 1-1½); *G. dahuricum* (p; 1½); *G. macrohizon* (r or p; 1); *G. sylvaticum* (p or b, veined r; 2); *G. Wallichianum* (p; ½); *Geum coccineum* (p; ½-1½); *Habenaria fimbriata* (l-p; 1-1½); *Helleborus olympicus* (p; 2); *Hesperis matronalis* vars. (sc; 2-3); *Hottonia palustris* (ag, l, y eye; 1-2); *Hyacinthus* varieties (p, sc; ½-1); *Iberis Tenoreana* (p or w; ½); *Iris* (*Xiphion*) *alata* (l-p; ½); *I. balkana* (l-p; 1); *I. biflora* (v-p; 1½); *I. Douglasiana* (l-p; ½-1); *I. (Xiphion) filifolia* (d p; 1-2); *I. germanica* (p and l, sc; 2-3); *I. laevigata* (s-ag, d p; 1); *I. pumila* (l-p, bearded w; ½-¾); *I. (Xiphion) reticulata* (d v-p; ½); *I. rubro-marginata* (p; ½); *I. sambucina* (p and y, sc; 2); *I. (Xiphion) tingitana* (l-p; 2-3); *I. tuberosa* (p; 1); *I. versicolor* (pa and d p; 1-2); *I. (Xiphion) vulgare* (p; 1-2); *I. (Xiphion) xiphoides* (l-p, flushed y-br; 1-2); *Lactuca macrorrhiza* (v-p; ½-¾); *Lathyrus magoliensis* (b-p); *Lilium Martagou* (p-r, spotted p; 2-3); *L. oxypetalum* (l-p; 1-1½); *L. polyphyllum* (p and w; 2-3); *Linaria alpina* (b-v; ½); *L. hepaticifolia* (l-p; ½); *L. purpurea* (b-p; 1-3); *L. triornithophora* (p, y palate); *Liparis lilifolia* (br-p); *Lophanthus scrophulariifolius* (p; 5); *Lysimachia atropurpurea* (d p; 2); *Mazus pumilio* (pa v); *Moltkia petraea* (d v-b; ½); *Monarda fistulosa* (p; ½); *Morœa edulis* (v; 4); *Muscari comosum monstrosum* (b-v; 1-1½); *Onopordon Acanthium* (p; 4-5); *Orchis foliosa* (p; 1½-2½); *O. latifolia* (p or r; 1); *Orobis flaccidus* (6); *Oxalis tetraphylla* (p-v or r); *Paeonia* varieties (sc); *Pentstemon campanulatus* vars. (v or d p; 1½); *P. diffusus* (p; 1½); *P. glaber* (v, p, or b; ½-1); *P. gracilis* (l-p or w; 1); *P. heterophyllus* (pi-p or pi; 1½); *P. Menziesii* Douglasii (l-p, p-r at base; 1); *P. pubescens* (v or p; 1-3); *P. venustus* (p; 2); *P. varieties*; *Petalostemon violaceus* (pi-p; 1); *Phalaris arundinacea* (p; 3-5); *Phlomis herba-venti* (p-v; 1-1½); *Phlox amœna* (p, pi, or w; ½-1½); *P. maculata* (p, sc; 2); *P. ovata* (r-p; 1-1½); *P. paniculata* (pi-p, varying to w; 3-4); *P. pilosa* vars. (p; 1-2); *P. reptans* (p or v); *P. varieties* (p); *Physochlaina physaloides* (p-v; 1-1½); *Physostegia virginiana* (p or w-pi; 1½-4) and var.; *Phyteuma comosum* (p or b; ½-¾); *Plumbago Larpentis* (v; 1); *Polemonium humile* (p or b; ½); *Prenanthes purpurea* (p; 4); *Primula auriculata* (p, w eye; ½); *P. calycina* (p); *P. denticulata cashmeriana* (pa p, y eye); *P. farinosa* (pa p, y eye; ½-1); *P. glutinosa* (b-p; ½); *P. obconica* (p or pa l; ½-1); *P. scotica* (p, y eye); *P. Steimii* (p); *P. viscosa* (pi-p, w eye; ½); *P. v. pedemontana* (pi-p, y-w eye; ½); *Ranondia pyrenaica* (p; ½); *Ranunculus asiaticus* vars. (p; ½); *R. parnassifolius* (p or w; ½-¾); *Romulea Bulboodium* (v, y below; ½); *Rudbeckia purpurea* (r-p; 3-4); *Salvia discolor* (p and v-bk; 2-3); *S. interrupta* (v-p, r-p, and w; 3-4); *Saussurea pulchella* (p; 2); *Saxifraga moschata* (p or pa y; ½); *S. oppositifolia* (p); *S. purpurascens* (p; ½-¾); *S. retusa* (p; ½); *Scilla nutans* vars. (p); *Scutellaria alpina* (p, or p and y); *Sedum pulchellum* (pi-p; ½); *S. Rhodiola* (r-p or g; ½); *Sempervivum Funckii* (r-p; ½-¾); *S. montanum* (mv-p; ½); *Senecio pulcher* (p, disk y; 1-2); *Silene Schafta* (p; ½); *Stayrkinson grandiflorus* (p; ½); *Soldanella alpina* (v; ½); *S. montana* (p; ½); *Stachys grandiflora* (v; 1); *Streptopus roseus* (pi-p; 1½); *Thermopsis barbata* (d p; 1); *Tradesantia virginica* (v, p, or w; ½-2); *Trifolium alpestre* (p; ½-1); *T. Lupinaster* (p; 1-1½); *Trillium erectum* (d p; 1); *Tulipa* varieties (v); *Verastrum nigrum* (bk-p; 1-3); *Vinca major* (b-p); *V. minor* (b-p); *Viola cucullata* (p or v-b, &c.); *V. Munbyana* (w or v); *V. odorata* vars. (p or v, sc); *V. tricolor* vars. (p

Purple and Violet—continued.

Half-hardy.—ANNUALS.—*Amarantus speciosus* (r-p; 3); *Callistephus chinensis* vars. (p and v; ½-2); *Cobaea scandens* (d p); *Gomphrena globosa purpurea* (p; 1½); *Pennisetum longistylum* (p; 1-½); *Phlox Drummondii* vars. (p; 1); *Verbena* varieties (p); *Zinnia elegans* varieties (v-p; 2).

BIENNIALS.—*Mathiola incana* vars. (p; 1-2).

PERENNIALS.—*Amaryllis Belladonna* (p, &c.; 2); *Anagallis linifolia* *Wilmoreana* (b-p; ½); *Caryopteris Mastacanthus* (v; 2); *Eryngium pandanifolium* (p; 10-15); *Glaucidium Papilio* (p, marked y; 3); *G. varieties* (p or v; 1-3); *Myosotis azorica* var. (b-p; ½-2); *Oxalis arenaria* (v-p; ½); *Petunia* varieties (p); *Sarracenia Drummondii* (p; 2); *S. psittacina* (p; 1); *S. purpurea* (p; 1); *S. rubra* (v-p; 1-2); *Soilla chinensis* (pi-p; 1-½); *Tricyrtis macropoda* (pa p; 2-3).

Tender.—ANNUALS.—*Anisomeles ovata* (st, p; 2-3); *Eryale ferox* (st ag, v); *Impatiens flaccida* (st, p; ½-1½); *Martynia fragrans* (c-h; 2); *Salpiglossis sinuata* vars. (c-h, p; 2).

BIENNIAL.—*Ebenus Sibthorpii* (c-h, p; 2).

PERENNIALS.—*Achimenes grandiflora* (i-h, v-p; 1½); *Echmea distichantha* (st, p, bracts r; 1); *Æ. glomerata* (st, v, bracts r; 1½); *Alcoasia cuprea* (st, p-r; 2); *Amorphophallus Titanum* (st, bk-p and g; 10); *Anchomanes Hookeri* (st, pa p, spadix w; 3); *Arissema galathea* (c-h, p and g); *A. speciosa* (c-h, d p, g, and w); *Arum palæstinum* (c-h, p, bk, and y-w; 1½-2); *Barbaecenia purpurea* (i-h, sc; 1½); *B. Rogieri* (i-h, sc; 1½); *Barkeria Lindleyana* (c-h, pi-p, p, and w; 2); *Batatas bigonioides* (i-h, d p); *B. edulis* (i-h, p, w outside); *B. paniculata* (i-h, p); *Bifrenaria vitellina* (st, y-p; 1); *Billbergia Quosneliana* (st, d p, bracts pi; 6); *Bletia Shepherdii* (st, p, lip marked y; 2); *B. Sherrattiana* (st, pi-p, marked w and y); *Brachyspatha variabilis* (st, g-p, spadix w and o-r; 3); *Burlingtonia rigida* (st, p-w, spotted pi; 1); *Calanthe Masuca* (st, v, lip v-p; 3); *Calceolaria arachnoidea* (c-h, p; 1); *Calochortus purpureus* (c-h, p and y; 3); *Canarina Campanula* (c-h, y-p or o; 3-4); *Canna expansa rubra* (st, p; 4-6); *Cattleya Dawsoni* (i-h, pi-p, y, and w; 1); *C. Skinneri* (i-h, pi-p, lip w at base; 1½); *Ceropegia elegans* (st, p); *Chironia jasmimoides* (c-h, p or r; 1-2); *Cineraria cruenta* (c-h, r-p; 2); *C. varieties* (c-h, p); *Chirchopetalum Cumingii* (st, r-p; ½); *Cobaea scandens* (c-h, d p); *Comparettia falcata* (i-h, pi-p; ½); *Crawfordia fasciculata* (st, p); *C. speciosa* (st, p); *Cyclamen* varieties (c-h, p, &c.); *Cycnoches Eckertonianum* (st, d p; 2); *Cymbidium bicolor* (st, pa p, marked r; 1); *Cypripedium barbatum* (st, p and w; 1); *Dendrobium Heyneanum* (st, v and w; ½); *D. Kingianum* (c-h, v-p; ½); *D. lituiflorum* (st, pi-p, lip w and p, 1½); *D. superbiens* (st, pa p, sometimes r, shaded br; 1-3); *D. s. Goldiei* (st, v; 1-3); *Dichorisandra leucophthalmus* (st, b-p, w at base; 1-½); *Drosera filiformis* (c-h, p; 1); *D. spatulata* (c-h; ½); *Eichhornia crassipes* (st ag, v); *Epidendrum atropurpureum* (c-h, p or d pi; ½-1); *E. evectum* (st, pi-p); *E. paniculatum* (c-h, p or l-p, column tipped y; 2-4); *E. syringothyrsis* (st, d p, marked o and y; 3); *Epistephium Williamsii* (st, r-p; 1); *Gladiolus* varieties (c-h, p or v; 1-3); *Gloxinia* varieties (st); *Gymnostachyum venustum* (st, p; ½); *Hyacinthus* varieties (c-h, p, sc; ½-1); *Hypoestes sanguinolenta* (st, p, marked w; ½-1); *Lelia caloglossa* (i-h, pa p); *L. Dayana* (i-h, pi-p, lip margined l and w); *L. Dominiana* (i-h, pa p, lip bk-p); *L. Jongheana* (i-h, b-p, lip p and y); *Lotus jacobæus* (c-h, bk-p; 1-3); *Maurandya Barclayana* (c-h, v-p); *M. scandens* (c-h, v-p); *Maxillaria variabilis* (i-h, p); *Mesembryanthemum Cooperi* (c-h, p; ½); *M. cordifolium variegatum* (c-h, pi-p); *Miltonia spectabilis Morleana* (i-h, p, lip marked pi); *Mormodes atropurpureum* (st, d p-br; 1); *Oncidium ornithorhynchum* (c-h, pi-p, sc); *Onosoria Drakeana* (c-h, p); *Oxalis elegans* (c-h, p; ½); *O. hirta* (c-h, pa v, varying to d r; ½); *O. Martiana* (c-h, d p-pi); *Pelargonium glaucifolium* (ch, d p); *P. varieties* (c-h); *Peristrophe speciosa* (st, p and v-p; 4); *Phaius*

Purple and Violet (Tender Perennials)—continued.

Rensouze (i-h, pi-p, marked y and w; 1); *Phalanopsis speciosa imperatrix* (st, pi-p); *P. Veitchiana* (st, p); *P. violacea* (st, v, r, and w); *Physidium cornigerum* (st, p; 1); *Podolepis gracilis* (c-h, w, p, or l; 3); *Rhœo discolor* (st, p or b); *Saccolabium calopterym* (st, p, w at base); *Salvia ianthina* (c-h, v-p; 2); *Sauchezia longiflora* (st, p); *Schomburgkia tibicinis grandiflora* (st, p, o, w, and y); *S. undulata* (st, br-p and v-p); *Sedum Ewersii* (c-h, pa v or pi; ½); *Senecio speciosus* (c-h, p; 1); *Sinningia speciosa* (st, v, &c.); *Sobralia Cattleya* (st, p and p-br, lip crested y); *Sophrontis violacea* (c-h, v; ½); *Sparaxis grandiflora stellaris* (c-h, p; 1-2); *Stelis Bruckmulleri* (c-h, pa p and y-p); *S. ciliaris* (c-h, d p); *Stylidium bulbiferum macrocarpum* (c-h, g-p); *Taoca pinnatifida* (st, p); *Thysanotus junceus* (c-h, p; 1-2); *T. tuberosus* (c-h, p; ½-1); *Tigridia atrata* (c-h, d p, marked g and br; 2); *T. Melesgris* (c-h, pa and d p; 1½); *Tilandisia ionantha* (st, p, v; ½); *T. Lindenii* (st, b-p, bracts r); *Typhonium divaricatum* (st, d p); *Utricularia Humboldtii* (st, b-p); *Vanda navis* (st, p and w); *Watsonia Moriana* (c-h, p or r; ½-2); *Zygopetalum Gairianum* (st, v, marked p-w, w-y, &c.); *Z. Sedeni* (c-h, p).

RED.—The shades are indicated by the following abbreviations: *bd* (blood), *ca* (carmine), *cin* (cinnabar), *cr* (crimson), *d* (dark), *mar* (maroon), *pa* (pale), *s* (scarlet), *ver* (vermilion).

Hardy.—ANNUALS.—*Adonis aestivalis* (cr; 1); *A. autumnalis* (bd; 1); *Anagallis grandiflora* (ver, varying to b; ½); *Armeria cephalotes* (cr or pi; 1-½); *Conranthus macrosiphon* (pi-ca; 2); *Clarkia elegans* (cr; 2); *Collomia coccinea* (d; 1-½); *Cropis rubra* (½-1); *Delphinium Ajacis* (r, b, or w; 1-½); *Fedia Cornuopias* (½); *Gaillardia amblyodon* (bd; 2-3); *G. pulchella* (cr, tipped y; 2-3); *Glaucium phœniceum* (cr, spotted bk; ½); *Iberis umbellata atropurpurea* (d cr; ½-1); *Lathyrus odoratus* vars. (sc); *Malcolmia maritima* vars. (½-1); *Mathiola annua* vars. (1-2); *Oenothera Whitneyi* (pi-r, blotched r; 1-½); *Papaver Rhœas* (s; 1) and vars; *Scabiosa atropurpurea* (d cr, sc; 2-3); *Sedum sempervivoides* (½-½); *Tropæolum majus* vars.

BIENNIALS.—*Anagallis fruticosa* (ver; 2); *Dianthus chinensis*, variable (½-1); *D. c. Atkinsonii* (bd; ½-1); *Eschscholtzia californica crocea* var. (1); *Hesperis tristis* vars. (b-r, sc; 1-2).

PERENNIALS.—*Agrostemma coronaria* var. (cr; 1-2); *A. flos-Jovis* (s or p; 1½); *Allium Maenabianum* (m; 1); *A. sphaerocephalum* (1½-2½); *Alströméria chilensis* (bd or pi, marked y; 2-3); *Althæa flexuosa* (s; 2-3); *A. narbonneensis* (pa; 3-6); *Anemone fulgens* (ver or s, stamens bk); *A. japonica* (pi-ca, anthers y; 2-3); *A. multifida* (r or y; ½-1); *A. stellata* (pi-r, p, or w; ½); *Apocynum androsaemifolium* (1-2); *Aquilegia canadensis* (s, mixed y; 1-2); *A. formosa* (limb y; 2-4); *A. fragrans* (pa, or w; 1½-2); *Armeria vulgaris*, variable (½-1); *Aranum caudatum* (br-r); *Asclepias incarnata* (r or p; 2); *Astilbe rivularis* (r or y-w; 3); *Bellis perennis conspicua* (½); *Callirhoe involucrata* (cr; ½); *C. Papaver* (v-r; 3); *Calyptegia Soldanella* (pa); *Centranthus ruber* (2-3); *Choiranthus Cheiri* vars. (d, sc; 1-2); *Chrysanthemum* varieties; *Convolvulus althæoides* (pa, or l); *C. cantabricus* (pa; ½-1); *C. chinensis* (p-cr, y star; 2-3); *C. Scammonia* (pa, or c); *Dahlia Juarezii* (s; 3); *D. varieties*; *Delphinium cardinale* (s; 3-4); *D. nudicaule* (petals y; 1-½); *Dianthus alpestris* (½-½); *D. atrobatus* (d; 1); *D. barbatus* vars. (1-½); *D. Caryophyllus* vars. (sc, 1½-2); *D. cruentus* (bd-s); *Dodecatheon integrifolium* (pi-cr; ½-½); *Dicentra formosa* (½); *D. spectabilis* (pi-cr; ½-2); *Epilobium angustifolium* (cr; 3-6); *E. rosmarinifolium* (2); *Epimedium alpinum* (d cr; ½-½); *E. rubrum* (cr; ½-½); *Erodium Manekoevi* (p-r; 1-2); *Fritillaria imperialis* (cr, varying to y; 3); *F. i. Aurora* (bronz cr; 3); *F. i. Minature* (d; 3); *F. i. rubra maxima* (3); *F. recurva* (s; 2); *Geranium argenteum* (½); *G. cinereum* (½); *G. macrorrhizum* (p or d r; 1); *G. sanguineum*

Red (Hardy Perennials)—continued.

(*cr* or *bd*; 1-2); *Geum rivale* (1-3); *Gillenia trifoliata* (varying to *w*; 1½); *Gunnera scabra* (4); *Habenaria psychodes* (*s*, varying to *pi*); *Hedysarum coronarium* (4; 3-4); *H. c. flexuosum* (tinged *b*; 3-4); *Heliathemum vulgare* var.; *Hesperis matronalis* var. (*sc*; 2-3); *Heuchera americana* (1½); *H. sanguinea* (4; ½-1½); *Hieracium aurantiacum* (0-r; 1-1½); *Hyacinthus* varieties (*sc*; ½-1); *Lilium bulbiferum* (2-1); *L. canadense* (*pa*, spotted, varying to *y*; 1½-3); *L. c. parvum*, (0-r, spotted *r-p*; 1½-2); *L. Catesbaei* (0-r, spotted *p*; 1-2); *L. chalcedonicum* (*s*, rarely *y*; 2-3); *L. concolor* *Buschianum* (*s*; 1-3); *L. davuricum* (*s*; 2-3); *L. elegans* (*pa* *s*); *L. pardalinum* *Bourgei* (0-r, spotted *p*; 3-7); *L. p. Robinsoni* (*ver*, shading to *y*, spotted; 7-8); *L. philadelphicum* (0-r, spotted *p* below; 1-3); *L. pomponium* (*r* or tinged *o*; 1½-3); *L. pseudo-tigrinum* (*s*, dotted *bk* within; 3-4); *L. superbum* (0-r, spotted; 4-6); *L. tenuifolium* (*s*; ½-1); *L. tigrinum* (0-r, spotted *p-bk*; 2-4) and var.; *Lychnis chalcedonica* (*s*; 1½-3); *L. coronaria* (3); *L. fulgens* (*ver*; ½-1); *L. f. Haageana* (*s*, varying to *w*; ½-1); *Malva Aloys fastigiata* (2-3); *Mimulus cardinalis* (1-3); *Monarda didyma* (*s*; 1½); *Orehis latifolia* (*r* or *p*; 1); *Ourisia coccinea* (*s*; ½-1); *O. Pearcei* (*cr*, streaked *bd*); *Oxalis tetraphylla* (*r* or *p-w*); *Oxytropis Lambertii* (*pi-ca*; ½-1); *Pæonia officinalis* (*d* *cr*; 2-3); *P. tenuifolia* (*d* *cr*; 1-1½); *P. varieties* (*sc*); *Papaver bracteatum* (4); *P. orientale* (*s*; 2-3) and var.; *P. pilosum* (*pa* *s* or *o*, marked *w*; 1-2); *Pentstemon barbatus* (*pi-r* to *ca*; 3); *P. b. Torreyi* (*d* *s*; 3); *P. Eatoni* (*cr-s*; 1½); *P. Hartwegiana* (*s* or *bd*; 2); *P. Murrayanus* (2-3); *P. varieties*; *Phlox glaberrima* (1-2); *P. paniculata* var. (3-4); *P. varieties*; *Polygonum affine* (*pi-r*; ½-2); *P. amplexicaule* (*pi-r* or *w*; 2-3); *Primula altaica* (*p-cr* or *mv*; ½-1); *P. Auriculata* var. (4); *P. japonica* var. (*cr* or *mar*; 1-1½); *P. officinalis* var. (½-1); *P. rosea* (*pi-ca*, *y* eye; 4); *Salvia Komariana* (*d* *s*; 1-2); *Saponaria ocyra* (*r* or *pi*); *Saxifraga ligulata* (*pa*; 1); *Scilla bifolia* (*r*, *b*, or *w*; ½); *S. nutans rubra*; *S. parviana* (*r*, *w*, or *t*; 1-1½); *Scopolia carnolica* (*y* or *g* within; 1); *Sempervivum arachnoideum* (filaments *p*; 4) and var.; *S. atlanticum* (*pa*; 1); *S. Boissieri* (½); *S. calcarenula* (*pa*; 1½); *S. calcarenum* (*pa*, keeled *g*; 1); *S. fimbriatum* (½-2); *S. Moggridgei* (½); *S. Pomelii* (*pi-r*; ½-2); *Silene virginica* (*d* *cr*; 1-2); *Spiraea palmata* (*cr*; 1-2); *Statice tatarica* (1); *Symphytum bohemicum* (*r* or *r-p*; 1-3); *Tropaeolum speciosum* (*s*); *Tulipa Eichleri* (*s*, marked *bk* and *y*); *T. elegans* (*y* eye); *T. Gomeriana* var.; *T. Greigi* (blotched *bk*); *T. macrosepala* (blotched *bk* and *y*); *T. Oculis-solis* (blotched *bk* and *y*; 1-1½); *T. præcox* (blotched *bk* and *y*); *T. pubescens* (*sc*); *T. varieties*.

Half-hardy.—ANNUALS.—*Amarantus hypochondriacus* (*d* *cr*; 4-5) and var.; *Calandrinia Menziesii* (*d* *p-cr*); *Callistephus chinensis* var. (½-2); *Gomphrena globosa nana* (1½); *Impatiens Balsamina* (1-2); *Mimosa pudica* (1); *Mirabilis Jalapa* (*cr*, *w*, or *y*; 2); *Phlox Drummondii* var. (1); *Salvia coccinea* (*s*; 2); *Verbena* varieties; *Zinnia elegans* var. (*s*, *cr*, &c.; 2).

PERENNIALS.—*Amaryllis Belladonna* (*r* or *w*, &c.; 2); *Amphicoma arguta* (3); *Anagallis linifolia* var. (½-1); *Androsace carnea oximia* (*pi-cr*, *y* eye; 4); *Anomatheca cruenta* (*ca-cr*; ½-1); *Bessera elegans* (*s*, or *s* and *w*; 2); *Blumenlachia chuquitenensis* (*y* within); *Brodiaea coccinea* (*bd*, *y-g* at apex; 1½); *Crocus aurea* (0-r; 2); *Gladiolus brachyandrus* (*pa* *s*; 2); *G. cardinalis* (*s*; 3-4); *G. Colvillei* (marked *p*; 1½); *G. cruentus* (*s*, *y-w* at base; 2-3); *G. psittacinus* (*s*, marked *y*, tube *g* and *p*; 3); *G. Saundersii* (*cr*, spotted *w*; 2-3); *G. varieties* (1-3); *Kniphofia aloides* (coral-r, fading to *o*; 3-4) and var.; *K. Burchelli* (*s* and *y*, tipped *g*; 1½); *K. Leichlinii* (*pa* *ver* and *y*); *K. Rooperi* (0-r, turning *y*; 2); *Lobelia cardinalis* (*s*; 1-2); *L. splendens* (*s*; 1-2); *Schizostylis coccinea* (3).

Tender.—ANNUALS.—*Celosia cristata* (*st*, *d*; ½); *Salpiglossis sinuata* var. (*c-h*; 2); *Mimosa pudica* (*st*, 1).

BIENNIAL.—*Humea elegans* (*c-h*, *br-r*, *cr*, or *pi*; 5-6),

Red (Tender)—continued.

PERENNIALS.—*Achimenes pedunculata* (*i-h*, *y* eye; 2); *A. picta* (*i-h*, *y* eye; 1½); *Ada aurantiaca* (*st*, *o-s*, streaked *bk*); *Achmea discolor* (*st*, *s*; 2); *Æ. fulgens* (*st*, tipped *b*; 1); *Æ. hystrix* (*st*, *s*; 2½); *Æ. spectabilis* (*st*, *pi-cr*); *Æ. Veitchii* (*st*, *s*; 1); *Agalmis staminea* (*st*, *s*; 2); *Alströmmeria caryophylla* (*st*, *s*, *sc*; ½-1); *A. densiflora* (*c-h*, *s*, spotted *bk*); *Amomum angustifolium* (*st*, *r* or *y*; 8); *Ananas macrodonata* (*st*, tinted buff); *Anguloa Ruckeri* *sanguinea* (*c-h*, *d* *bd*; 1½); *Anigozanthus coccineus* (*c-h*, *s*; 5); *Antholyza cafra* (*c-h*, *s*; 2); *Anthurium Andreanum* (*st*, *o-r*, spadix *y*; 1); *A. Bakeri* (*st*, *s* and *pi*; 1); *A. ferrierense* (*st*); *A. Scherzerianum* (*st*, spadix *o*; 1-1½) and var.; *Arpophyllum spicatum* (*i-h*, *d*; 1½); *Asclepias curassavica* (*st*, *o-s*; 1-3); *Babiana ringens* (*c-h*, *s*; ½-2); *B. stricta* (*c-h*, *cr*; ½); *Batatas Cavanillesii* (*i-h*, *pa*); *Begonia boliviensis* (*i-h*, *s*; 2); *B. Chelsoni* (*i-h*, *o-r*; 2); *B. Clarkii* (*i-h*; 1½); *B. Davisii* (*i-h*; ½); *B. Frobeli* (*i-h*, *s*; ½); *B. geranioides* (*i-h*, waved *w*; 1½); *B. magnifica* (*i-h*, *pi-ca*; 2); *B. Sutherlandii* (*i-h*, *o-r*, shaded *p-r*; 1-2); *B. Veitchii* (*i-h*, *cin*; 2); *B. varieties* (*i-h*); *Blandfordia Cunninghamii* (*c-h*, *y* above; 1); *B. flammea elegans* (*c-h*, *c*, tipped *y*; 2); *B. princeps* (*c-h*, *o-r*, *y* within; 1); *B. grandiflora* (*c-h*, *c*; 2); *Blumenbachia contorta* (*c-h*, *o-r*); *Bomarea oligantha* (*c-h*, *y* within); *B. patococcensis* (*c-h*, *c*); *B. Shuttleworthii* (*c-h*, *o-ver* and *y*, spotted); *Bravoa geminiflora* (*c-h*, *o-r*; 2); *Bromelia bicolor* (*st*, *s*); *Broughtonia sanguinea* (*st*, *bd*; 1½); *Brunsvigia falcata* (*i-h*; ½); *B. Josephines* (*i-h*, *s*; 1½); *B. multiflora* (*i-h*; 1); *Burbidgea nitida* (*st*, *o-s*; 2-4); *Canna Achiras variegata* (*d*, *cr*; 4); *C. Annsii fulgida* (*st*, *o-r*; 3-5); *C. A. rosea* (*st*, *ca-pi*; 5); *C. Auguste Ferrier* (*st*, *o-r*; 10); *C. Bihorelli* (*st*, *d* *cr*; 6-7); *C. discolor* (*st*; 6); *C. gigantea* (*st*, *o-r* and *p-r*; 6); *C. limbata* (*st*, *y-r*; 3); *C. nigricans* (*st*, coppery *r*; 4½-8); *C. Van-Houttei* (*st*, *s*); *C. Warscewiczii* (*st*, *s* and *p*; 3); *Cattleya marginata* (*i-h*, *pi-cr*, lip *pi* and *l*); *Centropogon Lucayanus* (*st*, *pi-ca*); *Ceropegia Thwaitesii* (*st*, *bd*, tube *y*); *Chironia jasminoides* (*c-h*, *r* or *p*; 1-2); *C. lineoides* (*c-h*; 1-2); *Cineraria* varieties (*c-h*); *Chianthus Dampieri* (*c-h*, *bk* or *p* blotch; 2); *Cœlia macrostachya* (*i-h*; 1½); *Comparrattia coccinea* (*i-h*, *s*, lip tinged *w*; ½); *Costus igneus* (*st*, *o-s*; 1-3); *Crinum amabile* (*st*, *sc*; 2-3); *C. cruentum* (*st*; 2); *Curcuma Roscoeana* (*st*, *s*, bracts *o*; 1); *C. rubricaulis* (*st*; 1); *Cyclamen Coum* (*c-h*, *d*; 4); *C. ibericum* (*c-h*; 4); *C. neapolitanum* (*c-h*, *r* or *w*, *v-p* spot; 4); *C. varieties* (*c-h*); *Cymbidium pendulum purpureum* (*d*, lip *w* and *cr*; 2); *Diss grandiflora* *Barrellii* (*c-h*, *o-s*, lip veined *cr*; 2-3); *D. g. superba* (*c-h*, *s* and *cr*, veined *pi*; 2-3); *Episcia fulgida* (*st*, *ver*; ½); *Falkia repens* (*c-h*, *pa* throat); *Fittonia gigantea* (*st*, *pa*; 1½); *Gesnera Cooperi* (*st*, *s*, throat spotted; 2); *G. Donkelaarians* (*st*, *ver*; 1-2); *G. exoniensis* (*st*, *o-s*, *y* throat); *G. pyramidalis* (*st*, *o-r*, throat and lip *o*); *Gladiolus* varieties (*c-h*; 1-3); *Gloxinia* varieties (*st*); *Hemanthus abyssinicus* (*st*, *s*; 4); *H. cinnabarinus* (*st*; 1); *H. Kalbreyeri* (*st*, *cr*; 4); *H. Katherina* (*st*, *d*); *Hedychium angustifolium* (*st*; 3-6); *Hibiscus coccineus* (*c-h*, *s*; 4-8); *Hippeastrum Ackermannii* (*i-h*, *cr*); *H. equestre ignescens* (*i-h*, *s*, marked *w*; 1); *Homalomena Wallisii* (*st*); *Hyacinthus* varieties (*c-h*, *sc*; ½-1); *Impatiens Sultani* (*st*, *s*); *I. Walkeri* (*st*, *s*; 1-1½); *Ixia speciosa* (*c-h*, *d*; 4); *Kennedia prostrata* (*c-h*, *s*); *K. p. Marryattii* (*c-h*, *pa* *s*); *K. rubicunda* (*c-h*); *Lachenalia fragrans* (*c-h*, *Lelia autumnalis atrorubens* (*i-h*, *r* or *m-p*, lip *w* below, *sc*; 1); *L. cinnabarina* (*i-h*, *cin*; 1-1½); *L. flammea* (*i-h*, *o-s*, lip *p-cr*); *L. harpophylla* (*i-h*, *o-s*, lip blotched *w*); *L. monophylla* (*i-h*, *o-s*); *Lobelia fulgens* (*c-h*, *s*; 1-2); *Lycoris Sewerzowi* (*c-h*, *br-r*; 1); *Masdevallia amabilis* (*c-h*, *o-ca*; ½); *M. ignea* (*c-h*, often shaded *cr* or *v-pi*; ½); *M. Lindenii* *onchiflora* (*c-h*, *pi-r*); *L. regalis* (*c-h*, *cr*); *Nerine curvifolia* (*c-h*, *s*); *N. flexuosa* (*c-h*, *cr-s*, tinged *o*; 1); *N. sarniensis* *corusca* (*c-h*, *o-s*; 1); *N. s. venusta* (*c-h*, *s*; 2-2½); *Nymphæa Devonienis* (*st* *aq*, *ro-r*); *N. Lotus dentata* (*st* *aq*); *Oncidium Cebolleta* (*st*, *y-r*, spotted); *Oxalis Bowiei* (*c-h*, *pi-r*; ½-2); *O. hirta* (*c-h*, *d*, varying to

Red (Tender Perennials)—continued.

pa v; 4); *O. lasiandra* (c-h, cr; 2-14); *O. variabilis rubra* (c-h; 4); *Pelargonium* varieties (c-h); *Phormium tenax* (c-h, r or y; 6) and vars.; *Pinguicula caudata* (c-h, ca); *Pitcairnia coralina* (st, petals edged w); *P. fulgens* (st; 3); *P. Karwinskiana* (st; 1-2); *P. muscosa* (st; 1); *P. pungens* (st; 1-14); *P. tabulariformis* (st); *Plumbago rosea* (st, pi-s; 2); *Pterodiscus speciosus* (c-h, l or r; 2); *Renanthera coccinea* (i-h, bd); *Salvia coccinea* (c-h, s; 2); *gesneriflora* (c-h, s; 2); *Scutellaria costaricana* (st, y-s, lip y within; 1-14); *S. Lehmanni* (st, s; 1-2); *S. Moci-niana* (st, s, lip y within; 14); *S. splendens* (st, s; 1); *Selenipedium Sedeni* (i-h, cr, p-cr, and w; 14); *Sinningia speciosa* vars. (st); *Siphocampylus betulifolius* (st; 3); *S. coccineus* (st, s; 3); *S. Humboldtianus* (st, s; 3); *Sophronitis grandiflora* (c-h, s or cin); *S. militaris* (c-h, cin or cr, lip y and r; 4); *Sparaxis tricolor grandiflora* (c-h, cr, 1-2); *Spigelia splendens* (st, s; 14); *Spiranthes colorans* (i-h, s; 2); *Sprekelia formosissima* (c-h, cr or w; 2); *Stachys coccinea* (c-h, s; 1-2); *Stenomesson coccineum* (i-h, cr; 1); *S. incarnata* (i-h; 2); *Swainsona galegifolia* (c-h, d; 1); *Thunbergia coccinea* (st, varying to o-p); *Trichopilia crispata* (i-h, cr, edged w); *Tritonia crocosmiflora* (c-h, o-s); *T. miniata* (c-h, s, 4); *Tropaeolum Jarrattii* (c-h, o-s, dotted y); *Valloia purpurea* (c-h; 2-3); *V. p. eximia* (c-h, throat w; 2-3); *Watsonia densiflora* (c-h, pi-r; 14-2); *W. Meriana* (c-h, s or p; 2-2).

VIOLET.—See Purple and Violet.

WHITE.—The ivory shade is indicated by the abbreviation *w*; *d* and *pa* refer to dark and pale markings.

Hardy.—**ANNUALS.**—*Agrostemma coll-rosa* (w or pi; 1); *Argemone albiflora* (1); *A. hirsuta* (2); *Bellium bellidioides* (4); *Blumenbachia insignis* (seals r-y; 1); *Borago officinalis* (w, b, or p; 1-2); *Centranthus macro-siphon* var. (2); *Clarkia elegans* vars. (2); *C. pulchella* vars. (14-2); *Delphinium Ajacis* (w, r, or b; 1-14); *Gilia liniflora* (1); *G. tricolor* vars. (1); *Heliotropium convolvulaceum* (sc; 2); *Iberis coronaria* (1); *Ionopsisium acule* (w tinged v, or l; 4); *Loasa vulcanica* (2); *Mulcolmia maritima* vars. (1-1); *Malpoe trifida* (w or p; 1); *Matri-caria inodora flore-pleno*; *Nemophila maculata* (blotched v-p; 4); *N. Menziesii* alba (bk centre; 4); *Nigella damascena* (w or b; 1-2); *Papaver somniferum* vars. (3-4); *Polygonum orientale* (w or pi-p; 3-10); *Sabbatia calycosa* (s-ag; 1-14); *Scabiosa atropurpurea* vars. (sc; 2-3); *Tropaeolum majus* vars. (c).

BIENNIALS.—*Androsace coronopifolia* (4); *Blumenbachia coronaria* (14); *Digitalis purpurea* (varying to p; 3-5); *Eschscholtzia californica crocea* vars. (1); *Hesperis grandiflora* vars. (4); *H. tristis* vars. (w or c, sc; 1-2); *Michauxia laevigata* (11).

PERENNIALS.—*Abronia fragrans* (sc; 1-2); *Acanthus mollis* (w or pi; 3-4); *Achillea Ageratum* (2); *A. atrata* (2); *A. Clavennae* (4); *A. Herba-rotta* (4); *A. moschata* (4); *A. pectinata* (14); *A. Ptarmica flore-pleno* (1-2); *A. serrata* (14); *A. umbellata* (1-4); *Aciphylia Colensoi* (6-9); *A. squarrosa* (6-9); *Acis autumnalis* (pi base; 4); *A. grandiflora* (4); *A. trichophyllus* (flushed r; 4); *Aconitum album* (4); *A. barbatum* (c; 2-6); *A. Halleri bicolor* (variegated b; 4-6); *A. ochroleucum* (c; 2-4); *A. variegatum albidiflorum* (1-6); *A. v. bicolor* (edged b or l; 5); *Actaea alba* (1-14); *A. spicata* (w or b; 1) and var.; *Agrostemma coronaria* (r eye; 1-2); *Aletris farinosa* (14-2); *Alisma natans* (aq); *Allium neapolitanum* (14-14); *A. nigrum* (w or v; 24-34); *A. reticulatum attenuifolium* (2-14); *Anemone alpina* (variable; 4); *A. baldensis* (variable; 4); *A. decapetala* (c or y; 1); *A. dichotoma* (tinged r beneath; 14); *A. Hepatica alba*; 4); *A. japonica alba* (2-3); *A. narcissiflora* (c; 1); *A. nemorosa* (4); *A. n. bracteata flore-pleno* (4); *A. n. flore-pleno* (4); *A. palmata* var. (4); *A. patens Nuttalliana* (c or p; 1); *A. rivularis* (s-ag, p anthers; 1-2); *A. stellata* (w, pi-r, or p; 4); *A. sylvestris* (sc; 1-14); *A. vernalis* (p outside; 4); *Antennaria margaritacea* (2); *Anthemis*

White (Hardy Perennials)—continued.

Aizoon (4); *Anthericum Lillago* (1-14); *A. Liliastrum* (1-2); *A. ramosum* (2); *Aponogeton distachyon* (aq, anthers p-br, sc); *Aquilegia caerulea alba* (2-14); *A. fragrans* (w or pa r; 14-2); *Arabis albida* (4-2); *A. alpina* (4); *A. lucida* (4); *A. petraea* (4); *Arenaria balearica* (4); *A. graminifolia* (4-4); *A. grandiflora* (4-4); *A. laticifolia* (4); *A. rotundifolia* (4); *Armeria vulgaris alba* (4-1); *Arium tenuifolium* (1); *Asclepias quadrifolia* (sc; 1); *Asperula odorata* (4-1); *Asphodelus albus* (2); *Aster acuminatus* (2); *A. alpinus albus* (4-4); *A. dracunculoides* (3); *A. dumosus* (2); *A. d. albus* (2); *A. ericoides* (3); *A. hyssopifolius* (w, or shaded p; 14-2); *A. longifolius* (3); *A. multiflorus* (3); *A. Tradescanti* (3); *Antilbe rivularis* (y-w or r; 3); *Astragalus hypoglottis alba* (4); *Astrantia carniolica* (4-1); *Baptisia alba* (2); *Bellevuea romana* (4); *B. syriaca* (1); *Boldi-astrium Michelii* (1); *Bellis perennis* (4); *Brodiaea congesta alba* (1); *B. lactea* (midribs g; 1-2); *Calceola suaveolens* (3-5); *C. tuberosa* (2-6); *Caltha leptosepala* (s-ag; 1); *Camassia esculenta Leichtlinii* (c; 2); *Campanula barbata alba* (4-14); *C. bononiensis* var. (2-3); *C. caespitosa alba* (4-4); *C. glomerata* var. (1-2); *C. grandis alba* (1-2); *C. isophylla alba*; *C. lactiflora* (c tinged b, or b; 2-6); *C. nitida* (w or b; 4-4); *C. nobilis* var. (2); *C. persicifolia alba* (1-3); *C. p. a. coronata* (1-3); *C. psallia alba* (4-4); *C. pyramidalis* vars. (4-5); *C. Rapunculus* (w or b; 2-3); *C. rotundifolia alba* (4-1); *C. r. Hostii* var. (4-1); *C. speciosa* (w, b, or p; 1-14); *C. Trachelium* vars. (2-3); *Cardamine asarifolia* (1-14); *C. rhomboidea*; *C. trifolia* (4); *Carlina acanthifolia* (2); *Cephalanthra grandiflora* (lip tipped y; 1-2); *Cerastium alpinum* (4); *C. Biebersteinii* (4); *C. Boissieri* (4-1); *C. grandiflorum* (4); *C. tomentosum* (4); *Chaptalia tomentosa* (4); *Chelone obliqua alba* (2-3); *Chlorogalum pomoridianum* (veined p; 2); *Chrysanthemum argentum* (1); *C. varieties*; *Cimicifuga americana* (2-3); *C. japonica* (3); *C. racemosa* (3-5); *Clematis recta* (sc; 2-3); *Clintonia uniflora* (4); *Convolvulus Scammonia* (c or r); *Coptis occidentalis* (s-ag; 1-1); *C. trifolia* (s-ag; 4-4); *Corydalis cava albiflora* (4); *Crambe cordifolia* (sc; 6); *C. capense* (r at back; 1); *Crocus biflorus* (varying to l; 4); *C. Boryi* (c, throat o; 4); *C. vernus* (w, l, or v; 4); *C. varieties*; *Dahlia varieties*; *Delphinium exaltatum* (w or b; 3-6); *D. grandiflorum album* (1-2); *D. g. album-plenum* (1-2); *Dentaria diphylla* (p outside; 4-1); *D. polyphylla* (c; 1); *Dianthus arenarius* (2); *D. barbatus* vars. (1-14); *D. Caryophyllus* vars. (sc; 14-2); *D. plumarius* (variable, sc; 2); *Diapensia lapponica* (1); *Dicentra spectabilis* vars. (4-2); *Dictamnus albus* (1-14); *Diphylleia cymosa* (1); *Dodecatheon Meadia* (w, pi-p, or l; 2-14); *Draba Mawii* (4); *D. nivalis* (4); *Dracocephalum Ruyschianum japonicum* (bordered b; 2); *Drypis spinosa* (w or pa pi; 4); *Epilobium hirsutum* (w or pa pi; 3-5); *Epimedium macranthum* (2-14); *E. Muschianum* (1); *Eremurus himalaicus* (14-2); *Erigeron grandiflorus* (w or p; 4-2); *Erodium pelargonii-florum* (spotted p; 2); *Erythronium dens-canis* (w or p-pi, 4); *Fragaria chilensis* (1); *F. c. grandiflora* (1); *Fritillaria Meleagris* var. (1); *Funkia ovata* (w or b-l; 1-14); *F. sub-cordata* (14-2); *Galanthus Elwesii* (spotted g; 4-1); *G. nivalis* (marked g; 4); *G. plicatus* (g-w; 4); *Galax aphylla* (4-4); *Galega officinalis albiflora* (2-3); *Galtonia candicans* (4); *Gaura Lindheimeri* (pi-w; 4); *Gentiana Pneumonanthe* vars. (4-1); *Geum triflorum* (edged p-r; 4-1); *Gillenia trifoliata* (varying to r; 14); *Gratiola officinalis* (striated p; 1); *Glycerium argenteum* (4-6); *Gypsophila cerastioides* (veined r; 34); *G. paniculata* (2-3); *Habenaria blephariglotis*; *Hesperis matronalis* (sc; 2-5); *Heteropappus hispidus* (1); *Houstonia serpyllifolia* (4); *Hyacinthus* varieties (sc; 4-1); *Iberis semperflorens* (sc; 1-2); *I. Tenoreana* (w or p; 4); *Ipomoea pandurata* (throat p); *Iris florentina* (tinged l, sc; 2-3); *I. Guldenstadiana* (marked y; 2); *Isopyrum thalictroides* (2-14); *Lathyrus sylvestris platyphyllus* var.; *Leucojum aestivum* (tipped g; 14); *L. Hornandezii* (spotted g; 1-14); *L. vernum* (spotted g, sc; 4-4); *Lilium*

White (Hardy Perennials)—*continued*.

auratum (banded *y*, spotted *p*; 2-4); *L. candidum* (2-3); *L. Kramerii* (tinged *r*, *sc*; 3-4); *L. longiflorum* (*sc*; 1-2); *L. l. eximium* (1-2); *L. neilgherrense* (*sc*; 2-3); *L. speciosum* (*w*, or marked *r*; 1-3); *L. s. albiflorum* (1-3); *L. Washingtonianum* (tinged *p* or *l*; 3-5); *Lychnis chalcedonica* var. (1½-3½); *L. fulgens* Haageana (varying to *r*; ½-1); *L. vesperina* (*sc*; 1-3); *Lysimachia barystachys*; *L. clethroides* (3); *Malva moschata* var. (2-2½); *Mandragora vernalis* (*w* or *b*; 1); *Marshallia capitata* (*b-w*; 1); *Melittis Melisophyllum* (*c*, spotted *pi* or *p*; 1-1½); *M. M. grandiflora* (*c*, lower lip *p-r*; 1-1½); *Mertensia sibirica* var. (½-1½); *Milla biflora* (½); *Mitchella repens* (tinged *p*); *Moringia muscosa* (4); *Muscari botryoides* alba; (½-1); *Myrrhis odorata* (2-3); *Narcissus biflorus* (crown *y*; 1); *N. Bulbocodium monophyllum* (½-¾); *N. calathinus* (*w* or *pa y*; ½-1); *N. Macleai* (*c*, crown *y*; 1); *N. poeticus* (crown edged *r*, *sc*; 1 or more); *N. Tazetta* (crown *y*, *sc*); *N. T. papyraceus* (tube *g-w*); *N. triandrus* (½-1); *N.* varieties; *Nierembergia rivularis* (tinged *y* or *pi*); *Nothoecordium fragrans* (barred *l*, *sc*; 1½-2); *Nymphæa alba* (*aq*); *N. odorata* (*aq*, tinged *r*, *sc*) and var.; *N. pygmaea* (*aq*, *sc*); *Oenothera acaulis* (fading to *r*; ½); *O. californica* (varying to *pi*, *y* centre, *sc*; 2); *O. eximia* (½-1); *O. taraxacifolia* (fading to *r*; ½); *Ornithogalum narbonense* (1-1½); *O. nutans* (*g* at back; ¾-1); *O. pyramidale* (striped *g* at back; 1½-2); *O. umbellatum* (marked *g* outside; ½-1); *Oxalis Acetosella* (veined *p*; 1); *Paeonia albiflora* (*w* or *pi*; 2-3); *P. Emodi* (2-3); *P.* varieties (*sc*); *Pancratium illyricum* (*sc*; 1½); *Papaver alpinum* (*w*, *pi*, or *y*; ½); *P. nudicaule* (*o*, or *y*; ¾-1½); *Pedicularis verticillata* (*w* or *pi*; ½-1); *Peltaria allinacea* (1); *Pentstemon gracilis* (*w* or *li-p*; 1); *P.* varieties; *Petalostemon candidus* (1); *Petasites fragrans* (*sc*; ½); *P. frigidum* (½); *Phlox amona* (*w*, *p*, or *pi*; ½-1½); *P. maculata* candida (2); *P. paniculata* (varying to *pi-p*; 3-4); *P. pilosa* vars. (1-2); *P. subulata* vars.; *P.* varieties; *Physalis Alkekengi* (anthers *y*, calyx *r*; 1); *Podophyllum Emodi* (½-1); *Polemonium caeruleum* var. (2); *P. reptans* (*w* or *b*); *Polygonatum multiflorum* (2-3); *Polygonum amplexicaule* *w* or *pi-r*; 2-3); *P. compactum* (2); *P. cuspidatum* (4-8); *Potentilla congesta* (1-2); *P. unguiculata* (¾-1); *Pratia angulata*; *P. repens* (tinted *v*); *Primula involucreta* (*s-aq*, *c*, *y* eye; ½); *P. i. Munroi* (*y* eye; ¾-¾); *P. japonica* vars. (1-1½); *P. minima* (*w* or *pi*; ½); *P. nivalis* (¾-¾); *P. sinensis* (*w* or *pa l*; ¾); *Puschkinia scilloides* (striped *b*; ¾-¾); *Pyrethrum corymbosum* (1); *P. Tchihatchewii* (disk *y*; 2); *P. uliginosum* (disk *y*; 5); *Pyrola rotundifolia* (*sc*, ½) and var.; *P. secunda* (*g-w*; ¾-¾); *Ramondia pyrenaica* var. (4); *Ranunculus acronitifolius* (½-2) and vars.; *R. amplexicaulis* (¾-¾); *R. anemonoides* (tinted *pi*; ¾-¾); *R. parnassifolius* (*w* or *p*; ¾-¾); *Romanzoffia sitchensis* (4); *Sagittaria heterophylla* (*s-aq*; 2); *S. sagittifolia* (*s-aq*, claws *p*); *Salvia asperata* (2); *S. Sclarea* (*b-w*; 2-3); *Sanguinaria canadensis* (4); *Saponaria officinalis* (*w* or *l*; 1-3); *Saxifraga Burseriana* (*c*; ½); *S. B. major* (4); *S. cæsia* (*c*; ¾-¾); *S. cæspitosa* (4); *S. Composii* (¾-¾); *S. Cottleton* (1-2); *S. granulata* (¾-1½); *S. Hostii* (sometimes dotted *p*; ½-1); *S. hypnoides*; *S. linguata* (dotted *pi*; 1-1½); *S. l. cochlearis* (1-1½); *S. longifolia* (slightly dotted *r*; 1); *S. Maweana* (¾-¾); *S. Rocheliana* (*sc*); *S. Stracheyi* alba (¾-¾); *S. umbrosa* (sometimes sprinkled *r*; ½-1); *S. valdensis* (4); *S. virginiana* (4); *S. Scilla amona* (*w* or *b*; ¾-¾); *S. bifolia* (*w*, *b*, or *r*; ¾); *S. hispanica* alba (¾-¾); *S. nutans* vars.; *S. peruviana* alba (1-1½); *Sedum album* (4); *S. anglicum* (*w* or tinted *pi*; ½); *S. brevifolium* (ribbed *pi*; ½); *S. glaucum* (*pi-w*; 4); *S. maximum* (tipped *r*; 1-2); *S. m. hematodes* (tipped *r*, 2-2½); *Sida Napæa* (4-10); *Silene acaulis* alba (½); *S. alpestris* (½); *S. maritima* and var.; *Sisyrinchium grandiflorum* var. (½); *Smilacina oleracea* (tinged *p* outside; 4); *S. stellata* (1-2); *Spirea Filipendula* (*w* or *pi* outside; 2-3); *S. Ulmaria* (2-4); *Thalictrum aquilegifolium* (stamens sometimes *p*; 1-3); *T. tuberosum* (1); *Tiarella cordifolia*

White (Hardy Perennials)—*continued*.

(¾-1); *Tradescantia virginica* (*w*, *v*, or *p*; ¾-2); *Trifolium Lupinaster albiflorum* (1-1½); *Trillium erythrocarpum* (striped *p* at base; 4); *T. grandiflorum* (changing to *pi*; 1-1½); *T. nivale* (2-4); *Veratrum album* (3-4); *Veronica virginica* (*w* or *b*; 2-6); *Vinca minor* vars.; *Viola odorata* vars. (*sc*); *V. pedata* (*w* or *b*); *V. tricolor* vars.; *Xerophyllum asphodeloides* (1-2); *Yucca filamentosa flaccida* (4-8); *Y. f. orchoides* (2-2½); *Zephyranthes Atamasco* (¾-1); *Zygadenus glaberrimus* (2-3).

Half-hardy.—ANNUALS.—*Acroclinium roseum album* (1-2); *Ageratum mexicanum* var. (2); *Ammobium alatum grandiflorum* (1½-2); *Brachycome iberidifolia* (*w* or *b*; 1); *Callistephus chinensis* vars. (¾-2); *Datura fastuosa* (*v* outside; 2-3); *D. Metel* (*sc*; 2); *Gomphrena globosa* alba (1½); *Helichrysum bracteatum niveum* (*w* and *y*; 3-4); *Mentzelia ornata* (*sc*; 2); *Mesembryanthemum crystallinum*; *Mimulus Jalapa* (*w*, *y*, or *r*; 2); *Nicotiana affinis* (*sc*; 2-3); *Phlox Drummondii* vars. (1); *Schizanthus candidus* (2); *Schizopetalum Walkeri* (1-2); *Swertia paniculata* (marked *p* or *g* at base; 1); *Verbena* varieties (*sc*); *Zaluzianskia capensis* (¾-1); *Zinnia elegans* vars. (2).

PERENNIALS.—*Ainslia Walkeræ* (anthers *r-p*; 1); *Amaryllis Belladonna* (*w* or *p*, &c.; 2); *Astilbe japonica* (1-2); *A. j. variegata* (1-2); *Bellis rotundifolia cæruleoens* (*w* or *pa b*); *Bonssingaultia baselloides* (turning *bk*); *Chionographis japonica* (¾-1); *Commelina cælestis* alba (1½); *Conandron ramondoides* (*w*, or *pi* and *p*; ¾); *Erodium Reichardi* (veined *pi*; ¾); *Francoa ramosa* (2-3); *Gladiolus blandus* (marked *r*; ¾-2); *G. Colvillei* alba (1½); *G.* varieties (1-3); *Lilium giganteum* (tinged *g* and *p*; 4-10); *Nolina georgiana* (2-3); *Ophiopogon japonicus* (4); *O. j. argenteo-marginatus* (1½); *Ornithogalum arabicum* (*bk* centre, *sc*; 1-2); *Pancratium maritimum* (2); *Petunia* varieties (marked *r*, *p*, &c.); *Salvia patens* alba (2½); *Saxifraga Fortunei* (¾); *S. sarmentosa* (¾); *Sisyrinchium filifolium* (lined *pa p-r*; ¾-¾); *S. iridifolium* (*y-w*);

Tricyrtis hirta (outer segments dotted *p*; 1-3); *Urginea maritima* (keeled *p-g*; 1-4); *Viola hederacea* (*w* or *b*); *Yucca glauca* (5-6).

Tender.—ANNUALS.—*Begonia humilis* (½-h; ½); *Browallia elata* var. (*c-h*; 1½); *B. grandiflora* (*c-h*, *w* or *l* 1-3); *Celosia argentea* (*st*; 1); *Drosera rotundifolia* (*c-h* 4); *Nicotiana acutiflora* (*c-h*; 1-2); *Porana racemosa* (*c-h*); *Solanum sisymbriifolium* (*c-h*, *w* or *pa b*; 4); *Thunbergia alata* alba (*st*); *Victoria regia* (*st aq*, *p* or *pi* towards the centre); *Waixia nivea* (*c-h*, *w*, *pi*, or *pa y*; 1½).

BIENNIAL.—*Basella alba* (*st*; ¾).

PERENNIALS.—*Actinocarpus minor* (*c-h aq*); *Actinotus helianthi* (*c-h*; 2); *Aerides crispum* (*st*, suffused *p-pi*; 1); *A. c. Warneri* (*st*, lip *pi*); *A. falcatum* (*st*, marked *r* and *pi*); *A. Fieldingii* (*st*, mottled *pi*; 3-4); *A. japonicum* (*st*, marked *br-p* and *v*); *A. maculosum Schröderi* (*st*, marked *l* and *pi*; 1½); *A. mitratum* (*st*, lip *v*); *A. odoratum* (*st*, *c*, marked *pi*, *sc*; 1½) and vars.; *A. quinquevulvum* (*st*, marked *r* and *pi*, *sc*; ½); *A. q. Farmeri* (*st*, *sc*); *A. Williamsii* (*st*, *pi-w*); *Aganisia fimbriata* (*st*, lip *b*); *A. pulchella* (*st*, *y* blotch; ¾); *Agapanthus umbellatus albidus* (*c-h*; 2-3); *A. u. maximus* var. (*c-h*; 2-3); *Aglaiomena commutatum* (*st*; 1); *A. Mannii* (*st*; 1½); *Albuca fastigiata* (*c-h*; 1½); *A. Nelsoni* (*c-h*, striped *r*; 4-5); *Alcacia scabriscula* (*st*; 4-4½); *Alpinia mutica* (*st*, lip *y* and *r*; 5); *Alströméria Pelagrina* alba (*c-h*; 1); *Amorium Granum Paradisi* (*st*, tinged *y* and *pi*; 3); *Angræcum aronatum* (*st*; ¾); *A. bilobum* (*st*, tinged *pi*, *sc*; ¾); *A. Chaillanum* (*st*, spur *y-g*); *A. citratum* (*st*, *c* or *y*); *A. eburneum* (*c-h*, *w*); *A. Ellisia* (*st*, spur *br*, *sc*; 1); *A. falcatum* (*c-h*, *sc*; ¾); *A. Kotschyi* (*st*, *y-w*, *sc*); *A. modestum* (*st*); *A. pellucidum* (*st*; ¾); *A. portusum* (*st*, ¾); *A. Scottianum* (*st*, spur *y*); *A. sesquipedale* (*st*; 1); *Anguloc eburnea* (*c-h*, lip spotted *pi*); *A. uniflora* (*c-h*, spotted *pi*, sometimes freckled *br*; 1½); *Anthurium Harrisii pulchrum* (*st*, spadix *r*; 3); *A. Lindenianum* (*st*, spadix *w* or *p*, *sc*; 3); *A. ornatum*

White (Tender Perennials)—continued.

(*st*, *spadix* *p*; 2½); *A. Soherzerianum* Williamsii (*st*, *spadix* *y*; 1-1½); *Arthropodium neo-caledonicum* (*c-h*; 1½); *A. paniculatum* (*c-h*; 3); *A. pendulum* (*c-h*; 1½); *Arundo conspicua* (*c-h*; 3-12); *A. Donax* (*c-h*, at first *r*; 12); *Begonia amabilis* (*i-h*, *w* or *pi*); *B. Dregii* (*i-h*; 1); *B. echinosepala* (*i-h*; 1½); *B. glandulosa* (*i-h*, *g-w*; 2); *B. herbacea* (*i-h*; ½); *B. hydrocotylifolia asarifolia* (*i-h*); *B. imperialis* (*i-h*; ½); *B. lucinata* (*i-h*, tinted *pi*, 2); *B. monoptera* (*i-h*; 2½); *B. octopetala* (*i-h*, *g-w*; 2); *B. pruinata* (*i-h*); *B. Richardsiana* (*i-h*; 1); *B. scandens* (*i-h*); *B. Schmidtiana* (*i-h*; 1); *B. semperflorens* (*i-h*, *w* or *pi*; 2); *B. varieties* (*i-h*); *Bonatea speciosa* (*st*; 2); *Brassavola Digbyana* (*i-h*, *c*, lip streaked *p*; ½); *B. Gibbsiana* (*i-h*, spotted *br*); *B. lineata* (*i-h*, *c* and *w*, *sc*; 1); *B. venosa* (*i-h*, *c* and *w*; 1); *Bromheadia palustris* (*st*, marked *p* and *y*; 2); *Bulbophyllum reticulatum* (*st*, marked *p*); *Burlingtonia Batemanni* (*st*, *w*, lip *mv*, *sc*); *B. candida* (*st*, stained *y*, *sc*; 1); *B. decora* (*st*, *w* or *pi*, spotted *r*); *B. fragrans* (*st*, stained *y*, *sc*); *B. venusta* (*st*, *w*, tinted *pi* and *y*); *Calanthe veratrifolia* (*st*, tipped *g*; 2); *C. vestita* (*st*; 2) and vars.; *Caliphuria Hartwegiana* (*c-h*, *g-w*; 1); *C. subdentata* (*c-h*; 1½); *Calochortus albus* (*c-h*, blotched; 1-1½); *C. elegans* (*c-h*, *g-w*, *p* at base; ½); *C. Nuttallii* (*c-h*, spotted *p*; ½); *C. venustus* (*c-h*, marked *y* and *p*; 1½); *Carpolysa spiralis* (*c-h*, *r* outside; ½); *Cattleya choocensis* (*i-h*, lip *w* and *p*); *C. crispata* (*i-h*, lip *r*); *C. Devoniana* (*i-h*, tinged *pi*, lip *pi-p*); *C. Dominianna* (*i-h*, shaded *pi*, lip *pi-p*, *w*, and *o*); *C. D. alba* (*i-h*, lip blotched *l*); *C. labiata picta* (*i-h*, lip *r*; 1); *C. Mendellii* (*i-h*, varying to *pi*, lip *m*); *C. Trianae Hillii* (*i-h*, lip *m*, throat *y*); *C. Wageneri* (*i-h*, lip stained *y*); *Centrosolenia picta* (*st*; 1); *Ceropegia Gardnerii* (*c-h*, *c*, blotched *p*); *Cheirostylis marmorata* (*st*, calyx *r*); *Chysis brautescens* (*st*, lip blotched *y*); *Cineraria varieties* (*c-h*); *Celia Baueriana* (*i-h*, *sc*; 1); *Cœlogyne asperata* (*i-h*, *c*, marked *y* and *br*; 2); *C. barbata* (*i-h*, lip marked *p-br*; ½); *C. corrugata* (*c-h*, lip *y* and *o*); *C. cristata* (*i-h*, lip blotched *y*, *sc*); *C. Cumingii* (*i-h*, lip *y*; 2); *C. flaccida* (*i-h*, lip marked *y* and *r*, *sc*; 1); *C. Gardneriana* (*i-h*, lip *y* at base; 1); *C. Gowerii* (*c-h*); *C. humilis* (*i-h*, tinged *pi*, marked *r* and *br*); *C. maculata* (*i-h*, lip barred *r*); *C. media* (*i-h*, *c*, lip *y* and *br*; 1); *C. ocellata* (*i-h*; lip marked *y*; 1); *C. odoratissima* (*c-h*, lip stained *y*, *sc*); *C. Rhodæana* (*st*, *w*, *sc*); *C. viscosa* (*i-h*, lip streaked *br*); *Colocasia eculentata* (*c-h*; 2); *C. odorata* (*st*, *sc*; 2); *Crassula marginalis* (*c-h*); *C. rosularis* (*c-h*); *Crinum asiaticum* (*c-h*, tube *g*; 2-2½); *C. Balfourii* (*st*, tube *g*, *sc*; 1½); *C. Careyanum* (*st*, tinged *r*; 1); *C. giganteum* (*st*, *sc*; 2-3); *C. Kirkii* (*st*, striped *r* at back; 1-1½); *C. Macowani* (*c-h*, tinged *p*; 2-3); *C. purpurascens* (*st*, tinged *r* outside; 1-3); *Curcuma albiflora* (*st*, *w* and *y*; 2); *Cyanella odoratissima alba* (*c-h*, *sc*; 1); *Cyclamen africanum* (*c-h*, *w* or tinted *r*, spotted *p*; ½-½); *C. cilicium* (*c-h*, base *p*; ½); *C. neapolitanum* (*c-h*, *w* or *r*, *v-p* spot; ½); *C. persicum* (*c-h*, blotched *p*; ½); *C. varieties* (*c-h*); *Cycnoches barbatum* (*st*, *g-w*, spotted *pi*); *Cymbidium Dayanum* (*st*, *y-w*, marked *p*); *C. eburneum* (*i-h*, *iv*, stained *y*, *sc*; 1); *C. Maastersii* (*i-h*, *iv*, stained *pi*, *sc*); *C. Parishii* (*st*, *iv*, lip variegated); *Cypripedium concolor* (*st*, *c*); *C. niveum* (*st*, freckled *br*; ½); *Dahlia imperialis* (*c-h*, marked *l* and *r*; 10-12); *Dendrobium Ainsworthii* (*st*, tinged *pi* and *r-p*, *sc*; 1-2½); *D. aquenum* (*st*, *c*, lip blotched *y*; 1); *D. Bensonis* (*c-h*, lip marked *o* and *bk*; 1-1½); *D. bigibbum candidum* (*c-h*; 1); *D. Boxallii* (*st*, marked *p* and *y*); *D. cariniferum* (*st*, *w*, *y*, and *r*; 1); *D. Devonianum* (*st*, marked *pi*, *p*, and *o*) and vars.; *D. Draconis* (*st*, lip *r* at base; 1-1½); *D. endocharis* (*st*, lip lined *br*; 1); *D. Falconeri* (*st*, marked *p*, margined *o*; 1); *D. formosum* (*st*, throat *o*; 1-1½); *D. Fytchianum* (*st*, lip *w* and *p-pi*; 1); *D. gratiosissimum* (*st*, *w*, *pi*, and *y*); *D. infundibulum* (*st*, *iv*, lip *y*; 1-1½); *D. Leechianum* (*c-h*, *w* and *pi-p*); *D. longicornu majus* (*st*, lip marked *y*; 1½); *D. noniflorum* (*c-h*, lip spotted *p*, *sc*; ½); *D. nobile* (*c-h*, marked *pi* and *r*; 2-3); *D. Pierardii* (*c-h*, *c* or *pi*, lip *y* and

White (Tender Perennials)—continued.

p); *D. scabrilingue* (*st*, lip *g*, *y*, and *o*; ½-½); *D. speciosum* (*c-h*, *c* or *y-w*; ½-½); *D. teretifolium* (lip speckled *bk*); *D. transparens* (*st*, *w*, marked *p-pi*, *r*, and *y*; 1-1½); *D. Wardianum* album (*st*, lip *o* at base); *D. xanthophlebium* (*st*, lip spotted *o*; 1); *Diosæa muscipula* (*c-h*; ½-½); *Disa megaceras* (*c-h*, blotched *pa* *p* inside; 1-2); *Drimyopsis Kirkii* (*c-h*; ½); *Drosera binata* (*c-h*; ½); *Elisena longipetala* (*c-h*; 3); *Epidendrum bioerantum* (*st*, lip spotted *r*; 1-1½); *Episcia villosa* (*st*, marked *p* within; 1-1½); *Eucharis caudata* (*st*; 2); *E. grandiflora* (*st*; 2); *E. Sanderiana* (*st*; 1½); *Euryoles Cunninghamii* (*i-h*; 1); *Freesia refracta* (*c-h*); *F. r. alba* (*c-h*); *Galeandra Devoniana* (*st*, lip pencilled *pi*; 2); *Gladiolus varieties* (*c-h*; 1-3); *Gloxinia varieties* (*st*); *Gongora maculata grandiflora* (*st*, spotted *pi*; 1½); *Guzmania erythrolepis* (*st*, bracts *p-r*; 1-2); *G. tricolor* (*st*, bracts *y*, *b-p*, and *r*; 1-2); *Gymnostachyum ceylanicum* (*st*, tipped *g* and *y*); *Hechtea argentea* (*c-h*); *Hedyochium coronarium* (*st* *s-ag*, *sc*; 5); *Helleborus niger* (*c-h*; ½-1½); *Hippeastrum vittata* (*c-h*, striped *r*); *Hyacinthus varieties* (*c-h*, *sc*; ½-1); *Hymenocallis amœna* (*st*, tube *g-w*, *sc*; 1-2); *H. calathinum* (*c-h*, tube *g*, *sc*); *H. macrostephana* (*st*, tube *g*, *sc*; 2); *H. speciosa* (*st*, *sc*; 1½-2); *Impatiens Hookeriana* (*st*, striped *p*; 2½); *Ixia hybrida* (*c-h*; 1); *Iavlia albidia* (*i-h*, *c*, lip *w* or *pi*, lined *y*, *sc*); *L. anceps alba* (*i-h*, lip streaked *y*, *sc*); *L. n. Dawsoni* (*i-h*, lip marked *p* and *y*, *sc*); *L. elegans alba* (*i-h*, marked *r-m*); *L. majalis* var. (*i-h*); *L. Wyattiæna* (*st*, *w*, *p*, and *y*); *Lycaste jugosa* (*i-h*, lip veined *p*); *Madevallia ohelsoni* (*c-h*, lip marked *mv*); *M. melanopus* (*c-h*, dotted *p*, tails *y*); *M. tovarensis* (*c-h*; ½); *Maxillaria grandiflora* (*i-h*, lip marked *y* and *r*; ½-½); *M. luteo-alba* (*i-h*, *c*; 1½); *M. splendens* (*i-h*, lip *o* and *pi*); *M. venusta* (*i-h*, lip marked *y* and *r*); *Miltonia Phalunopsis* (*i-h*, lip marked *r* and *y*; ½-½); *Moraea tricuspis* (*g-w*; 1); *Nelumbium speciosum* (*c-h* *alv*, lipped *pi*, *sc*); *Nymphæa Lotus* (*st* *aq*, *w* or *r*); *N. thormalis* (*st* *aq*); *Odontoglossum cirrhosum* (*i-h*, spotted *p*, &c.); *O. citrosimum* (*i-h*, lip *p*, *sc*); *O. crispum* (*c-h*, lip *y*, spotted *r-br*) and vars.; *O. Oerstedii* (*c-h*, marked *y* and *r*); *O. Pe-catoroi* (*c-h*, lip marked *p-r* and *y*); *O. pulchellum* (*i-h*, lip dotted *p*, *sc*); *O. Rosarii Ehrenbergii* (*c-h*, petals barred *br*); *Oncidium incurvum* (*c-h*, marked *r* and *br*, *sc*; 3); *Oxalis variabilis albiflora* (*c-h*; ½); *Pachystoma Thomsoniana* (*st*, lip *p*; ½); *Pelargonium pulchellum* (*c-h*, spotted *r*); *P. varieties* (*c-h*); *Peristaria elata* (*st*, speckled *l*, *sc*; 4); *Phaius albus* (*i-h*, lip marked *y* and *pi*; 2); *P. Dodgsonii* (*i-h*, lip *r* at base); *P. irroratus* (*i-h*, *c*, tipped *pi*); *P. Marshallii* (*i-h*, lip marked *y*; 2); *P. tuberosus* (*i-h*, lip marked *y*, *br*, and *mv*); *Phalænopsis amabilis* (*st*, lip streaked *y*) and var.; *P. amethystina* (*st*, lip marked *y*, *b*, and *p*); *P. Aphrodite* (*st*, lip sometimes streaked *r*, *o*, and *y*); *P. Parishii* (*st*, *c*, lip *p*); *P. P. Lobbii* (*st*, *c*, lip banded *br*); *P. speciosa* (*st*, lip *pi-p*, spotted *y*); *P. Stuartiana* (*st*, *c*, marked *br*); *Plagiolirion Horsmanni* (*st*); *Podolepis gracilis* (*c-h*, *w*, *p*, or *l*; 3); *Rauunculus Lyullii* (*c-h*; 2-4); *Richardia africana* (*c-h*, *spadix* *y*; 2); *R. albo-maculata* (*c-h*, *g-w*; 2); *Romneya Coulteri* (*c-h*; 2-4); *Saccolabium violaceum Harrisianum* (*st*, *sc*); *Sagittaria montividensis* (*i-h*, spotted *r* at base); *Sarcochilus Fitzgeraldii* (*c-h*, spotted *r*); *Schismatoglottis crispata* (*st*, *c*, *g* below); *Selenipedium Lindenii* (*i-h*, marked *g* and *p-r*; 1); *S. Schlimii* (*i-h*, marked *pi*; 1); *Sinningia speciosa* vars. (*st*); *Siphocampylus coccineus leucostomus* (*st*, *w* and *r*; 3); *Solanum sisymbriifolium* (*c-h*, *w* or *pa* *b*; 4); *Sparaxis grandiflora Liliago* (*c-h*; 1-2); *S. varieties* (*c-h*); *Spathiphyllum candidum* (*st*; ½); *S. cannaefolium* (*st*; 1); *Sprekelia formosissima* (*c-h*, *w* or *r*, 2); *Strelitzia augusta* (*i-h*; 10); *Streptanthera elegans* (*c-h*, tinged *pa* *pi*, marked *p* and *y*; ½); *Streptocarpus parviflora* (*c-h*, faintly streaked *p*; ½-½); *Theropogon pallidus* (*c-h*, sometimes tinged *r*; 1); *Thunbergia erecta alba* (*st*, tube *y*; 6); *T. fragrans* (*st*, *sc*); *Tillandsia pulchra* (*st*, bracts *r*); *T. regina* (*st*, *sc*, bracts *pi*; 7); *T. virginalis* (*st*, *w*); *T. ziphitoides* (*st*); *Trichopilia nobilis* (*i-h*, lip blotched *o*, *sc*);

White (Tender Perennials)—continued.

T. suavis (c-h, w or c, lip marked v-pi and y, sc); *Utricularia montana* (st, marked y); *Vanda Hookeriana* (st, marked pi, m, and p); *Xanthorrhoea Preissii* (c-h; 5-6); *Xanthosia rotundifolia* (c-h; 1-2); *Yuca aloifolia* (c-h; 15-20); *Zephyranthes candida* (c-h, g at base; $\frac{1}{2}$ - $\frac{3}{4}$); *Zygopetalum candidum* (st, lip pi-p and w; $\frac{1}{2}$); *Z. Dayanum* (st, marked g and p-w); *Z. triumphans* (st, marked b); *Z. Wallisii* (c-h, marked v).

YELLOW.—The shades are indicated by the following abbreviations: *bu* (buff), *chr* (chrome), *ci* (citron), *d* (dark), *go* (golden), *le* (lemon), *n* (nankeen), *o* (orange), *pa* (pale), *str* (straw), *su* (sulphur).

Hardy.—**ANNUALS.**—*Amarantus caudatus* var. (2-3); *Argemone ochroleuca* (pa; 1 $\frac{1}{2}$); *Bartonia albescons* (or biennial) (pa; 1-4); *B. aurea* (go; 1); *Bivonaea lutea* ($\frac{1}{2}$ - $\frac{3}{4}$); *Calendula maderensis* (o; 2); *C. officinalis* (o; 3); *Castilleja indivisa* (g-y, bracts r; $\frac{1}{2}$ -1); *Centaurea suaveolens* (sc; 1 $\frac{1}{2}$); *Cerintho minor* (sometimes spotted br; 1-1 $\frac{1}{2}$); *Chlora perfoliata* (go; 1); *Chrysanthemum coronarium* (4); *C. negotum* (1 $\frac{1}{2}$); *C. s. grandiflorum* (1 $\frac{1}{2}$); *Collomia grandiflora* (r-y; 1 $\frac{1}{2}$ -2); *Coreopsis Drummondii* (r-br circle; 1); *C. tinctoria* (p-br blotch; 2); *Erysimum Perofskianum* (r-o; 1); *Gilia miorantha aurea* (go; $\frac{1}{2}$); *Helianthus annuus* (6) and var.; *Limnanthes Douglasii* (passing to w, streaked gy; $\frac{1}{2}$); *Linaria spartea* (d); *Loasa Pontlandii* (o; 4); *L. prostrata*; *Lupinus luteus* (sc; 1-1 $\frac{1}{2}$); *Madia elegans* (1 $\frac{1}{2}$); *Nigella orientalis* (spotted r; 1 $\frac{1}{2}$); *Oenothera bistorta Veitchiana* (spotted r); *Oxalis corniculata*; *O. valdivianensis* (streaked r; $\frac{1}{2}$ - $\frac{3}{4}$); *Podolepis aristata* (go, ray pi; 1); *Selonina aurea* (g-y and go; $\frac{1}{2}$); *Tropaeolum majus* var.; *T. peregrinum*; *Ursinia pulchra* (o; 1); *Vesicaria grandiflora* (1).

BIENNIALS.—*Bartonia albescons* (or annual) (pa; 1-4); *Centaurea Fenzlii* (4); *Chlora grandiflora* (go; $\frac{1}{2}$ -1); *Eschscholtzia californica crocea* (o, &c.; 1); *Foeniculum dulce* (4); *Glaucium flavum* (1-2); *Grindelia grandiflora* (y or o; 2 $\frac{1}{2}$ -3); *Mecynopsis nepalensis* (pa go; 3-5); *Oenothera biennis* (pa; 2-4); *Scrophularia chrysantha* (go; $\frac{1}{2}$ -1 $\frac{1}{2}$); *Verbascon Chaixii* (3).

PERENNIALS.—*Achillea aegyptiaca* (1 $\frac{1}{2}$ -2 $\frac{1}{2}$); *A. aurea* (go; 1 $\frac{1}{2}$); *A. Eupatorium* (4-5); *A. tomentosa* ($\frac{1}{2}$ -1); *Aconitum Anthora* (pa; 1-2); *A. A. nemorosum* (3); *A. pyrenaicum* (2); *A. vulpina* (pa; 1-3); *Acorus Calamus*; *Actinella grandiflora* ($\frac{1}{2}$ - $\frac{3}{4}$); *Actinomeris helianthoides* (3); *A. protera* (8); *A. squarrosa* (3); *Adonis pyrenaica* (1-1 $\frac{1}{2}$); *A. vernalis* ($\frac{1}{2}$ -1); *Aggrimonia odorata* (sc; 2-3); *Aletris aurea* (1-2); *Allium Moly* ($\frac{1}{2}$ -1 $\frac{1}{2}$); *Alströmmeria aurantiaca* (o, streaked r; 3-4); *A. versicolor* (marked p; 2-4); *Alyssum alpestre* ($\frac{1}{2}$); *A. gemonense* (1); *A. orientale* (1); *A. saxatile* (1) and var.; *A. serpyllifolium* (pa; $\frac{1}{2}$); *A. Wiersbeckii* (d; 1 $\frac{1}{2}$); *Anemone alpina sulphurea* (1); *A. decapetala* (pa, or c; 1); *A. multifida* (pa, or r; $\frac{1}{2}$ -1); *A. palmata* (go; $\frac{1}{2}$); *A. patens* (y or p; 1); *A. ranunculoides* (4); *Anthlumis Bibersteinii* (1-2); *Anthyllis Vulneraria* (variable; $\frac{1}{2}$); *Aquilegia chrysantha* (pa, tipped r-p; 3-4); *Arnebia cilioides* (spotted p; $\frac{1}{2}$ -1); *Arnica Chamissonis* (1-2); *A. foliosa* (pa; 1-2); *A. montana* (1); *A. scorpioides* ($\frac{1}{2}$ -1); *Artemisia alpina* ($\frac{1}{2}$ - $\frac{3}{4}$); *A. argentea* (pa; 1 $\frac{1}{2}$); *Aselepias tuberosa* (o; 1-2); *Asphodelus creticus* (2); *Astragalus alpeurooides* (2-5); *A. canadensis* (2-3); *A. galegiformis* (pa; 3-5); *A. glycyphyllos* (su; 2-3); *A. leucophyllus* (pa; 2-3); *A. maximus* (2-3); *A. vulpinus* (pa; 2-3); *Baptisia perfoliata* (3); *B. tinctoria* (2-3); *Brodiaea gracilis* (d, nerved br; $\frac{1}{2}$); *Bupththalmum grandiflorum* (1 $\frac{1}{2}$); *B. salicifolium* (1 $\frac{1}{2}$); *B. speciosissimum* (2); *Bupleurum graminifolium* (g-y; $\frac{1}{2}$); *Calliprora lutea* (marked p-br; $\frac{1}{2}$); *Caltha palustris* (s-ag, go; 1); *C. radicans* (s-ag; $\frac{1}{2}$); *Campanula thyrsoidea* (su; 1-1 $\frac{1}{2}$); *Cassia marylandica* (2-3); *Centaurea alpina* (3); *C. babylonica* (6-10); *C. macrocephala* (3); *Cerintho maculata* (spotted p; 1-1 $\frac{1}{2}$); *Cheiranthus Cheiri* var. (sc; 1-2); *Chrysanthemum* varieties; *Chrysoactron Hookeri*

Yellow (Hardy Perennials)—continued.

(1 $\frac{1}{2}$ -3); *C. Rossii* (2-3); *Chrysozonum virginianum* ($\frac{1}{2}$); *Cineraria aurantiaca* (o; $\frac{1}{2}$); *C. longifolia* (2); *Cnicus spinosissimus* (pa; 3); *Colchicum luteum* ($\frac{1}{2}$); *Coreopsis auriculata* (p-br band; 1-1 $\frac{1}{2}$); *C. grandiflora* (3-4); *C. lanceolata* (1-3); *C. verticillata* (go; 1-2); *Coronilla iberica*; *Corydalis bracteata* (su; $\frac{1}{2}$); *C. lutea* (1); *C. Marschalliana* (su; $\frac{1}{2}$); *C. nobilis* (br, tipped g; $\frac{1}{2}$); *C. sibirica* (1-3); *Crocus aureus* (o; $\frac{1}{2}$); *C. asiaticus* (o; $\frac{1}{2}$); *C. varieties*; *Dahlia* varieties; *Datisca cannabina* (3-6); *Dianthus Caryophyllus* var. (sc; 1 $\frac{1}{2}$ -2); *Dicentra chrysantha* (go; 3-5); *D. thalictrifolia* (sc); *Digitalis ambigua* (reticulated br; 2-3); *Diotis maritima* ($\frac{1}{2}$ -1); *Doronicum altaicum* (1); *D. austriacum* (1-1 $\frac{1}{2}$); *D. caucasicum* (1); *D. Pardalianchos* (1 $\frac{1}{2}$ -3); *D. plantagineum excelsum* (5 or more); *Draba aizoides* (4); *D. Aizoon* (4); *D. alpina* (go; $\frac{1}{2}$); *D. glacialis* (go; $\frac{1}{2}$); *Epimedium pinnatum* ($\frac{1}{2}$ -2); *Eranthis hyemalis* ($\frac{1}{2}$ - $\frac{3}{4}$); *E. sibirica* ($\frac{1}{2}$); *Erysimum spectabilis* (su; 1); *Erigeron aurantiacus* (o; 1); *Erysimum alpinum* (su; $\frac{1}{2}$); *E. ochroleucum* (pa); *E. pumilum* (pa su, sc; $\frac{1}{2}$); *Erythronium americanum* ($\frac{1}{2}$ - $\frac{3}{4}$); *Ferula asparagifolia* (4-5); *F. communis* (8-12); *F. glauca* (6-8); *F. tingitana* (6-8); *Foeniculum vulgare* (6); *Fritillaria armena* ($\frac{1}{2}$); *F. imperialis* (varying to r; 3); *F. i. lutea* (3); *F. i. sulphurea* (su; 3); *F. pallidiflora* ($\frac{1}{2}$); *F. pudica* (d; $\frac{1}{2}$ - $\frac{3}{4}$); *Gagea lutea* ($\frac{1}{2}$); *Gaillardia aristata* (1 $\frac{1}{2}$); *Gentiana lutea* (4-6); *G. punctata* (dotted p; 1-2); *Geum elatum* (go); *G. montanum* ($\frac{1}{2}$ -1); *G. pyrenaicum* (1 $\frac{1}{2}$); *Gilia Brandegei* (go; $\frac{1}{2}$ -1); *Gratiola aurea* (go; $\frac{1}{2}$); *Habenaria cristata* (go; 1); *Hacquetia Epipactis* ($\frac{1}{2}$ - $\frac{3}{4}$); *Helonium autumnale* (4-6); *Helianthemum vulgare* var.; *Helianthus orgyalis* (6-10); *H. rigidus* (go; 3); *Helichrysum arenarium* (go; $\frac{1}{2}$ -1); *Homerochallis Dumortieri* (o, tinged br; 1-1 $\frac{1}{2}$); *H. flava* (o, sc, 2-3); *H. fulva* (2-4); *H. Middendorfi* (2-3); *H. minor* (tinged g; $\frac{1}{2}$ - $\frac{3}{4}$); *Humulus Lupulus* (g-y); *Hyacinthus* varieties (sc; $\frac{1}{2}$ -1); *Hypericum elegans* (1); *H. patulum* (6); *H. perforatum* (1-3); *Inula glandulosa* (2); *I. Hookeri* (pa, sc; 1-2); *Iris aurea* (3-4); *I. Chamisieri* (marked br; $\frac{1}{2}$ - $\frac{3}{4}$); *I. flavescens* (le, marked p-br and o, 2-3); *I. lutescens* (pa; $\frac{1}{2}$); *I. Monnierii* (le, sc; 3-4); *I. ochroleuca* (y and w; 3); *I. Pseudo-acorus* (s-ag; 2-3); *Leptinella dioica* (pa; $\frac{1}{2}$); *Lilium canadense* (spotted, varying to r; 1 $\frac{1}{2}$ -3); *L. chalcedonicum* (y or r; 2-3); *L. croceum* (go, tinted r; 3-6); *L. Hansonii* (r-o; 3-4); *L. monadelphum* (pa, tinged r at base; 3-5); *L. Parryi* (pa, dotted br-r, sc; 2-6); *L. pyrenaicum* (2-4); *Limnanthemum nymphaeoides* (ag); *Linaria dalmatica* (3-4); *Lotus corniculatus* (fading to o); *Lysimachia oiliata* (pa; 2-3); *L. Nummularia*; *L. punctata* (1); *L. vulgaris* (2-3); *Mecynopsis cambrica* (pa; 1); *Mimulus moschatus*; *M. primuloides*; *Mitella pentandra* ($\frac{1}{2}$); *Morina Coulteriana* (pa; $\frac{1}{2}$ -1 $\frac{1}{2}$); *Narcissus Bulbocodium* ($\frac{1}{2}$ - $\frac{3}{4}$); *N. calathinus* (pa, or w; $\frac{1}{2}$ -1); *N. incomparabilis* (1); *N. Jonquilla* (sc, $\frac{1}{2}$ -1); *N. Pseudo-Narcissus* (su, crown o; 1); *N. varieties*; *Nuphar advena* (ag, authors r); *N. luteum* (ag, sc); *Oenothera glauca* (pa; 1-2) and var.; *O. linearis* ($\frac{1}{2}$ -1 $\frac{1}{2}$); *O. missouriensis latifolia*; *Ononis Natix* (veined r; 1 $\frac{1}{2}$ -2); *Onosma stellulata tauricum* ($\frac{1}{2}$ - $\frac{3}{4}$); *Orobanchium aurantius* (d; 1 $\frac{1}{2}$); *Oxalis lobata* (spotted r; $\frac{1}{2}$); *Paeonia Wittmanniana* (pa; 2); *Papaver alpinum* (y, pi, or w; $\frac{1}{2}$); *P. nudicaule* (o, y, or w; $\frac{1}{2}$ -1 $\frac{1}{2}$); *Pedicularis dolichorrhiza* (go; 1-1 $\frac{1}{2}$); *P. Scopetrum Carolinum* (go; 3-4); *Pentstemon antirrhinoides* (le; $\frac{1}{2}$ -1 $\frac{1}{2}$); *P. breviflorus* (y or pi, striped pi withi; 3-6); *P. confertus* (su; $\frac{1}{2}$ -1 $\frac{1}{2}$); *P. deustus* (1); *Polygonum sachalinense* (s-ag, g-y; 10-12); *Potentilla alpestris* ($\frac{1}{2}$ -1); *P. ambigua* ($\frac{1}{2}$); *P. argyrophylla* (1 $\frac{1}{2}$ -3); *Primula Auricula* ($\frac{1}{2}$); *P. lateola* (s-ag; 1 $\frac{1}{2}$ -2); *P. officinalis* var. ($\frac{1}{2}$ -1); *P. sikkimensis* (pa; 1 $\frac{1}{2}$ -2); *P. Stuartii* (go; $\frac{1}{2}$ -1 $\frac{1}{2}$); *P. vulgaris* (pa; $\frac{1}{2}$); *Pyrethrum achillesfolium* (go; 2); *Ranunculus asiaticus* var. (y or o; $\frac{1}{2}$); *R. cortusae-folius* (2); *R. gramineus* ($\frac{1}{2}$ -1); *Rudbeckia grandiflora* (disk p; 3 $\frac{1}{2}$); *R. maxima* (4-9); *R. pinnata* (pa; 3); *R. speciosa* (o, disk bk-p; 2-3); *Saxifraga aizoides* (o or r; $\frac{1}{2}$ - $\frac{3}{4}$); *S. aretioides* (go; $\frac{1}{2}$); *S. diversifolia* ($\frac{1}{2}$ -1 $\frac{1}{2}$); *S.*

Yellow (Hardy Perennials)—continued.

Hirculus (dotted r at base; $\frac{1}{2}$ - $\frac{1}{2}$); *S. moschata* (pa y or p; $\frac{1}{2}$); *S. pygmaea* ($\frac{1}{2}$); *S. sancta*; *Scabiosa Webbiana* (c-y; $\frac{1}{2}$); *Scolymus grandiflorus* (3); *Scorzonera hispanica* (3); *Scutellaria alpina lupulina*; *Sedum Aizoon* (1); *S. japonicum* ($\frac{1}{2}$); *S. kantschaticum* ($\frac{1}{2}$); *S. reflexum* ($\frac{1}{2}$); *Sempervivum arenarium* (pa; $\frac{1}{2}$ - $\frac{1}{2}$); *S. Braunii* ($\frac{1}{2}$ - $\frac{1}{2}$); *S. Heuffelii* (pa, calyx turning r-br; $\frac{1}{2}$ - $\frac{1}{2}$); *S. soboliferum* (pa; $\frac{1}{2}$ -1); *Senecio Doria* (4); *S. Doronicum* (1); *Silene Saxifraga* (r-br beneath; $\frac{1}{2}$ - $\frac{1}{2}$); *Silphium laciniatum* (3-6); *Solidago Drummondii* (1-3); *S. lanceolata* (2-3); *S. speciosa* (3-6); *Stachys Maweana* (pa, blotched p; 1); *Sternbergia lutea* ($\frac{1}{2}$ -1); *S. l. sicula* ($\frac{1}{2}$ -1); *Stylophorum diphyllum* (d; 1); *Tanacetum leucophyllum* (go; $\frac{1}{2}$); *Thermopsis montana* (1-2); *Tritonia Pottsii* (flushed r outside; 3-4); *Trollius europaeus* (pa; $\frac{1}{2}$ -2); *Tropaeolum polyphyllum*; *Tulipa retroflexa*; *T. sylvestris* (sc; 1-2); *T. varieties*; *Uvularia grandiflora* (pa; $\frac{1}{2}$ -1); *U. sessilifolia* ($\frac{1}{2}$ -1); *Vesicaria utriculata* (1); *Viola Munbyana lutea*; *V. tricolor* vars.; *Waldsteinia fragarioides*.

Half-hardy.—ANNUALS.—*Callistephus chinensis* vars. ($\frac{1}{2}$ -2); *Datura chlorantha flore-pleno* (sc); *Gomphrena globosa aurea superba* (1 $\frac{1}{2}$); *Helichrysum bracteatum* vars. (3-4); *Helipterum Humboldtianum* (1-2); *Lindheimera texana* (1-2); *Montzelia bartonioides* (su; 1); *Mimulus luteus* (d marks; $\frac{1}{2}$ -1); *Mirabilis Jalapa* (y, w, or r; 2); *Momordica Charantia*; *Tagetes erecta* (2); *T. patula* vars. (1 $\frac{1}{2}$); *T. tenuifolia* (2); *Zinnia elegans* (bu; 2).

PERENNIALS.—*Abronia arenaria* (le, sc; $\frac{1}{2}$ -1 $\frac{1}{2}$); *Amicia Zygomis* (splashed p; 8); *Arctotis acanthis* (y and r; $\frac{1}{2}$); *A. grandiflora* (o; 1 $\frac{1}{2}$); *A. reptans* (o and w; $\frac{1}{2}$); *A. speciosa* (1 $\frac{1}{2}$); *Calceolaria amplicaulis* (1 $\frac{1}{2}$); *C. Fothergillii* ($\frac{1}{2}$ - $\frac{1}{2}$); *C. varieties*; *Centaurea ragnina* (2); *Collinsonia asiatica* (pa; 2-3); *Cypella Horbertii* (1); *Gladiolus purpureo-aureus* (go, blotched p; 3-4); *G. varieties* (1-3); *Hedychium Gardnerianum* (le; 3-5); *Lilium japonicum* (tinged p outside; 4-5); *L. Kramerii* (tinged r, sc; $\frac{1}{2}$); *Neja gracilis* (1); *Othonnopsis cheirifolia* ($\frac{1}{2}$ -1); *Sarracenia flava* (2); *Satyrium corifolium* (1); *Tigridia pavonia* (go-o; 1-2); *Tropaeolum tricolorum Regelianum*; *Viola pedunculata* (d); *Zephyranthes Andersoni* (go or br; $\frac{1}{2}$).

Tender.—ANNUALS.—*Oxalis Barrelieri* (c-h, spotted c; $\frac{1}{2}$ -1); *Salpiglossis sinuata* vars. (c-h; 2); *Thunbergia alata aurantiaca* (st, d); *Torenia flava* (st, p eye; $\frac{1}{2}$ - $\frac{1}{2}$); *Waiteia aurea* (c-h, go or tinged br; 1-2); *W. nivea* (c-h, pa y, pi, or w; 1 $\frac{1}{2}$).

PERENNIALS.—*Acineta densa* (c-h, le, dotted br, sc); *A. Humboldtii* (c-h, str, dotted br; 1); *Aechmea calyculata* (st, bracts r; $\frac{1}{2}$); *Aechynomene aspera* (st; 6-8); *Aglaonema pictum* (st, 1-2); *Albuca angolensis* (c-h; 3); *A. aurea* (c-h, pa; 2); *A. flaccida* (c-h, pa, g keel; 2); *Amomum angustifolium* (st, chr or r; 8); *Angræcum citratum* (st, pa; or c); *A. Kotschy* (st, pa, spur r, sc); *Anguloa Clowesii* (c-h, go, lip w, sc; 1 $\frac{1}{2}$); *Anigozanthus flavidus* (c-h, g-y; 3); *A. pulcherrimus* (c-h; 3); *Ansellia africana* (st, spotted br-r; 2); *A. a. gigantea* (st, pa, barred br, sc; 2); *A. a. nilotica* (st, spotted br-r); *Aspasia ependroides* (st, pa; 1); *A. papilionacea* (st, marked br and v; $\frac{1}{2}$); *Babiana stricta sulphurea* (c-h, pa, or c; $\frac{1}{2}$); *Begonia Pearcei* (i-h; 1); *B. xanthina* (i-h, go; 1); *B. varieties* (i-h); *Bifrenaria aurantiaca* (st, o; $\frac{1}{2}$); *Blandfordia aurea* (c-h, go; 1-2); *B. flammæa* (c-h; 2); *B. nobilis* (c-h, o, margined y; 2); *Bomarea Caldasiana* (c-h, o-y, spotted r); *Brassavola glauca* (i-h, lip o, throat w; 1); *Brassia antherotes* (i-h, marked bk-br and br); *B. caudata* (i-h, marked br, 1); *B. Lanceana* (i-h, blotched br, sc; $\frac{1}{2}$); *B. L. macrostachya* (i-h, spotted br, sc; $\frac{1}{2}$); *B. Lawrenceana* (i-h, marked br and g, sc; 1); *B. L. longissima* (i-h, o and pa, marked p; 1); *B. maculata guttata* (i-h, y-g and y, blotched br; 1); *Bromelia Fernandezæ* (st, bracts o-r; 2); *Brunsvigia Cooperi* (i-h, su, edged r; 1 $\frac{1}{2}$); *Bulbine aloides* (c-h; 1); *B. caulescens* (c-h; 2); *Bulbophyllum Lobbiani* (st, spotted p; $\frac{1}{2}$); *B. siamense* (st, striped p); *Calanthe Petri*

Yellow (Tender Perennials)—continued.

(st, pa); *C. Sieboldii* (st; 1); *Calceolaria plantaginea* (c-h; 1); *C. varieties* (c-h); *Callipsyche aurantiaca* (c-h, go; 2); *C. mirabilis* (c-h, g-y; 3); *Calochortus Benthami* (c-h; $\frac{1}{2}$ - $\frac{1}{2}$); *C. luteus* (c-h, y and g; 1); *C. pulchellus* (c-h; 1); *Camaridium ochroleucum* (st, pa; 1); *Canarina Campanula* (c-h, o or y-p; 3-4); *Canistrum aurantiacum* (st, o); *Canna Dupute Henon* (st, pa; 4); *C. zebrina* (st, o; 6-8); *Caragana Van Volxemii* (st; 2-3); *C. Zahnii* (st, pa; 1); *Cataetum callosum* (st, br-y; 1); *Cattleya amethystoglossa sulphurea* (i-h, y and c, spotted p; 2-3); *C. citrina* (i-h, le; 1); *C. Dowiana* (i-h, n, lip p, pi, and y); *C. Trianae volutina* (i-h, pa o, marked v and p, se); *Centrosolenia bullata* (st, str); *Chondrorhyncha Chestertonii* (st); *C. fimbriata* (st, su, spotted br); *Chysis aurea* (st, marked r; 1); *C. ohlsonii* (st, n, marked pi and r; 1); *C. laevis* (st, lip blotched r; 1); *Cirrhæa Loddigesii* (st, g-y, marked r; $\frac{1}{2}$); *Cirrhopetalum aureum* (st, str, marked go and r; $\frac{1}{2}$); *C. Medusa* (st, pa str, dotted pi; $\frac{1}{2}$); *C. Thoursarii* (st, dotted r; 1); *Cleistanoma* (st, su, o, and go, marked br); *Coslogyne plantaginea* (i-h, g-y, lip w and br; 1 $\frac{1}{2}$); *C. Schillioriana* (i-h, lip blotched p; $\frac{1}{2}$); *Costus Malortianus* (st, go, banded o-r; 1-3); *Curouma australasica* (st); *C. cordata* (st, r-y; 1); *C. petiolata* (st, pa; 1 $\frac{1}{2}$); *Cyanocheilus aureum* (st, pa; 1); *C. Lehmanni* (st, o, sepals pi); *Cypripedium Druryi* (st, lip spotted y; $\frac{1}{2}$); *Cyrtocilium citrinum* (st, c); *Dendrobium aggregatum* (c-h, d; $\frac{1}{2}$); *D. Aphrodite* (c-h); *D. aureum* (c-h, lip marked br and p; 1); *D. Brymerianum* (st; 2); *D. chrysanthum* (c-h, d, r blotch; 1); *D. chrysothis* (st, go and o; 2-6); *D. clavatum* (st, r spot; 1-3); *D. crassinode* (st, marked p and o); *D. Dalhousianum* (st, bu and le, marked r and pi; 3-5); *D. densiflorum* (st; 1); *D. erythro-xanthum* (st, o, striped p; 3-4); *D. fimbriatum* (st, o; 2-4); *D. f. oculatum* (st, o, blotched p or r; 2-4); *D. Jenkinsii* (c-h, bu and pa); *D. luteolum* (c-h, pa; 1-2 $\frac{1}{2}$); *D. macrophyllum* (st, g-y, lip marked p); *D. suavisimum* (st, br-p blotch; 1); *Epidendrum alatum majus* (c-h, pa, lip striped p); *E. aurantiacum* (st, o, lip striped r; 1); *E. falcatum* (st, g-y and y, sc; 2); *Fragaria indica* (c-h, go); *Galaxia ovata* (c-h; $\frac{1}{2}$); *Galeandra Baneri lutea* (st, lip lined p; $\frac{1}{2}$); *Goissorrhiza inflexa* (c-h, spotted p; 1 $\frac{1}{2}$); *Gladiolus varieties* (c-h; 1-3); *Globba aethrauguinea* (st, bracts r; 1-1 $\frac{1}{2}$); *G. Schomburgkii* (st, go, lip o-r nt base; $\frac{1}{2}$ -1); *Gloxinia varieties* (st); *Gongora maculata* (st, spotted pi-r; 1 $\frac{1}{2}$); *Gynura aurantiaca* (c-h, o; 2-3); *Hedychium flavosum* (st, sc; 2-3); *H. flavum* (c-h a-aq, o, sc; 3); *Holiceonia psittacorum* (st, o; 3); *Hippenstrum equestre fulgida* (i-h, o, margined w; 1); *H. e. major* (i-h, o, starred g; 1); *H. e. flore-pleno* (i-h, o; 1); *Hyacinthus varieties* (c-h, sc; $\frac{1}{2}$ -1); *Imantophyllum Gardeni* (c-h, r-o or y; 1-2); *I. miniatum* (st, d o, bu below; 1-2); *Isoloma hondense* (st, r-hairy; 1); *Ixia maculata* (c-h, o; 1); *I. odorata* (c-h, sc; 1); *Lachenaia Nelsoni* (c-h, go); *Laelia xanthina* (i-h, go, lip w and o; $\frac{1}{2}$); *Limnorchis Plumieri* (i-h aq; 1 $\frac{1}{2}$); *Littonia modesta* (i-h, o; 2-6); *Lycaste aromatica* (st); *Lycoris aurea* (c-h, go, 1); *Manulea rubra* (c-h, go; 1-2); *Maranta concinna* (st); *Masdevallia Davisii* (c-h, o); *M. ionocharis* (c-h, w-y, blotched p; $\frac{1}{2}$); *Microstylis calophylla* (st); *M. discolor* (st, turning o); *Miltonia flavescens* (i-h, lip spotted r); *Mimulus luteus* (c-h; $\frac{1}{2}$ -1); *Mormodes Oceana* (st, o; 1); *M. pardinum* (st, spotted br); *Musschia aurea* (c-h, go; 1-2); *Nelumbium luteum* (c-h aq, sc); *Odontoglossum cristatum* (c-h, marked br or p); *O. Lindenii* (c-h; 2-3); *O. Londeboroughianum* (c-h, pa); *O. Schillerianum* (c-h, marked br and p); *O. Wilckeanum* (c-h, pa, blotched br); *Oncidium ampliatum* (st); *O. calanthum* (i-h, lip stained r); *O. Cavendishianum* (st); *O. concolor* (c-h, go); *O. cornigerum* (c-h, spotted r); *O. divaricatum* (i-h, y, marked br; 1 $\frac{1}{2}$); *O. excavatum* (i-h, go, marked br); *O. flexuosum* (i-h, spotted br); *O. Marshallianum* (i-h, go, marked br); *O. oblongatum* (i-h); *O. rupestre* (i-h, go, spotted br; 2); *O. varicosum Rogersii* (i-h, go); *O. Warszewiczii* (c-h, go, lip marked w and br); *Ornithogalum thyrsoides* (c-h; $\frac{1}{2}$ -1 $\frac{1}{2}$) and vars.; *Peristeria pendula* (st, pa, spotted v and

Yellow (Tender Perennials)—continued.

br; 1); *Phaius Walliohii* (*i-h*, *o* or *bu*, tinged *p*; 4-5); *Phormium Cookianum* (*c-h*; 3-6); *P. tenax* (*c-h*, *y* or *r*; 6) and vars.; *Physalis peruviana violacea* (*c-h*, spotted *p* at base; 3); *Pitcairnia xanthocalyx* (*st*; 1½-2); *Pogonia Fordii* (*i-h*, nerved *br*, lip *w*); *Prepusa Hookeriana* (*c-h*, *pa*; 1); *Primula Boveana* (*c-h*; ½); *P. floribunda* (*c-h*, *y*; ½); *P. verticillata simensis* (*c-h*; 1-1½); *Richardia melano-leuca* (*c-h*, *pa*, *bk-p* spot at base, spadix *w*; 1½); *Saccolabium acutifolium* (*st*, lip *pa* *pt*); *S. bigibbum* (*st*, lip *w* and *y*); *Sandersonia aurantiaca* (*c-h*, *o*; 1½); *Scuticaria Steelii* (*st*, *pa*, lip marked *br-r* and *o*); *Sedum sarmentosum* (*c-h*); *Sompervivum aureum* (*c-h*; 1); *Sinningia conspicua* (*st*, marked

Yellow (Tender Perennials)—continued.

p; 1); *Sparaxis tricolor* (*c-h*, *o* and *y*, spotted *bk*; 1-2); *S. varieties* (*c-h*); *Spathoglottis Fortunei* (*st*, lip blotched *r*); *S. Lobbii* (*st*, *su*, marked *br*); *S. pubescens* (*st*, lip marked *v*); *Stenomesson vitellinum* (*i-h*; 1); *Stylidium spathulatum* (*c-h*, *pa*; 1½); *Tillandsia Saundersii* (*st*, *su*; 1½); *T. splendens* (*st*, bracts *p*); *Tritonia crocata* (*c-h*, *pa*; 2); *Tropæolum Lobbianum* (*c-h*, *o*); *T. peregrinum* (*c-h*); *Turnera ulmifolia* (*st*; 2-4); *Utricularia bifida* (*c-h*); *Villarsia parnassifolia* (*c-h*; 1-2); *V. reniformis* (*c-h*; ½-3); *Wachendorffia thyrsiflora* (*c-h*; 2); *Warrea tricolor* (*st*, *pa*, lip *p* and *w*; 2); *Zephyranthes citrina* (*i-h*; ½-1); *Zygo-petalum citrinum* (*i-h*, lip marked *bk* and *r*).



SHRUBS AND SUB-SHRUBS.

IN gardens of any pretensions Shrubs are indispensable, both for indoor and for outdoor cultivation. A Shrubbery is now generally considered a necessary item in any large establishment, and the best subjects, both evergreen and deciduous, may be chosen by means of the following lists. The height attained by the various species is in most cases appended to the description, the figures denoting feet: this should be found of much service to persons desirous of making a selection of Shrubs for massing, or for growing as isolated specimens on lawns, &c. By means of this information, suitable plants can also be chosen to serve as a background to herbaceous borders, and for similar purposes.

A good list of tender evergreens is given, and will be found useful when selecting plants for the winter decoration of Conservatories and other Glass-houses.

For borders, some of the dwarf-growing, hardy evergreens here enumerated are especially desirable in winter, as in such positions there are then very few herbaceous subjects showing signs of growth, with the exception of bulbous plants such as *Crocus*, *Galanthus*, &c.

The lists of Deciduous and Evergreen Climbers will be of service where it is desired to cover walls or dead tree-trunks, or to form arbours, screens, &c.; and the Trailers may prove of use for planting in Rockeries, or for interspersing with erect-growing subjects in Shrubberies, &c.

For full information as to the general treatment of Shrubs, the reader is referred to the article "Shrubs and Shrubberies" in Vol. III.

The following are the abbreviations employed:—

aq., aquatic; *b.*, blue; *bk.*, black; *br.*, brown; *c.*, cream; *c-h.*, cool-house; *fl.*, flowers; *fol.*, foliage; *fr.*, fruit; *g.*, green; *gl.*, glaucous; *gy.*, grey; *i-h.*, intermediate-house; *l.*, lilac; *m.*, magenta; *mv.*, mauve; *o.*, orange; *p.*, purple; *pi.*, pink; *r.*, red; *s-aq.*, semi-aquatic; *sc.*, scented; *si.*, silvery; *st.*, stove; *v.*, violet; *w.*, white; *y.*, yellow.

Where not otherwise specified, the leaves are green. Plants of a sub-shrubby nature are here indicated by an asterisk.

DECIDUOUS.—Hardy.—*Acana microphylla** (*fl g* and *r*; $\frac{1}{2}$); *A. millefolia**; *A. myriophylla** ($\frac{1}{2}$ -1); *A. pulchella** (*fol* bronzy); *Acer circinatum* (*fl r*; *fol r* in autumn; 5-6); *A. heterophyllum* (4); *A. japonicum* vars. (*fl p-r*; $1\frac{1}{2}$ -3); *A. opulifolium* (8); *A. o. obtusatum*; *A. palmatum* vars.; *Adenocarpus hispanicus* (*fl y*; 2-4); *A. intermedius* (*fl y*; 3-4); *A. parvifolius* (*fl y*; 3-4); *A. telonensis* (*fl y*; 2-4); *Alyssum saxatile** (*fl y*; 1) and var.; *A. serpyllifolium** (*fl y*; 4); *Amelanchier vulgaris* (*fl w*; 3-9); *Amorpha canescens* (*fl b*; 3); *A. fruticosa* (*fl b-p*; 6); *Amygdalus incana* (*fl r*; 2); *A. nana* (*fl pi*; 2-3); *Artemisia Abrotanum* (*fl y*; *fol sc*; 2-4); *Asimina triloba* (*fl p* and *y*; 10); *Azalea arborescens* (*fl r*; 10-20); *A. calendulacea* (*fl y, r, o*, and *br*; 2-6); *A. nudiflora* (*fl r-pi*; 3-4); *A. pontica* (*fl y*; 4-6); *A. speciosa* (*fl r* and *o*; 3-4); *A. viscosa* (*fl w, sc*; 2-4) and var.; *Retula fruticosa* (*fl w-br*; 5-6); *R. nana* (*fl w-g*; 1-3); *B. pumila* (*fl w*; 2-3); *Culophaca wolgarica* (*fl y*; 2-3); *Calycanthus floridus* (*fl p, sc*; 4-6); *C. glaucus* (*fl p*; 4-6); *C. laevigatus* (*fl p*; 3-6); *C. occidentalis* (*fl r, sc*; 6-12); *Calycotome spinosa* (*fl y*; 5-6); *Caragana frutescens* (*fl y*; 2-3); *C. jubata* (*fl w*, suffused *r*; 1-2); *C. spinosa* (*fl y*; 4-6); *Cephalanthus occidentalis* (*fl w-y*; 7); *Cerasus pseudo-cerasus* (*fl w*; *fr r*; 6-10); *Chimonanthus fragrans* (*fl w* or *y* and *p, sc*); *Chionanthus virginica* (*fl w, sc*; 10-30); *Clematis aromatica* (*fl v-b, sc*; 4-6); *Clethra acuminata* (*fl w, sc*; 10-15); *C. alnifolia* (*fl w*; 3-4); *C. paniculata* (*fl w, sc*; 3-4); *C. tomentosa* (*fl w*; 3-4); *Colutea arborescens* (*fl y*; 6-10); *C. cruenta* (*fl r-y*; 4-6); *Comptonia asplenifolia* (*fl w*; 3-4); *Cornus paniculata* (*fl w*; 4-8); *C. sanguinea* (*fl g-w*; 6-8); *C. sericea* (*fl w*; 5-8); *C. stricta* (*fl w*; 8-15); *Corylopsis spicata* (*fl y, sc*; 3-4); *Corylus Avellana* vars.; *C. tubulosa* vars.; *Cotoneaster vulgaris* (*fl r*; *fr r*; 3-5); *Crataegus Crus-galli ovalifolia* (*fl w*; 10-20); *C. C.-g. prunifolia* (*fl w*; 15-20); *C. Douglasii* (*fl w*; 10-15); *C. flava* (*fl w*; 12-20); *C. heterophylla* (*fl w*; 10-20); *C. nigra* (*fl w*; 10-20); *C. odoratifolia* (*fl w, sc*; 10-20); *C. orientalis* (*fl w*; 12-20); *C. Oxyacantha* (*fl w*, sometimes *pi, sc*; 10-20) and vars.; *C. tuncetifolia* (*fl w*; 12-20); *Cydonia (Pyrus) japonica* (*fl r*; 5-6); *C. (Pyrus) Maulei* (*fl r*); *Daphne Mezereum* (*fl r*; 3-4); *Deutzia corymbosa* (*fl w*; 5); *D. crenata* (*fl w*; 4-8); *D. gracilis* (*fl w*; 1-2); *Diervilla grandiflora* (*fl pi*; 8) and vars.; *D. rosea* (*fl pi* or *w*; 6) and vars.; *Dimorphanthus mandshuricus* (6-10); *Diroca palustris* (*fl y*; 2-5); *Enkianthus japonicus* (*fl w*; *fol* becoming *y-o*); *Euonymus atropurpureus* (*fl p*; 6-14); *E. europæus* (*fl g-w*; 6-20); *E. latifolius* (*fl w* to *p*; 6-8); *Forsythia suspensa* (*fl y*); *F. viridissima* (*fl y*; 10); *Fothergilla alnifolia* (*fl w, sc*; 3-6); *Fromontia californica* (*fl y*; 6-10); *Gordonia pubescens* (*fl w, sc*; 4-6); *Halimodendron argenteum* (*fl p*; 4-6); *Hamelis virginica* (*fl y*; 12); *Hibiscus syriacus* (6) and vars.; *Hippophae rhamnoides* (*fl y*; 2-20); *Hydrangea hortensis* (2-3) and vars.; *H. paniculata grandiflora* (*fl w*); *Hypericum calycinum* (*fl y*; 1); *Iberis Tenoreana** (*fl p* or *w*; $\frac{1}{2}$); *Kerria japonica* (*fl o-r*; 3-4); *Leycesteria formosa* (*fl w*, tinged *pi*; 4-6); *Lonicera tatarica* (*fl pi*; 4-6); *Magnolia parviflora* (*fl w*, tinged *pi*); *Microglossa albosenoens** (*fl b* or *w*); *Nuttallia cerasiformis* (*fl w*; 5); *Ononis rotundifolia** (*fl pi*; 1-1 $\frac{1}{2}$); *Pæonia Moutan* (*fl* variable; 3); *Parrotia persica* (*fol* becoming *o* or *y* and *g*; 10); *Pavia alba* (*fl w*; 3-9); *P. californica* (*fl w* or *pi*, *sc*; stamens *o*; 12-15); *Philadelphus coronarius* (*fl w, sc*; 2-10); *P. Gordonianus* (*fl w*; 10); *P. grandiflorus* (*fl w, sc*; 10); *P. hirsutus* (*fl w*; 3); *P. inodorus* (*fl w*; 4-6); *Potentilla fruticosa* (*fl y*; 2); *Prunus cerasifera* (*fl w*); *P. Pissardi* (*fl w*); *P. triloba* (*fl w* or *pi*; 6); *Pyrus arbutifolia* (*fl w* or tinged *p*; 2-10); *P. Aria* (*fl w*; 4-40); *P. Chamæmospilus* (*fl r*; 5-6); *P. floribunda* (*fl pi-r*); *P. Toringo* (*fl w* or tinged *pi*); *Rhododendron dahuricum* (*fl pi*; 3); *Rhodora canadensis* (*fl pi-p*, rarely *w*; 2-4); *Rhus Cotinus* (*fl p* or *pi-w*; 6-8); *R. glabra* (*fl g-y* or *g-r*; 5-18) and var.; *R. typhina* (*fl g-y*; 10-30); *Ribes aureum* (*fl y*; 5-8); *R. floridum* (*fl w*; *fr bk*; 4); *R. gracile* (*fl w*; *fr p*; 4-5); *R. Grossularia* (*fl g*; *fr*; 4); *R.*

Deciduous (Hardy)—continued.

lacustre (*fl g-y*; 4); *R. nigrum* (*fl g*; *fr bk*; 5); *R. oxyacanthoides* (*fl g*; *fr r* and *g*, or *p-b*; 2-3); *R. rubrum* (*fl g*; *fr r*; 4); *R. sanguineum* (*fl pi*; *fr p*, with *gl* bloom; 4-8); *R. speciosum* (*fl r*; *fr r*; 6-8); *Robinia hispida* (*fr pi*; 3-8); *Rosa acicularis* (*fl w-pi, sc*; 8); *R. alba* (*fl w* or *w-pi, sc*; 4-7); *R. alpina* (*fl pi* or *pi-r*; 3); *R. blanda* (*fl pi*; 1-3); *R. bracteata* (*fl w*; 2); *R. canina* (*fl* usually *pi*; *fr r*; 6-8); *R. centifolia* (*fl pi-p, sc*; 3-6); *R. c. muscosa* (*fl pi* or *w*); *R. damasceana* (*p w* or *r, sc*; 2-4); *R. gallica* (*fl r*; 2-3); *R. hemisphaerica* (*fl y*; 3); *R. indica* (*fl r*; 4-20); *R. lucida* (*fl r*; 1-2); *R. lutea* (*fl y*; 3); *R. mollis pomifera* (*fr r*); *R. nitida* (*fl r*; *fol* becoming *p*; 2); *R. rubiginosa* (*fl pi*; 5; plant *sc*); *R. rugosa* (*fl r*; *fr o-r* to *r*; 4); *Rubus biflorus* (*fl w*; 5); *R. deliciosus* (*fl p*; 3); *R. spectabilis* (*fl r*; *fr r*; 6-10); *Salix phylicifolia* (10); *Sambucus racemosa* (*fl w*; *fr r*); *Spartium juncum* (*fl y, sc*; 6-10); *Spiræa Douglasii* (*fl pi*; 3); *S. Lindleyana* (*fl w*; 4-8); *S. prunifolia flore-pleno* (*fl w*; 8); *Staphylea colchica* (*fl w*; 3-5); *S. pinnata* (*fl w*; 6-12); *Stuartia pentagyna* (*fl c*; 10); *S. virginica* (*fl w*; 8); *Styrax grandifolia* (*fl w*; 6); *Symphoricarpos occidentalis* (*fl w*, tinged *pi*); *Syringa Emodi* (*fl p* or *w*; 6); *S. Josikæa* (*fl b-p*; 5-10); *S. vulgaris* (*fl r, b*, or *w*; 8-20); *S. v. alba* (*fl w*; 12-15); *Tamarix gallica* (*fl w* or *pi*, 5-10); *T. parviflora* (*fl pi*); *Vaccinium corymbosum* (*fl w* or *pi*; *fr b-bk*; 5-10); *V. formosum* (*fl r-pi*; *fr b*; 2-3); *V. pennsylvanicum* (*fl w* or *pi*; *fr b-bk, gl*; $\frac{1}{2}$ -1); *V. stamineum* (*fl p* or *y-g*; *fr g* or *y*; 2-3); *Viburnum dentatum* (*fl w*; *fr b* or *p*; 5-10); *V. dilatatum* (*fl w*; 10); *V. macrocephalum* (*fl w*; 20); *V. Opulus* (*fl w* or *c-w*; *fr r*; 6-8); *V. O. sterilis* (*fl w*); *V. plicatum* (*fl w*; 4-6); *V. prunifolium* (*fl w*; 6); *Zenobia speciosa* (*fl w*; 2-4).

Half-hardy.—*Aseyrum Crux-Andræ* (*fl y*; 1); *Clematis Viorna coccinea* (*fl r* and *y*; 5-6); *Coronilla minima** (*fl y, sc*); *Gaylussacia frondosa* (*fl g-p*; *fr b*; 3-6); *G. resinosa* (*fl r*; *fr bk*, rarely *w*; 1-3); *Hydrangea quercifolia* (*fl w*; 4-6); *H. Thunbergii* (*fl b* or *pi*; 2-3); *Ononis arragonensis* (*fl y*; 1-2); *Piper Futeokadsura* (*fl g*; *fr r*); *Vaccinium Mortinia* (*fl pi*; 2-3); *Viburnum odoratissimum* (*fl w, sc*; 6-10); *Vitex Agnus-castus* (*fl l*; 6).

Tender.—*Abelia rupestris* (*c-h, fl r-pi, sc*; 5); *Barnadesia rosea* (*c-h, fl pi*; $1\frac{1}{2}$); *Capparis spinosa* (*c-h, fl w*); tinged *r*; 3); *Chenostoma linifolia** (*c-h, fl w* and *y*; 1); *Clerodendron Bothuanicum* (*st, fl r*, spotted *w* and *p*; 10); *C. fallax* (*st, fl r*); *C. foetidum* (*c-h, fl, l-pi*; 5); *C. fragrans* (*c-h, fl w*; 6); *C. f. flore-pleno* (*c-h, fl w*, suffused *pi, sc*; 6); *C. squamatum* (*st, fl r*; 10); *Fuchsia corymbiflora* (*c-h, fl r*; 4-6); *F. dependens* (*c-h, fl r*; 2-4); *F. simplicifolia* (*c-h, fl pi-r*); *F. splendens* (*c-h, fl r* and *g*; 6); *Gordonia anomala* (*c-h, fl c*; 3); *Moltkia petraea** (*c-h, fl pi-p*, becoming *v-b*; $1\frac{1}{2}$ -2); *Paoyipodium succulentum* (*c-h, fl r* and *w*; 1); *Solandra (Dissochroa) viridiflora* (*st, fl g*; 2-3).

EVERGREEN.—Hardy.—*Adenostoma fasciculata* (*fl w*; 2); *Ammodendron Sieversii* (*fl p*; 2); *Anthylla erinacea* (*fl b-p*; $\frac{1}{2}$ -1); *Arbutus Unedo* (*fl w*; *fr r*; 8-10); *Artemisia argentea* (*fl y*; $1\frac{1}{2}$); *A. caerulea* (*fl b*; 2); *Astragalus Tragacantha* (*fl v*; $1\frac{1}{2}$ -3); *Aucuba himalaica* (*fr*); *A. japonica* (*fol* spotted *y*; 6-10); *Azalea ledifolia* (*fl w*; 2-6); *Azara microphylla* (*fl g*; *fr o*; 12); *Bambusa Fortunei* (*fol g*; 1-2); *Benthama fragifera* (*fl w*; 10-15); *Berberis Darwinii* (*fl o*; 2); *Boleum asperum* (*fl c*; $\frac{1}{2}$ -1); *Bupleurum frutescens* (*fl y*; 1); *B. fruticosum* (*fl y*; *fol g*; 3-6); *Buxus sempervirens* vars.; *Calluna vulgaris* vars.; *Cassandra angustifolia* (*fl w*; 1-2); *C. calyculata* (*fl w*; 1-3); *Cassiope tetragona* (*fl w*; $\frac{1}{2}$ -2); *Ceanothus dentatus* (*fl b*; 4-6); *C. floribundus* (*fl b*; 4); *C. Veitchianus* (*fl b*; 3); *Cerasus Lanroceranus* (*fl w*; 6-10) and vars.; *C. lusitanica* (*fl w*; 10-20); *Chamaecyparis obtusa nana*; *C. o. plumosa* (15-20); *C. o. p. albo-piotta* (branchlets *w*); *C. o. p. argentea* (*fol c-w*, turning *g*); *C. o. p. aurea* (*fol y*, turning *g*); *C. squarrosa* (*fol gl-g* above).

Evergreen (Hardy)—continued.

gl-banded beneath; 4-6); *Chimaphila corymbosa** (*fl g-w*, tinged *r*; 4-4); *C. maculata* (*fl w*; *fol* banded *w* above, *r* beneath); *Cineraria maritima* (*fl y*; *fol* *si*-downy; 2); *Convolvulus Cnorum* (*fl pi*; *fol* *si*-tomentose; 1-3); *Coriaria myrtifolia* (*fl g*; 4-6); *Cotoneaster buxifolia* (*fl w*; 3-4); *C. microphylla* (*fl w*; 3-4); *C. thymifolia* (*fl pi*; *fol* *si*-*w* beneath; 1); *Crataegus Pyracantha* (*fl w*; *fr r*; 10-20); *Cupressus Goveniana* (*fl y*; 15-20); *C. MacNabiana* (*fol*; 10-15); *Daphne pontica* (*fl g-y*, *sc*; 4-5); *Dendromecon rigida* (*fl y*); *Dorycnium suffruticosum* (*fl w* and *r*; 2-3); *Eleagnus longipes* (*fr o*; *fol* *si*-*w* beneath; 3); *E. macrophylla* (*fl g-y*; *fol* *si*-scaly; 6); *E. pungens* (*fl y*; *fol* *si* beneath; 6); *Empetrum nigrum* (*fl pi*; anthers *r*; 4-1) and var.; *Erica carnea* (*fl pale r*; 4); *E. ciliaris* (*fl r*; 1); *E. scoparia* (*fl g*; 2, 3); *E. vagans* (*fl p-r*; 1); *Fabiana imbricata* (*fl w*; 3); *Frankenia pulverulenta* (*fl r*; 4); *Garrya elliptica* (*fl g-w* or *y*; 8-10); *Gaultheria procumbens* (*fl w*; *fr r*); *G. Shallon* (*fl w*, tinged *r*; *fr p*; 2); *Iberis correaefolia* (*fl w*; 1); *I. saxatilis* (*fl w*; 4-4); *I. sempervirens* (*fl w*; 4-1); *I. s. Garreuxiana* (*fl w*; 4-3); *Ilex Aquifolium* vars. (*fol* variegated); *I. cornuta*; *I. crenata*; *I. dipyrrena* (12); *I. latifolia* (20); *I. opaca* (20-40); *Indigofera Gerardiana* (*fl r*; *fol* *gy-g*, *gl* below); *Juniperus chinensis* vars.; *J. communis* vars.; *J. occidentalis* (*fol gl* when young; 10-50); *J. phoenicea* (*fol*; 15-18); *Kalmia angustifolia* (*fl p* or *r*; 2-3); *K. glauca* (*fl l-p*; *fol gl-w* beneath; 1-2); *K. latifolia* (*fl pi* to *w*; 3-10); *Lavandula vera* (*fl b*, rarely *w*; 1-2); *Ledum latifolium* (*fl w*; *fol* *br*-tomentose beneath; 1-3); *L. palustre* (*fl w*; *fol* *br*-tomentose beneath; 2); *Leiophyllum buxifolium* (*fl w* and *pi*; 4-1); *Leucothoë axillaris* (*fl w*; 2-3); *L. Davisia* (*fl w*; 3-5); *L. racemosa* (*fl w*; 4-10); *Ligustrum japonicum* (*fl w*, *sc*; 6-8); *L. lucidum* (*fl w*; 8-12); *L. Massalongianum* (*fl w*, *sc*; 6); *L. ovalifolium* (*fl w*) and var.; *Linum tauricum* (*fl w*; 14); *Lonicera fragrantissima* (*fl w*, *sc*; 6); *Lupinus arboreus* (*fl y*, *sc*); *Magnolia glauca* (*fl w*, *sc*; *fol gl* below; 15); *Margyricarpus setosus* (*fr w*; 2-4); *Olearia Haastii* (*fl w*; *fol w* beneath); *Osmanthus Aquifolium* (*fl w*, *sc*; 6); *O. fragrans* (*fl y* or *w*; 6-10); *Pernettya furens* (*fl w*; 3); *P. mucronata* (*fl w*; 6); *P. pilosa* (*fl w*; 4); *Phillyrea Vilmoriniana* (*fl w*); *Phlomis frutescens* (*fl y*; 2-4); *Pieris floribunda* (*fl w*; 2-6); *P. japonica* (*fl w*); *Quercus ilex* and vars.; *Rhododendron Anthopogon* (*fl g-y*; 1-14); *R. caucasicum* (*fl pi*, and *w* spotted *g*; 1); *R. ciliatum* (*fl r-p*; 2); *R. Clivianum* (*fl w*, tinged *pi*, and dotted *p-r*; 4); *R. ferrugineum* (*fl r*, dotted *gy* or *y*; *fol* *br*-dotted beneath; 1); *R. Fortunei* (*fl pi*, *sc*; *fol gl* below; 12); *R. hirsutum* (*fl r*; *fol* *br*-dotted beneath; 1-2); *R. Metternichii* (*fl pi*); *Rhodothamnus Chamæcistus* (*fl pi*; 4); *Rhodotypos kerrioides* (*fl w*; 15); *Rosmarinus officinalis* (*fl w* or *b-p*; 2-4); *Salvia ringens* (*fl r-p*; 1-2); *Skimmia japonica* (*fl w*, *sc*; *fr r*; 3-4); *S. Laureola* (*fl y*, *sc*; *fol y* beneath; 4); *S. oblata* (*fr r*); *S. rubella* (*fl g-w*; buds tinged *r*); *Spiræa cantoniensis* (*fl w*; 3-4); *Taxus baccata adpressa* (*fol gl* beneath; 6-8); *T. cuspidata* (*fol y-g* beneath; 15-20); *Thuya occidentalis* *Elwangeriana* (*fol*); *T. orientalis* (*fol*; 18-20); *Veronica pinguifolia* (*fl w*; 4-4); *V. Traversii* (*fl w*; 24); *Viburnum Tinus* (*fl w*; *fr b*; 8-10); *V. T. lucidum* (*fl w*).

Half-hardy.—*Adenocarpus foliolosus* (*fl y*; 4-6); *A. frankenioides* (*fl y*; 1-3); *Arotostaphylos nitida* (*fl w*; 1-4); *A. pungens* (*fl w*; 1); *Azara Gillesii* (*fl y*; 15); *A. integrifolia* (*fl y*; 18); *Buddleia globosa* (*fl o*; 15-20); *Buxus balearica* (*fol y-g*; 15-20); *Cassia corymbosa* (*fl y*; 6-10); *Ceanothus cuneatus* (*fl b* or *w*; 4); *C. integerrimus* (*fl w*; 3-6); *C. rigidus* (*fl p-b*; 5-6); *Cedronella triphylla* (*fl w* or *p*; *fol* *sc* when rubbed; 3-4); *Ceratiola ericoides* (*fl br*); *Chamaebatia foliolosa* (*fl w*; 2-3); *Cheiranthus mutabilis* (*fl c*, turning *p*, or striped; 2-3); *Cistus albidus* (*fl p* and *y*; 2); *C. crispus* (*fl r-p*; 2); *C. heterophyllus* (*fl r* and *y*; 2); *C. hirsutus* (*fl w*, marked *y*; 2); *C. ladaniferus* (*fl w*; 4); *C. l. maculatus* (*fl w*, spotted *r*); *C. latifolius* (*fl w*, spotted *y*; 3); *C. laxus* (*fl w*, spotted *y*; 3);

Evergreen (Half-hardy)—continued.

C. longifolius (*fl w*, marked *y*); *C. monspeliensis* (*fl w*; 4); *C. m. florentinus* (*fl w*, *y* at base; 3); *C. oblongifolius* (*fl w*, spotted *y*; 4); *C. obtusifolius* (*fl w*, spotted *y*; 1-14); *C. psilosepalus* (*fl w*, marked *y*; 2-3); *C. purpureus* (*fl r-p*; 2); *C. rotundifolius* (*fl p*, marked *y*; 1); *C. salviifolius* *Corbariensis* (*fl w*; 2); *C. vaginatus* (*fl pi*; 2); *C. villosus* (*fl r-p*; 3); *C. v. canescens* (*fl p*, marked *b* and *y*; 2); *Cordylina australis* (*fl w*, *sc*; 10-40) and var.; *Corokia Cotoneaster* (*fl y*, *sc*); *Coronilla glauca* (*fl y*, *sc*; 2-4); *Embothrium euccineum* (*fl o-r*; 3); *Escallonia floribunda* (*fl w*; 10); *E. macrantha* (*fl r*; 3-6); *E. organensis* (*fl pi*; *fol* margined *r*; 2-4); *E. rubra* (*fl r*; 3-6); *Euonymus fimbriatus* (*fl w*; 12); *E. japonicus* (*fl w*; 20); *Eurya japonica latifolia variegata* (*fl w*; *fol* variegated *y*); *Fabiana japonica* and vars.; *F. papyrifera* (*fl g*; 6-8); *Geranium anomonifolium* (*fl p-r*; 1-2); *Grindelia glutinosa* (*fl y*; 2); *Hudsonia ericoides* (*fl y*; 1); *Hypericum ampetrifolium* (*fl y*; 4-1); *H. Hookerianum* (*fl y*; 2); *Iberis gibraltaria* (*fl w*, suffused *pi* or *r*; 1-2); *I. sempervirens* (*fl w*, *sc*; 1-2); *Illicium anisatum* (*fl y-w*, *sc*; 4); *I. floridanum* (*fl r*, *sc*; 6); *Indigofera decora alba* (*fl w*); *Linum arboreum* (*fl y*; 1); *L. flavum** (*fl y*; 1-14); *Lupinus mutabilis** (*fl w* and *b*, changing to *b* and *y*; 5); *Mathiola bicornis** (*fl p-r*); *Myrtus communis* (*fl w*; 3-10) and vars.; *Olearia dentata* (*fl pi-w*; 3); *O. Gunniana* (*fl w*; 3-5); *Phillyrea media* (*fl w*; 10-15); *Photinia japonica* (*fl w*; *fr o-r*; 10-20); *P. serrulata* (*fl w*; 10-20); *Pieris formosa* (*fl w*); *Piptanthus nepalensis* (*fl y*; 10); *Pittosporum crassifolium* (*fl br-p*; 4-10); *P. Tobira* (*fl w*, *sc*; 12); *P. undulatum* (*fl w*; 10); *Plagianthus Lampenii* (*fl y-w*; 6-8); *Reaumuria hypericoides* (*fl p*; 2); *Rhododendron campanulatum* (*fl l* spotted *p*, or *pi*; *fol gy*-powdery below; 4); *R. cinnabarinum* (*fl br-r*); *R. glaucum* (*fl pi-p*; *fol* beneath *gl*, nearly *w*; 2); *R. lepidotum* (*fl y* or *p*, dotted *g*; anthers *r-br*; 2-4); *R. Maddeni* (*fl w*, tinged *w-pi*; 6-8); *R. Veitchianum* (*fl w*; *fol gl* and *r* or *br* scaly beneath; 6); *Stachyurus præcox* (*fl y-g*; 10); *Sutherlandia frutescens* (*fl r*; 3); *Veronica Andersonii* (*fl b-v*; 14); *V. elliptica* (*fl w*; 5-10); *V. Hulkeana* (*fl l*; 1-3); *Zauschneria californica* (*fl r*; 1).

Tender.—*Abelia floribunda* (*c-h*, *fl pi-p*; 3); *A. triflora* (*c-h*, *fl y*, tinged *pi*; 5); *Abutilon insignis* (*c-h*, *fl p-r*; 6); *A. striatum* (*c-h*, *fl o-y*, striped *r*; 10); *A. vittifolium* (*c-h*, *fl b*; 30); *A. varietalis* (*c-h*); *Acacia affinis* (*c-h*, *fl y*; 5); *A. albicans* (*c-h*, *fl w*; 5); *A. armata* (*c-h*, *fl y*; 6-10); *A. brachybotrya* (*c-h*, *fl y*; 8); *A. cultiriformis* (*c-h*, *fl y*; 4); *A. cuneata* (*c-h*, *fl y*; 6); *A. dealbata* (*i-h*, *fl w*; 10-20); *A. Drummondii* (*c-h*, *fl y*; 10); *A. glauca* (*c-h*, *fl w*; 5-10); *A. grandis* (*c-h*, *fl y*; 6); *A. heterophylla* (*c-h*, *fl y*; 5); *A. hispidissima* (*c-h*, *fl w*; 3-6); *A. linearis* (*c-h*, *fl y*; 3-6); *A. longifolia* (*c-h*, *fl y*; 10); *A. lunata* (*c-h*, *fl y*; 2-4); *A. mollissima* (*c-h*, *fl y*; *fol y*-downy; 10-20); *A. oxycedrus* (*c-h*, *fl y*; 6-10); *A. platyptera* (*c-h*, *fl y*; 3); *A. pubescens* (*c-h*, *fl y*; 6-10); *A. pulchella* (*c-h*, *fl y*; 2-3); *A. Riceana* (*c-h*, *fl y*; 20); *A. sphærocephala* (*st*, *fl y*); *A. verticillata* (*c-h*, *fl y*; 6-10); *A. vestita* (*c-h*, *fl y*; 4); *A. viscidula* (*c-h*, *fl y*; 6); *Aciotis discolor* (*i-h*, *fl r*; *fol p* beneath; 1); *Acmadena tetragona* (*c-h*, *fl w*; 1-2); *Acmena floribunda* (*c-h*, *fl w*; *fr p*; *fol* dotted; 4); *A. ovata* (*c-h*, *fol p*); *Acradenia Franklinii* (*c-h*, *fl w*; *fol* *sc*; 8); *Acriolcarpus natalitius* (*i-h*, *fl y*); *Acronychia Cunninghamii* (*c-h*, *fl w*, *sc*; 7); *Acrophyllum venosum* (*c-h*, *fl pi-w*; 6); *Acrotiche cordata* (*c-h*, *fl w*; 1); *A. divaricata* (*c-h*, *fl w*; 4-1); *Adonandra amena* (*c-h*, *fl w* and *r*; 1-2); *A. fragrans* (*c-h*, *fl pi*, *sc*; 1-2); *A. marginata* (*c-h*, *fl pi*; 1-2); *A. umbellata* (*c-h*, *fl pi*; 1-2); *A. u. speciosa* (*c-h*, *fl pi*; 1-2); *A. uniflora* (*c-h*, *fl w*, *pi* outside; 1-2); *A. villosa* (*c-h*, *fl pi*; 1-2); *Adenanthos barbiger* (*c-h*, *fl r*; 7); *A. obovata* (*c-h*, *fl r*; 5); *Adesmia glutinosa* (*c-h*, *fl y*; 1-2); *A. microphylla* (*c-h*, *fl y*; 1-2); *Adina globiflora* (*i-h*, *fl y*; 3-4); *Aegiphila grandiflora* (*st*, *fl y*; *fr b*; 3); *Æchyananthus atrosanguinea* (*st*, *fl r*, *sc*; 14); *Æ. Boschianus* (*st*, *fl r*, *sc*; 1); *Æ. cordifolius* (*st*, *fl r*, *bk*, and *o*, *sc*; 1); *Æ. fulgens* (*st*, *fl r* and *o*, *sc*;

Evergreen (Tender)—continued.

1); *Æ. grandiflorus* (st, fl r and o, sc; 5); *Æ. longiflorus* (st, fl r, sc); *Æ. miniatus* (st, fl r, sc; 1½); *Æ. speciosus* (st, fl o, sc; 2); *Æ. splendidus* (st, fl r and bk, sc; 1); *Æ. tricolor* (st, fl r, o, and bk, sc; 1); *Æschynomomo sensitiva* (st, fl w; 3-6); *Agapetes buxifolia* (st, fl r, 5); *Agastachys odorata* (c-h, fl y, sc; 3); *Agathosma acuminata* (c-h, fl v; 1-2); *A. bruniades* (c-h, fl l or w; 1-2); *A. ciliata* (c-h, fl w; 1-2); *A. oreata* (c-h, fl v; 1-2); *Allimanda nerifolia* (st, fl y, streaked o; 3); *Alloplectus peltatus* (st, fl w; 1); *A. zamorensis* (st, fl y and o-r; 1); *Alona celestis* (c-h, fl b; 2); *Alonsona albiflora* (c-h, fl w and y; 1½-2); *A. incisifolia* (c-h, fl r; 1-2); *Alsodeia latifolia* (st, fl w; 6); *Andersonia sprengeloides* (c-h, fl pi; 1-3); *Angophora cordifolia* (c-h, fl y; 7-10); *A. lanceolata* (c-h, fl w; 4-6); *Aniomeles furcata* (c-h, fl w, r, and p; 4-6); *Anona glabra* (st, fl b; fol sc; 16); *A. muricata* (st, fl g and y, sc; fol sc; 15); *Anopterus glandulosa* (c-h, fl w, tinted pi; 3); *Anthocercis allianis* (c-h, fl w, marked b-p, sc; 1½-2); *A. viscosa* (c-h, fl w; 4-6); *Anthospermum athiopicum* (c-h, fl b, g, 2-3); *Anthyllis Barba-Jovis* (c-h, fl y; 4-8); *Aotus gracillima* (c-h, fl y and pi; 3); *Aphelandra aurantiaca* (st, fl o-r; 3); *A. n. Boevidii* (st, fl r; fol dark g, shaded si); *A. cristata* (st, fl o-r; 3); *A. fuscinator* (st, fl r; fol banded si-w; 1½); *A. Leopoldi* (st, fl g-y; fol g and w); *A. nitens* (st, fl r; fol g and p; 2-3); *A. Portogana* (st, fl o; fol g and si-w; 2); *A. pumila* (st, fl o; ½); *A. punctata* (st, fl y; fol marked w); *A. variegata* (st, fl y; 1½); *Aphelaxis oricoides* (c-h, fl w; 1); *A. humilis* (c-h, fl pi; 2) and vars.; *Ardisia crenulata* (st, fl r-v; fr r; 3-6); *A. japonica* (c-h, fl w; 1); *A. macrocarpa* (c-h, fl w-pi; fr r; 5-6); *A. paniculata* (st, fl pi; fr r; 8-10); *A. serrulata* (st, fl r; 2-3); *Aristolochia ciliosa* (st, fl p-y; 6); *A. Duchartrei* (st, fl br and c; 5); *A. floribunda* (st, fl p-r and y; 10); *A. labiosa* (st, fl g; 20); *A. ornithocephala* (st, fl p, gy, and b; 20); *A. ringens* (st, fl g, marked bk-p; 20); *A. tricandata* (st, fl p-br); *Artabotrys odoratissimus* (st, fl r-br, sc; 6); *Astolma eximium* (c-h, fl r; 3); *Ayastasia chelonoides** (st, fl r-p and w; 3-4); *A. macrophylla* (st, fl pi-p and w; 8-20); *A. violacea* (st, fl v-p, striped w; 1-2); *Athanasia capitata* (c-h, fl y; 1½); *Athrixia capensis* (c-h, fl r; 3); *Azalea indica* (c-h, fl r. 3-6) and vars.; *Babiningtonia Camphorase* (c-h, fl pi-w; 7); *Bacchonia myrtifolia* (c-h, fl w; 16); *Backea diosmifolia* (c-h, fl w; 1-2); *B. frutescens* (c-h, fl w; 2-3); *B. virgata* (c-h, fl w; 2-3); *Bambusa arundinacea* (st, fol light g; 50-60); *B. aurea* (c-h, fol turning y; 6-10); *B. nana* (i-h, fol gl; 6-8); *Banksia collina* (c-h, fol si beneath; 6-8); *B. dryandioides* (c-h, fol r-br beneath; 6); *B. occidentalis* (c-h, fl y); *B. Solanderi* (c-h, fol si-w beneath; 6); *B. speciosa* (c-h, fol si-w beneath; 6); *Barbieria polyphylla* (st, fl r); *Barleria flava* (st, fl y; 3); *Barosma dioica* (c-h, fl p; 1-2); *B. puleholla* (c-h, fl r or p; 1-3); *B. serratifolia* (c-h, fl w; 1-3); *Bauera rubioides* (c-h, fl r or pi); *Buhinia natalensis* (st, fl w); *B. variegata* (st, fl r, w, and y; 20); *Befaria astuans* (c-h, fl p; fol gl beneath; 10-15); *B. glauca* (c-h, fl pi-w; fol gl beneath; 3-6); *B. ledifolia* (c-h, fl p; 3-4); *Begonia coccinea* (st, fl and peduncles r; 1-2); *B. erinita* (st, fl pi; fol edged dark g; 1); *B. dædalea* (st, fl pi and w; fol g, marked br, r when young; 2); *B. Kuntliana* (st, fl w; fol dark g above, r below; 2); *B. Lindloyana* (st, fl w; 3); *B. longipes* (st, fl w; 3); *B. Lynebianna* (st, fl r); *B. maculata* (st, fl r; fol g, blotched si-w above, r below); *B. magnifica* (st, fl pi); *B. Manni* (st, fl pi-r; 2); *B. nitida* (st, fl pi; fol glossy g; 4-5); *B. opuliflora* (st, fl w; 2); *B. platanifolia* (st, fl w, tinted pi; fol dark g; 5-6); *B. prestoniensis* (st, fl o-r, sc; 2); *B. ramentacea* (st, fl pi and w; fol r beneath; 1); *Berkheya grandiflora* (c-h, fl y; 2); *Bertolonia marmorata* (st, fol bright g, streaked w above, p below; ½); *B. pubescens* (st, fol light g and br; ½); *Berzelia lanuginosa* (c-h, fl w; 1-2); *Boesleria grandiflora** (st, fl spotted r; 3); *Bignonia speciosa* (st, fl pi, marked p; 4); *Blæria articulata* (c-h, fl r; 1); *Bocconia frutescens* (st, fl g; 3-6); *Bobera inœana* (c-h, fl y; 1½); *Borbonia barbata* (c-h, fl y; 3-4); *B. orenata* (c-h, fl y; 3-6); *Boronia*

Evergreen (Tender)—continued.

orenulata (c-h, fl r; 1-4); *B. Drummondii* (c-h, fl pi; 2); *B. elatior* (c-h, fl pi, sc; 4); *B. megastigma* (c-h, fl br-p and y, sc; 1); *B. plumata* (c-h, fl pi, sc; 1-3); *B. serrulata* (c-h, fl pi, sc; 1-6); *Bossiea disticha* (c-h, fl y-r; 1½); *B. linnæoides* (c-h, fl y and br); *B. linophylla* (c-h, fl o and p; 1-4); *B. rhombifolia* (c-h, fl r, and br-p; 1-3); *Bouvardia angustifolia* (i-h, fl r; 2); *B. flava* (i-h, fl y; 1½); *B. Humboldtii corymbiflora* (i-h, fl w, sc); *B. jasminiflora* (i-h, fl w, sc); *B. leiantha* (i-h, fl r; 2); *B. longiflora* (i-h, fl w; 2-3); *B. triphylla* (i-h, fl r; 2-3); *Brachychiton Bidwillii* (c-h, fl r); *Brachylæna nerifolia* (c-h, fl y; 2); *Brillantaisia owariensis* (st, fl v-b; 3); *Brongnartia podalyrioides* (c-h, fl p; 1); *B. sericea* (c-h, fl p; 1); *Browallia Jamesoni* (c-h, fl o; 4); *Brownia coccinea* (st, fl r; 6-10); *B. racemosa* (st, fl pi; 4); *Brocnea sumatrana* (st, fl p; 20); *Brunfelsia acuminata* (st, fl b-v; 1-2); *B. americana* (st, fl y, changing to w, sc; 4-6); *B. calycina* (st, fl p; 2); *B. eximia* (st, fl p; 2½); *B. hydrangeiformis* (st, fl b-v; 1-3); *B. Lindeniana* (st, fl p); *Brunia nodiflora* (c-h, fl w; 1-3); *Buddleia asiatica* (st, fl w, sc; 3); *Bunchosia argentea* (c-h, fl y; fol si beneath; 10); *B. odorata* (c-h, fl y, sc; 7); *Burchellia capensis* (st, fl r; 3-5); *Bursaria spinosa* (c-h, fl w; 10); *Burtonia conferta* (c-h, fl v; 2); *B. scabra* (c-h, fl p; 2); *Butea superba* (st, fl r); *Byrsonia chrysohylla* (st, fl y; fol r-y downy beneath; 14); *B. lucida* (st, fl pi; 8); *Cajanus indicus* (st, fl y or spotted p; 6-10); *Calceolaria bicolor** (c-h, fl y and w; 2-3); *C. fuchsiasfolia* (c-h, fl y; 1-2); *C. hyssopifolia* (c-h, fl y and w; 1-2); *C. violacea* (c-h, fl v; 2); *Calliandra Tweedii* (st, fl r; 6); *Callistemon linearis* (c-h, fl r; 4-6); *C. speciosus* (c-h, fl r; fol, when young, r; 5-10); *Calotropsis gigantea* (st, fl pi and p; 6-15); *Calycephyllum candidissimum* (st, fl w; 30); *Calythrix tetragona* (c-h, fl w; 2); *Camellia japonica* (c-h, fl various; 20) and vars.; *C. oleifera* (c-h, fl w, sc; 6-8); *Camoensia maxima* (st, fl c and y); *Candollea euneiformis* (c-h, fl y; 7); *Cantua buxifolia* (c-h, fl r; 4); *C. pyrifolia* (c-h, fl y-w; 3); *Capparis amygdalina* (st, fl w; fol under surface, and branches, dotted si; 6); *C. odoratissima* (st, fl v, sc, anthers y; 6); *Curoya arborea* (st, fl w, stamens r; 30-60); *Carlundoua atrovirens* (st, fol deep y); *C. Drudei* (st, fl w; fol deep g; 4); *C. palmata* (st, fol dark g; 4-6); *C. Wallisii* (st, fl w, sc); *Carmichaelia australis* (c-h, fl l; 2-4); *Cassia alata* (st, fl y; 6); *C. tomentosa* (st, fl y; 5-7); *Cassinia denticulata* (c-h, fl y; 6-8); *Ceanothus azureus* (c-h, fl b; 10); *Colastrus lucidus* (c-h, fl w; 1-3); *Centradonia rosea* (st, fl pi; 1); *Cephaelis tomentosa* (st, fl br; bracts r; 4); *Ceratostema speciosum* (c-h, fl o-r); *Cercocarpus fothergilloides* (c-h, fl p; 12); *Cestrum aurantiacum* (c-h, fl o; 4); *C. fasciculatum* (c-h, fl p-r; 5); *C. Newelli* (c-h, fl r; 6); *C. rosoum* (c-h, fl pi; 4); *Chetogastra strigosa* (c-h, fl pi-p; 1); *Chiococlea racemosa* (st, fl w, unscented, becoming y and sc; 4-6); *Chirita Moonii** (st, fl p; 2); *Chionanthos stoechadis* (c-h, fl g-y; 2); *Chomelia spinosa* (st, fl w, sc at night; 8-12); *Chorizoma angustifolium** (c-h, fl o-r; 1½); *C. cordatum** (c-h, fl r or y; 3); *C. diversifolium** (c-h, fl o-r; 2); *C. Henchmannii** (c-h, fl r; 2); *C. varium** (c-h, fl y and r; 4); *Citrus medica* (i-h, fl w, sc; fr y, sc; 8-16); *C. nobilis* (i-h, fl w, sc; fr r; 15); *Cleome gigantea* (st, fl w-g, filaments pi, anthers y; 6-12); *Clorodendron fallax* (st, fl r); *C. Thomsonæ* (st, fl r and w); *Cneorum pulverulentum* (c-h, fl y; 1-3); *Codium albicans* (st, fol g, variegated w, tinted r beneath); *C. angustissimum* (st, fol g, marked y); *C. aucubæfolium* (st, fol g, blotched y or r); *C. Baron Franck Seillière* (st, fol g, when adult pi beneath; nerves y, turning w); *C. chelsoni* (st, fol variegated pi-o, shaded r); *C. Crown Prince* (st, fol marked y); *C. Disraeli* (st, fol marked y); *C. Dodgsonæ* (st, fol marked y); *C. Earl of Derby* (st, fol suffused r; stems, petioles, and mid-rib y); *C. elegans* (st, fol marked r or y and pi above, mottled p below); *C. Evansianum* (st, fol g, veined and dotted y, changing to bronzy-r, veined and dotted o-r); *C. gloriocum* (st, fol variegated c-y); *C. Goldiei* (st, fol marked y);

Evergreen (Tender)—continued.

C. Hawkeri (st, fol c-y, margined g); C. Hillebrandii (st, fol above p-g veined r, below p veined r); C. Hookerianum (st, fol blotched and veined y); C. imperator (st, fol marked c-w); C. insigne (st, fol marked y and r); C. irregulare (st, fol marked y); C. Jamesii (st, fol sage-g, marked c-w, g, and y); C. Johannis (st, fol marked o-y); C. majesticum (st, fol, when young, g, ribbed y, becoming deep olive, ribbed r); C. medium variegatum (st, fol marked y); C. Mrs. Dorman (st, fol striped o-r); C. Nevillii (st, fol olive-g, marked y when young; when older, metallic-g, marked r, shaded o); C. Pilgrimii (st, fol marked y, suffused pi); C. princeps (st, fol g, marked y, becoming bronzy-g, marked pi-r); C. Queen Victoria (st, fol y, mottled g and margined pi); veins m, changing to r); C. spirale (st, fol when young, g, marked y; when mature, bronzy-g with r midrib); C. superbians (st, fol at first g marked y, finally b-bronze, r-br, and r); C. tricolor (st, fol, upper surface g and y, lower surface r-g); C. triumphans (st, fol g, marked y, becoming g-bronze; midrib r); C. undulatum (st, fol p blotched r; midrib p); C. Veitchii (st, fol above g, margined and veined pi, beneath p); C. volutum (st, fol veined y); C. Warrenii (st, fol mottled and suffused o-y and pi, which changes to r); C. Weismanni (st, fol marked y); C. Williamsii (st, fol, upper surface banded y; midrib and primary veins m, changing to v-r; under surface r); C. Youngii (st, fol, upper surface marked y and pi-r; under surface r); Coffea arabica (st, fl w, sc; 5-15); Coeleboribunda (st, fl y-w; 10); Colquhounia tomentosa (c-h, fl o-r); Columnea aurantiaca (st, fl o and y-g); C. aureo-nitens, st, fl o-r); C. erythrophœa (st, fl r; 2); C. Kalbreyeriana (st, fl y, marked r; fol r beneath); Comarostaphylis arbutoides (c-h, fl w; 6); Conocarpus erectus (st, fl w); Coprosma Baueriana picturata (c-h, fol blotched y and c-w); C. B. variegata (c-h, fol margined w); Cordia decandra (c-h, fl w, sc; 3); Cordyline albicans (st, fol bordered w); C. albo-rosea (st, fol edged pi, when young w); C. amabilis (st, fol marked pi and c-w); C. amboynensis (st, fol, lower half edged r-pi); C. Baptistii (st, fol margined and striped y and pi; stem variegated); C. canna-folia (st); C. chelsoni (st, fol bk-g, marked r); C. Cooperii (st, fol r); C. Duffii (st, fol margined and barred r); C. excolta (st, fol margined r); C. Fraseri (st, fol bk-p marked pi-r); C. gloriosa (st, fol, when mature, marked bronzy-o); C. Guilfoylei (st, fol striped r, pi, y-w, and g); C. indivisa and vars. (c-h); C. lutescens-atriata (st, fol y-g beneath); C. Macarthuri (st, fol pi and olive-g); C. magnifica (st, fol bronzy-pi); C. metallica (st, fol br-p, becoming p-bronze); C. Mooreana (st, fol bronzy p; midrib r); C. nigro-rubra (st, fol br and r-pi); C. ornata (st, fol bronzy g, margined pi); C. pulchella (st, fol bronze, edged r); C. Rex (st, fol bronzy g, flushed pi-p, streaked r-pi); C. splendens (st, fol bronzy g; when young marked pi); C. terminalis (st, fol dark g and r); C. triumphans (st, fol bk-p, gl beneath; when young marked pi); C. Weismanni (st, fol when young br-r, tinged c-w, changing to bronze, margined r); C. Youngi (st, fol streaked r and tinged pi, changing to bronze); Correa cardinalis (c-h, fl r and g; 3); C. Harrisii (c-h, fl r); C. pulchella (c-h, fl pi; 6); Cossignia pinnata (st, fl w; fol veined o-y beneath; 10-20); Cowania mexicana (c-h, fl y; 1-6); C. plicata (c-h, fl r; 1-2); Crassula arborescens (c-h, fl pi; fol gl; 2-3); C. coccinea (c-h, fl r; 1-3); C. ericoides (c-h, fl w; ½); C. falcata (c-h, fl r, rarely w; 3-8); C. jasminea (c-h, fl w, becoming r); C. lactea (c-h, fl w; 1-2); C. versicolor (c-h, fl r and w, sc); Crossandra guineensis (st, fl l; fol nerved y above, r beneath); Crotalaria canjanifolia (c-h, fl y; 4-6); C. Cunninghamii (c-h, fl y-g, marked p; whole plant gl; 3); Crowea angustifolia (c-h, fl r; 1-3); C. saligna (c-h, fl pi; 1-2); Curatella americana (st, fl w; 10); Cyanophyllum magnificum (st, fol above velvety g, veined w, beneath r-p); Daphne odora (c-h, fl p, sc; 3) and var.; Darwinia fimbriata (c-h, fl pi; 1-2); C. macrostegia (c-h, fl w, y, and r; 2-3); Datura arborea

Evergreen (Tender)—continued.

(c-h, fl w; 7-10); D. meteloides (c-h, fl b-v or w); D. suaveolens (c-h, fl w, sc; 10-15); Dianthus arbusculus (c-h, fl p-r; 1½); Dillwynia ericifolia (c-h, fl y); D. hispida (c-h, fl r); Diosma ericoides (c-h, fl w, tinged r; 1-3); Dipladenia amabilis (st, fl pi-r; 10); D. amœna (st, fl pi); D. boliviensis (st, fl w); D. Broerleyana (st, fl pi, changing to r); D. diadema (st, fl pi); D. hybrida (st, fl r); D. insignis (st, fl pi-p); D. nobilis (st, fl pi-p, changing to o-r); D. Regina (st, fl r, changing to pi-w); D. splendens profusa (st, fl r); Dombeya Burgessii (st, fl w, marked pi; 10); D. Mastersii (st, fl w, sc); Drawana concinna (st, fol margined p-r; 6); D. Goldiana (st, fl w; fol banded dark g and si-gy); D. Lindoni (st, fol banded c-w and y); D. phrynioides (st, fol spotted y); D. sarculosa maculata (st, fl y; fol spotted y); Dracocephalum capitatum (c-h, fl w; fol tipped r; 1-1½); D. gracile (c-h, fl w, sc); Dryandra armata (c-h, fl y; 2-4); D. nivea (c-h, fol w beneath; 2-3); D. pteridifolia (c-h, fl y; 1½); Duranta Plumieri (st, fl b; 6-15); Echium fastuosum (c-h, fl b; 2-4); Elæocarpus grandiflora (st, fl r, w, and y; 7); Elæodendron capense (c-h, fr y; 18); Enkianthus quinqueflorus (c-h, fl r and pi; 3-10); Epaœria impressa (c-h, fl varying from w to r; 2-3); E. longiflora (c-h, fl r and w; 2-4); E. pulchella (c-h, fl r or pi; 1-3); E. purpurascens (c-h, fl w, tinged r; 2-3); Ephedra nebrodensis (c-h, fl w; 3-4); E. vulgaris (c-h, fl w; 1-2); Eranthemum albo-marginalatum (st, fol margined w, suffused g); E. aspersum (st, fl w, spotted p); E. atropurpureum (st, fol and stems dark p); E. cinnabarinum (st, fl r-pi); E. pulchellum (st, fl b; 2); E. reticulatum (st, fol notted y); E. tuberculatum (st, fl w); Erica Aitoniana (c-h, fl r or nearly w; 2); E. ampullacea (c-h, fl r; 2); E. andromedæifera (c-h, fl r or r-p; 1-3); E. aristata Barnesii (c-h, fl r and w); E. Austriana (c-h, fl w, marked r); E. Beaumontiana (c-h, fl w, tinged p; 1); E. Bergiana (c-h, fl p; 1½); E. Bowiana (c-h, fl w; fol gl; 1); E. canfra (c-h, fl w, sc; 1½); E. Candolleana (c-h, fl r-pi and w); E. Cavendishiana (c-h, fl y; 1½); E. cerinthoides (c-h, fl r; 3); E. Chamissonis (c-h, fl pi; 1½); E. colorans (c-h, fl varying from r to w; 2); E. ochriflora (c-h, fl r; 1½); E. elegans (c-h, fl pi and g; fol gl; ½-1); E. eximia (c-h, fl r and y; 2); E. Fairiana (c-h, fl pi and w); E. gracilis (c-h, fl p-r; 1); E. g. vernalis (c-h, fl p-r; 2-3); E. grandiflora (c-h, fl y; 3); E. hybrida (c-h, fl r); E. Ilyemalis (c-h, fl pi and w; 2); E. Irbyana (c-h, fl w, tinged r; 1-2); E. jasmiflora (c-h, fl r; 1-2); E. Lambertiana (c-h, fl w; 1-2); E. Linnaiana (c-h, fl w and r; 1½); E. Marnockiana (c-h, fl p); E. Massonii (c-h, fl r and g-y; 3); E. McNabiana (c-h, fl pi-r and w); E. melan-thora (c-h, fl tinged pi; anthers bk; 2); E. odorata (c-h, fl w, sc; 1); E. Parmentieriana (c-h, fl r-p; 1); E. perspicua nana (c-h, fl w and pi-w); E. physodes (c-h, fl w; 1-2); E. primuloides (c-h, fl pi-p; 1); E. propendens (c-h, fl p or r; 1); E. rametacea (c-h, fl p-r; 1½); E. rubro-calyx (c-h, fl w and r-p); E. Savileana (c-h, fl r or p-r; 1); E. Shannoni (c-h, fl w, tinged p; 1-2); E. tricolor (c-h, fl r, w, and g-y; 2) and vars.; E. ventricosa coccinea minor (c-h, fl w and pi); E. v. grandiflora (c-h, fl pi-p); E. v. tricolor (c-h, fl pi, r, and w); E. vestita (c-h, fl w; 3) and vars.; E. Victoria (c-h, fl p and w); E. Westphalingia (c-h, fl pi-r); E. Wilmoreana (c-h, fl pi); Eriostemon buxifolius (c-h, fl pi; 1-2); E. intermedium (c-h, fl w, suffused pi; 3); E. myoporoides (c-h, fl pi; 1-2); E. nerifolius (c-h, fl pi; 3); E. scaber (c-h, fl w, tinged pi; 1½); Eupatorium atrorubens (c-h, fl r, shaded l); E. ianthinum (c-h, fl p; 3); E. riparium (c-h, fl w); E. Weinmannianum (c-h, fl w, sc); Eutaxia myrtifolia (c-h, fl y; 2-6); Fagraea auriculata (st, fl y); Faramœa odoratissima (st, fl w, sc; 6); Ficus Brasili (st); F. Chanvieri (c-h); F. Cooperi (st); F. dealbata (c-h, fol w beneath); F. diversifolia (c-h, fol dotted br above); F. eburnea (c-h, fol veined w); F. elastica (c-h, fol y-g beneath); F. exsculpta (st); F. macrophylla (c-h), F. Parcelli (st, fol blotched w); Fittonia

Evergreen (Tender)—continued.

*gigantea** (st, fl r; fol veined r; 1½); *F. Verschaffeltii** (st, fol veined r); *F. V. argyronera* (st, fol veined w); *F. V. Pearcei* (st, fol veined r, gl beneath); *Fouquieria formosa* (st, fl r; 6-10); *Fuchsia apetala* (c-h, fl r and y; 1-2); *F. fulgens* (c-h, fl r; 4-6); *F. macrostema* (c-h, fl r; 6-12) and vars; *F. microphylla* (c-h, fl r; 2); *F. penduliflora* (st, fl r); *F. thymifolia* (c-h, fl r; 4-6); *F. triphylla* (st, fl r; fol p beneath; 1-2); *Galphimia glauca* (st, fl y; 8); *Gardenia florida* (st, fl w, sc; 2-6); *G. f. Fortunei* (st, fl w, sc); *G. nitida* (st, fl w; 3); *G. radicans major* (st, fl w, sc); *G. Thunbergii* (c-h, fl w, sc; 4-5); *Gastrolobium bilobum* (c-h, fl y; 2); *G. calycinum* (c-h, fl y; 2); *Gaultheria antipoda* (c-h, fl w or pi; 6); *G. ferruginea* (c-h, fl pi); *G. fragrantissima* (c-h, fl w or pi); *Gazania uniflora** (c-h, fl y; 1); *Geisomeria oococinea* (st, fl r; 3); *Gnidia pinifolia* (c-h, fl c-w, sc; 1); *Godoya splendida* (st, fl w, sc; 10); *Goethea Makoyana* (st, bracts r; 2); *G. multiflora* (st, bracts pi or r); *Gomphia olivæformis* (st, fl y; 10-15); *Gomphocarpus fruticosus* (c-h, fl w; 5-7); *Gompholobium grandiflorum* (c-h, fl y; 2); *G. Knightianum* (c-h, fl pi or p; 1); *G. polymorphum* (c-h, fl r, y, and p; 2); *G. venustum* (c-h, fl p; 1-3); *Goodia lotifolia* (c-h, fl y and r; 2-4); *G. pubescens* (c-h, fl y, spotted r; 1-3); *Graptophyllum hortense* (st, fl r; 2); *Grevillea acanthifolia* (c-h, fl r; 4); *G. alpina* (c-h, fl r and y; 4); *G. Banksii* (c-h, fl r; fol w; 15); *G. fasciculata* (c-h, fl r and y; 3-4); *G. lavandulacea* (c-h, fl pi; 5); *G. macrostylis* (c-h, fl r and y; fol si beneath; 1-2); *G. punicea* (c-h, fl r; fol si or r-br beneath; 4); *G. ros-mariniifolia* (c-h, fl r; 4); *G. sericea* (c-h, fl pi; 6); *G. Thelomanniana* (c-h, fl r and y; 3-5); *Grewia occidentalis* (c-h, fl pi; 10); *Guettarda odorata* (st, fl r, sc at night; 6-10); *Gustavia insignis* (st, fl c-w tinged pi; filaments pi; anthers o; 3-4); *G. pterocarpa* (st, fl w; 6); *Hakea cucullata* (c-h; fl r); *H. dactyloides* (c-h, fl w; 7); *H. nitida* (c-h, fl w; 6-8); *H. suaveolens* (c-h, fl w; 4); *Heinsia jasminiflora* (st, fl w; 5-8); *Heliotropium corymbosum* (c-h, fl l; 4); *Hermannia flammea* (c-h, fl o or r; 1-3); *Hibbertia perfoliata* (c-h, fl y; 2); *H. stricta* (c-h, fl y); *Hibiscus marmoratus* (c-h, fl w, mottled pi); *H. rosasinensis* (st; 10-15) and vars.; *H. schizopetalus* (st, fl o-r); *Hoffmannia discolor* (st, fol velvety g above, r-p below; 6); *H. Ghiesbreghtii** (c-h, fol velvety above, r-p below; 2-4); *H. refulgens* (c-h, fl r; fol g suffused r above, r below; 1-2); *Homalomena Koezlii* (st, fol blotched y; 6); *H. Wallisii* (st, fol edged w, blotched y above); *Hovea elliptica* (c-h, fl b; 2-4); *H. pungens* (c-h, fl b; 1-2); *Hypericum baleranicum* (c-h, fl y; 1-2); *Hypocalyptus obovatus* (c-h, fl p; 1-2); *Indigofera australis* (c-h, fl pi; 3-4); *I. decora* (c-h, fl r; 3); *I. tinctoria* (st, fl r; 4-6); *Ioichroma fuchsoides* (c-h, fl o-r; 5); *I. lanceolata* (c-h, fl p-b; 4-5); *Ixora chinensis* (st, fl o-pi); *I. coccinea* (st, fl r; 3-4); *I. Colei* (st, fl w); *I. concinna* (st, fl pi); *I. congesta* (st, o; 4); *I. decora* (st, y and pi-r); *I. Fraseri* (st, fl r and pi); *I. fulgens* (st, fl o-r; 3-4); *I. javanica* (st, fl o; 3-4); *I. macrothyrsa* (st, fl r); *I. Pilgrimii* (i-h, fl o-r); *I. princeps* (st, fl br-w, changing to r-o); *I. regina* (st, fl v-pi); *I. splendens* (st, fl br-r); *I. Williamsii* (st, fl r-pi); *Jacobinia Ghiesbreghtiana* (st, fl r; 1-1½); *Jasminum grandiflorum* (i-h, fl w); *Jatropha podagrica* (st, fl o-r; 1½); *Laobnea buxifolia* (c-h, fl p; 2) and var.; *L. purpurea* (c-h, fl p; 2); *Lagerströmia indica* (st, fl pi; 6-10); *Lambertia formosa* (c-h, fl r; 3); *Leea amabilis* (st, fol, upper surface bronzy g, striped w; lower surface r, striped g); *Leonotis Leonurus* (c-h, fl r; 3-6); *Leschenaultia biloba* (c-h, fl b; 1); *L. formosa* (c-h, fl r; 1); *Leucopogon australis* (c-h, fl w; 2-4); *L. Richei* (c-h, fl w; 3-4); *L. verticillatus* (c-h, fl w or pi; fol pi when young; 3-6); *Libonia floribunda* (i-h, fl r, tipped y); *L. Penrhosiensis* (i-h, fl r); *Lightfootia ciliata* (c-h, fl b; ½); *Lindenia rivalis* (st, fl w and r; 3); *Liparia parva angustifolia* (c-h, fl y); *Lisianthus princeps* (c-h, fl, r, y, and g); *L. pulcher* (c-h, fl r; 5); *Lomatia ferruginea* (c-h; 10); *L. silaifolia* (c-h, fl w; 2); *Luoclia gratissima* (c-h, fl pi, sc; 9-16); *L. Pinceaana* (c-h, fl w, sc); *Macleleania pulchra* (c-h, fl y and r; fol tinged r when young); *M.*

Evergreen (Tender)—continued.

speciosissima (c-h, fl r and y; fol tinged r when young); *Magnolia fuscata* (c-h, fl p, sc; 2-4); *Mahernia incisa* (c-h, fl r, turning o. then y; 2-4); *Mascarenhasia Curvoviana* (st, fl r); *Medinilla amabilis* (st, fl pi); *M. Curtisii* (st, fl w; stamens p); *M. magnifica* (st, fl pi; 3); *Melanthus major* (c-h, fl br); *Moriania rosea* (st, fl varying from w and r to pi and p; 30); *Miconia flammea* (st, fol); *M. Hookeriana* (st, fol olive-g, marked si); *Microcachrys tetragona* (c-h, cones r); *Mimulus glutinosus* (c-h, fl br or pi; 5); *M. g. puniceus* (c-h, fl varying from o-r to r); *Mitriostigma axillare* (st, fl w, sc; 5); *Monochlatum alpestre* (c-h, fl r); *M. Hartwegianum* (c-h, fl pi); *M. Humboldtianum* (c-h, fl r-p); *M. sericeum multiflorum* (c-h, fl mv); *Monsonia speciosa** (c-h, fl pi, p, and g; ½); *Montana bipinnatifida* (c-h, fl y; 6-8); *Morinda jasminoides* (st, fl br; 6); *Muralata Heisteria* (c-h, fl p; 2-3); *Mussaenda luteola* (c-h, fl y; 5-6); *Myrtus bullata* (c-h, fl pi; 10-15); *M. Luma* (c-h, fl w; 3); *M. Ugni* (c-h, fl w; 4); *Nepenthes atrosanguinea* (st, pitchers r, spotted y); *N. bicalcarata* (st, pitchers br-downy when young); *N. oococinea* (st, pitchers r, y, g, and bk); *N. Courtii* (st, pitchers gy-g, spotted r); *N. Dormanniana* (st, pitchers g, blotched r); *N. Hookeriana* (st, pitchers spotted r); *N. intermedia* (st, pitchers g, spotted r); *N. Kennedyana* (st, pitchers r and gl-v); *N. Khasiana* (st, fl g, y; pitchers g, marked p); *N. Lawrenceana* (st, pitchers g, spotted r); *N. madagascariensis* (st, pitchers r and c); *N. Masteriana* (st, pitchers r, pi-c, and p); *N. Morgania* (st, pitchers r and g); *N. Northiana* (st, pitchers spotted p and bk); *N. Rafflesiana* (st, fl and pitchers y and br); *N. Bajah* (st, pitchers p); *N. Ratcliffiana* (st, pitchers g, spotted r); *N. rubro-maculata* (st, pitchers y-g, spotted r); *N. sanguinea* (st, pitchers r); *N. Sedeni* (st, pitchers g, marked br-r); *N. Veitchii* (st, pitchers); *N. Williamsii* (st, pitchers spotted r); *Nerium Oleander* (c-h, fl r; 6-14); *Nicotiana glauca* (c-h, fl y; 10-20); *N. wigandioides* (c-h, fl y-w); *Notospartium Carmichaelii* (c-h, fl pi; 20); *Osbeckia glauca* (st, fl r or p; 2); *O. rostrata* (st, fl pi); *Oxyanthus tubiflorus* (st, fl w; 3-4); *Oxylobium Callistachys* (c-h, fl y; 3-4); *O. cuneatum obovatum* (c-h, fl y, or y and p; 2); *O. ellipticum* (c-h, fl y; 2-3); *O. obtusifolium* (c-h, fl r, o, and y; 1-3); *O. trilobatum* (c-h, fl y; 2); *Ozothamnus rosamarinifolius* (c-h, fl w; 8-9); *Panax diffusum* (st; 2); *P. dumosum* (st; 1-½); *P. laciniatum* (st, fol marked br); *P. plumatum* (st); *P. Victoriae* (st, fol edged w); *Pentapterygium flavum* (c-h, fl y, margined r; 1-3); *P. rugosum* (c-h, fl w, marked p or r; 1-3); *Pentas carnea** (st, fl w-pi; 1½); *P. o. kermesina* (st, fl r-pi, tinged w); *Peroonia ferruginea* (c-h, fl y; 3); *P. longifolia* (c-h, fl y; 10-20); *P. rigida* (c-h, fl y; 3-4); *Petraea arborea* (st, fl b and v; 12); *Petrophila acicularis* (c-h, fl w, r; 2); *Phanocoma prolifera* (c-h, fl r; 4); *Philesia buxifolia* (c-h, fl r; 4); *Phlogoacanthus aperulus* (st, fl p-r; 3); *P. curviflorus* (st, fl y; 3-6); *Phygelius capensis* (c-h, fl r; 3); *Phylia plumosa squarrosa* (c-h, fl w; 2); *Phyllanthus Chantrieri* (st, fl r, y-hairy); *P. pallidifolius* (st, fl r and y); *Phyllostachys nigra* (c-h; 4-25); *Pimelea ferruginea* (c-h, fl pi or r; 1-2); *P. hispida* (c-h, fl w-pi; 2-4); *P. rosea* (c-h, fl pi or w; 2); *P. spectabilis* (c-h, fl w, tinged pi; 3-4); *P. suaveolens* (c-h, fl y; 1-3); *Piper excelsum aureum-pictum* (c-h, fol blotched c); *Pittosporum viridiflorum* (c-h, fl g-y, sc; 6); *Platylobium formosum* (c-h, fl y; 4); *P. triangulare* (c-h, fl y; 1); *Pleroma Benthamicum* (st, fl p; 4); *P. elegans* (st, fl b; 5); *P. sarmentosum** (c-h, fl v or v-p; 1-2); *Podalyria calyptata* (c-h, fl p; 6); *Polygala myrtifolia grandiflora* (c-h, fl p; 4-6); *P. oppositifolia* (c-h, fl p and y-g); *Pomaderris apetala* (c-h, fl g; 3-6); *Portlandia platantha* (st, fl w, tinged r, sc; 10-14); *Posoqueria fragrantissima* (st, fl w, sc); *P. multiflora* (st, fl w, sc); *Prostanthera nivea* (c-h, fl w or tinged b; 3-6); *P. violacea* (c-h, fl b-p; 4); *Protea formosa* (c-h, fl v and pi; fol margined pi; 6); *P. mellifera* (c-h, fl pi or w; 6); *P. pulchella* (c-h, fl r; fol margined bk; 3); *P. Scoulym* (c-h, fl p; 3); *Psammisia Hookeriana* (st, fl pi-r; 1½-2);

Evergreen (Tender)—continued.

P. Jessicum (st, fl r); *Psidium Cattleianum* (st, fl w; 10-20); *Psoralea aculeata* (c-h, fl b and w; 2-3); *P. pinnata* (c-h, fl b; 3-6); *P. jasminiflora* (st, fl w; fol w-tomentose beneath); *Pultenaea obcordata* (c-h, fl y; 2); *P. rosea* (c-h, fl pi; 2); *P. stricta* (c-h, fl y; 1-3); *P. villosa* (c-h, fl y; 1-3); *Rafnia triflora* (c-h, fl y; 2-4); *Regelia ciliata* (c-h, fl r; 3-5); *Reinwardtia trigynum* (i-h, fl y; 2-3); *Rhodo-dendron Aucklandii* (c-h, fl w and y, tinged pi; 4-8); *R. blandfordiaeflorum* (c-h, fl r, or g becoming o-r or r; 8); *R. Brookeanum gracilis* (st, fl y); *R. calophyllum* (c-h, fl w, tinged y-g; fol, under side gl, becoming ferruginous; 3); *R. campylocarpum* (c-h, fl g-y, sc; 6); *R. Edgeworthii* (c-h, fl w, often tinged w-pi or y, sc; 2); *R. formosum* (c-h, fl w, tinged p and y; 3-8); *R. Hookeri* (c-h, fl r; 12-14); *R. jasminiflorum* (c-h, fl w, tinged pi; anthers r; 2); *R. javanicum* (c-h, fl o, spotted r; fol br-scaly dotted beneath; 4); *R. Nuttallii* (c-h, fl w, sc; 12-30); *R. Thomsoni* (c-h, fl r; 6-10); *Rhodomyrtus tomentosa* (c-h, fl pi; 5); *Rhus succedanea* (c-h, fl g-y; fol gl beneath; 10-15); *Rivina humilis* (st, fl w-pi; fr r; 1-2); *R. laevis* (st, fl w-pi; fr r; 7-8); *Roezilia granadensis* (st, fl r-p; 3); *Rondeletia amena* (st, fl pi; 4); *R. cordata* (st, fl pi; 4); *R. gratissima* (i-h, fl pi, sc); *R. odorata* (st, fl r, sc; 3); *R. Purdiei* (st, fl y, sc; 4); *Ruellia Baikei* * (st, fl r; 3); *R. Herbsteinii* (st, fl pi-p and w; fol, upper leaves p beneath; 3); *R. macrophylla* * (st, fl r; 3-4); *R. speciosa* (st, fl r; 20); *Russelia juncea* (st, fl r; 3-4); *R. sarmentosa* (st, fl r; 4); *Salvia albo-carulea* * (c-h, fl w and b; 3); *S. chamaedryoides* (c-h, fl b; 1); *S. confertiflora* * (c-h, fl r and y; 3); *S. fulgens* (c-h, fl r; 2-3); *Sanchezia nobilis* * (st, fl y; bracts r; 1-3); *S. n. glaucophylla* (st, fol gl-g, striped w or y); *Scaevola Koenigii* (c-h, fl r; 2); *Scutellaria Hartwegii* (st, fl r and v; 1-2); *S. Mociniana* (st, fl r and y; 1½); *Selago Gillii* * (c-h, fl pi; 6); *Sempervivum aureum* * (c-h, fl y; fol gl; 1); *S. caurariense* (c-h, fl w; 1½); *S. tabulariforme* (c-h, fl g-y; 1); *Senecio argenteus* * (c-h, fl y; 1-2); *S. chordifolia* * (c-h, fl y; 1); *Sida inaequalis* (st, fl w; 7); *Siphocampylus coccineus* * (st, fl r; 3); *S. manettiaeflorus* * (st, fl r and y; 1); *Solanum acanthodes* (st, fl b-p; 3-6); *S. atropurpureum* * (c-h, fl tinged p and y); *S. Capsicastrum* * (c-h, fr r; 1-2); *S. Pseudo-capsicum* (c-h, fr r, sometimes y; 4); *S. pyracanthum* * (c-h, fl b-r; 3-6); *Sophora secundiflora* (c-h, fl v; 6); *Sphaeralcea elegans* * (c-h, fl veined p; 3); *S. miniata* * (c-h, fl r; 1); *Spiranthera odoratissima* (st, fl w, sc; 6); *Sprengelia incarnata* (c-h, fl p; 2); *S. Ponceletia* (c-h, fl r; 1); *Stachytarpheta mutabilis* * (st, fl r, at length pi; 3); *Stactice arborescens* (c-h, fl b; 2); *Stenanthera pinifolia* (c-h, fl r, y, and g; 2-3); *Steriphoma oleomides* (st, fl y; 6); *Streptocolen Jamesonii* (c-h, fl o; 4); *Strobilantes anisophyllus* * (st, fl b-p; 2-3); *S. glomeratus* * (st, fl p; 2-6); *S. isophyllus* * (st, fl b-p, 1-2); *S. Wallichii* * (st, fl b; ½-2); *Styphelia tubiflora* (c-h, fl r; 5); *Tabernaemontana Barteri* (st, fl w; 6); *T. coronaria* (st, fl w, sc at night; 4); *Tetradlea hirsuta* (c-h, fl pi; ½-1½); *T. pilosa* (c-h, fl p; 1-1½); *Teucrium fruticans* (c-h, fl b; 2-3); *Thomasia macrocarpa* (c-h, fl r; 3); *Thysanactium bracteolatum* (st, fl r; 2); *T. oallistaehyus* (st, fl r; 2); *T. rutilans* (st, fl r; 2); *T. Schomburgkianus* (st, fl r; 3); *Timnea aethiops* (st, fl r-p; 4-6); *Toxicophaea pectabilis* (c-h, fl w, sc; 4-6); *Ursinia crithmitolia* (c-h, fl y; 1-2); *Vaccinium caracasense* (c-h, fl r-w; 4); *V. erythrinum* (i-h, fl r; fol, when young, stained r; 1½); *V. leucobotrys* (c-h, fl w; fr w, spotted; 4-7); *Vitex Lindenii* (st, fl l, streaked r); *Westringia rosmariniformis* (c-h, fl b; fol hoary or si-w beneath; 2); *Whitfieldia lateritia* (st, fl o-r or r; 3); *Zieria Smithii* (c-h, fl w).

DECIDUOUS CLIMBERS.—**Hardy.**—*Actinidia Kolomikta* (fl w; fol turning w and r); *A. volubilis* (fl w); *Ampelopsis quinquefolia* (fl g-p; fol turning r; grown as a climber, but really a creeper); *A. tricuspidata* (fol turning r and y); *Aristolochia Sipho* (fl y-br); *A. tomentosa* (fl p); *Atragea alpina* (fl b, varying to w); *A. americana* (fl p-b); *Berchemia volubilis* (fl g-w); *Celastrus scandens* (fl y);

Deciduous Climbers

Clomatis caerulea (fl v; stamens p) and vars.; *C. Flammula* (fl w, sc); *C. florida* (fl w); *C. Fortunei* (fl w, sc); *C. graveolens* (fl y); *C. lanuginosa* (fl b); *C. paniculata* (fl w, sc); *C. virginiana* (fl w, sc); *C. Vitalba* (fl w, sc); *C. Viticella* (fl b, p, or pi); *Convolvulus Scammonia* (fl c); *Decumaria barbara* (fl w, sc); *Jasminum nudiflorum* (fl y); *Lonicera Caprifolinum* (fl y and b, sc); *L. flava* (fl y, sc); *L. flexuosa* (fl y, sc); *L. Periclymenum* (fl r outside); *Periploca graeca* (fl g and br); *Rosa moschata* (fl y-w); *R. multiflora* (fl w, pi, or p); *Tecoma radicans* (fl r); *Vitæstivalis* (fl g, sc; fr bk); *V. Labrusca* (fl g, sc; fr p or y); *Wistaria chinensis* (fl b); *W. japonica* (fl w).

Half-hardy.—*Bomarea Caldasiana* (fl o-y and r); *B. Carderi* (fl pi and p-br); *B. oligantha* (fl r and y); *B. Shuttleworthii* (fl o-r, g, y, and r); *B. Williamsii* (fl pi); *Clomatis montana* (fl w); *Rosa Banksia* (fl w, sc); *Rubus australis* (fl pi or w, sc).

Tender.—*Aloysia citrodora* (c-h, fl w or l; fol g, sc); *Aristolochia Goldiana* (st, fl g, y, and br); *Batatas bigonioides* (st, fl p); *B. Cavanillesii* (st, fl w-r); *B. paniculata* (st, fl p); *Gonolobus carolinensis* (c-h, fl pi); *Lapageria rosea* (c-h, fl r-pi); *L. r. alba* (c-h, fl w); *L. r. superba* (c-h, fl r); *Solanum jasminoides* (c-h, fl b-w); *Tecoma grandiflora* (c-h, fl r); *Testudinaria elephantipes* (c-h, fl g-y).

EVERGREEN CLIMBERS.—**Hardy.**—

Clomatis crispata (fl l or p); *Hedera Helix algeriensis* (fol y-g); *H. H. aurantia* (fr r-o; fol gy-g); *H. H. chrysoarpa* (fol gy-y); *H. H. Donerailensis* (fol. turning p-br); *H. H. Rognonianna*; *H. H. rhombea* (fol margined c-w); *Jasminum officinale* (fl w, sc); *J. revolutum* (fl y, sc); *Passiflora caerulea* (fr y); *Rosa sempervirens* (fl w, sc); *Smilax aspera* (fl w or pi-w, sc); *S. rotundifolia* (fl g).

Half-hardy.—*Berberidopsis corallina* (fl r); *Bignonia caproata* (fl o); *Clomatis indivisa* (fl w and c); *Giantium puniceus* (fl r); *Escreomarpus longiflorus* (fl y and g); *E. scaber* (fl o or r); *Ficus stipulata*; *Mitraria coccinea* (fl r); *Pentstemon cordifolius* * (fl r); *Smilax aspera mauritanica* (fl y-y, sc); *Tecoma australis* (fl y-w, tinged p or r); *T. capensis* (fl o-r).

Tender. *Abutilon Darwinii* (i-h, fl o); *A. megapotamicum* (c-h, fl r, y, and br); *A. pulchellum* (c-h, fl w); *A. venosum* (c-h, fl o, veined r); *A. varietos* (c-h); *Adelobotrys Lindenii* (st, fl w, turning pi); *Adenocalymnum comosum* (st, fl y); *A. nitidum* (st, fl y); *Adhatoda cydoniifolia* (st, fl w and pi); *Aeschynanthus Lobbianus* (st, fl r, sc); *A. pulcher* (st, fl r, sc); *Aganosma acuminata* (st, fl w, sc); *A. caryophyllata* (st, fl y, tinged r, sc); *A. elegans* (st, fl pi); *A. marginata* (st, fl w, sc); *A. Roxburghii* (l, fl w, sc); *A. Wallichii* (st, fl w, sc); *Akokia quinata* (c-h, fl p-br, sc); *Allamanda Aubletii* (st, fl y); *A. cathartica* (st, fl y); *A. chelsoni* (st, fl y); *A. grandiflora* (st, fl y); *A. nobilis* (st, fl y); *A. Schottii* (st, fl y); *Amerimnon Brownei* (st, fl w, sc); *Amphilophium paniculatum* (st, fl pi); *Anemopaegnum racemosum* (st, fl y); *Antigonon amabilis* (st, fl pi); *A. in-ignis* (st, fl pi); *Argyrea cymosa* (st, fl pi); *A. speciosa* (st, fl pi); *A. splendens* (st, fl r); *Aristolochia odoratissima* (st, fl p, sc); *Asparagus plumosus* (c-h, fl w; fol); *Astephanus triflorus* (c-h, fl w); *Asystasia scandens* (st, fl c); *Banisteria chryso-phylla* (st, fl o; fol y-downy beneath); *B. ciliata* (st, fl o); *B. fulgens* (st, fl y); *B. splendens* (st, fl y); *Baninia corymbosa* (st, fl pi); *Beaumontia grandiflora* (st, fl w and g); *Begonia scandens* (st, fl w; fol whining g); *Besleria coccinea* (st, fl y; bracts r); *Bignonia equinoxialia Chamberlaynii* (st, fl y); *B. Clomatis* (st, fl w, y, and r); *B. floribunda* (st, fl pi); *B. magnifica* (st, fl w and y, varying to p-r and y); *B. pallida* (st, fl y and l); *B. variabilis* (st, fl g-y and w); *Billiardiera longiflora* (c-h, fl g-y, changing to p); *B. scandens* (c-h, fl c, changing to p); *Bougainvillea glabra* (st, bracts pi); *B. speciosa* (st, bracts l-pi); *Brachysema latifolium* (c-h, fl r); *B. undulatum* (c-h, fl br-w); *Cacocya coccinea* (st, fl r); *Costrum elegans* (c-h, fl p-r) and var.; *Cissampelos mauritiana* (st, fl y and g);

Evergreen Climbers (Tender)—*continued.*

Clomatis caripensis (st, fl w, sc); *C. grandiflora* (st, fl g-y); *Clerodendron scandens* (st, fl w); *Clitoria heterophylla* (st, fl b); *C. ternatea* (st, fl b, marked w); *Cobaea penduliflora* (i-h, fl g); *C. scandens* (c-h, fl p); *Colquhounia coccinea* (c-h, fl r); *Combretum elegans* (st, fl y); *C. laxum* (st, fl r or y); *C. racemosum* (st, fl w); *Convolvulus pannifolius* (c-h, fl w-p and w); *Cryptostegia grandiflora* (st, fl r p); *Dolichos lignosus* (c-h, fl pi and p); *Echites atropurpurea* (st, fl br); *E. franciscana sulphurea* (st, fl g-y, r, and pi); *E. stellaris* (st, fl pi and y); *Hibbertia dentata* (c-h, fl y); *Hoya australis* (st, fl w, tinged pi, sc); *H. carnosa* (st, fl pi-w); *H. cinnamomifolia* (st, fl y-g and p-r); *H. Cumingiana* (st, fl g-y, or w, and p-br); *H. globulosa* (st, fl c and pi); *H. imperialis* (st, fl r-br); *H. pallida* (st, fl y and pi, sc); *H. Pottsii* (st, fl y, tinged p, sc); *H. Shepherdii* (st, fl w and pi); *Ipomœa Bona-nox* (st, fl w); *I. Horsfallii* (st, fl pi); *I. Learii* (st, fl b); *I. rubro-cœrulea* (st, fl w and r, becoming b); *Jas-minum Sambac* (st, fl w, sc); *Lonicera sempervirens* (c-h, fl r and y; fol gl beneath); *Metrosideros scandens* (c-h, fl w); *Mikania scandens* (st, fl y-w); *Millettia megasperma* (c-h, fl p); *Oxypetalum cœruleum* * (st, fl b); *Passiflora alata* (st, fl r, p, and w, sc); *P. alba* (st, fl w); *P. anabilis* (st, fl r); *P. cœruleo-racemosa* (c-h, fl p); *P. cincinnata* (c-h, fl r-p and w); *P. cinnabarina* (st, fl r); *P. coccinea* (st, fl r and o); *P. odulis* (st, fl w, sc; fr p); *P. Hahnii* (c-h, fl w and y); *P. Innesii* (st, fl w, r, and r); *P. quadrangularis* (st, fl w, r, and v, sc); *P. racemosa* (st, fl r; fol gl beneath); *P. Riddiana* (st, fl r and p; fol vinous beneath); *Petrœa volubilis* (st, fl p); *Philibertia gracilis* * (c-h, fl y, striped r); *Physianthus albens* (*Aranja sericeofera*) (c-h, fl w, tinged r); *Physostelma Wallichii* (st, fl g, y); *Piper porphyrophyllum* (st, fol above bronzy g, spotted pi; below p); *Pleroma macranthum* (c-h, fl r-p); *Plumbago capensis* (st, fl b); *Pronaya elegans* (c-h, fl b or w); *Proustia pyrifolia* (c-h, fl w); *Quisqualis*

Evergreen Climbers (Tender)—*continued.*

indica (st, fl varying from o to r, sc); *Randia macrantha* (st, fl y); *Smilax ornata* (c-h, fol spotted si-y); *Solandra grandiflora* (st, fl g-w); *Sollya heterophylla* (c-h, fl b); *S. parviflora* (c-h, fl b); *Stephanotis floribunda* (st, fl w, sc); *Stigmaphyllon ciliatum* (st, fl y; fol gl); *S. littorale* (s, fl y); *Tacsonia insignis* (i-h, fl v, r, g, and b); *T. manicata* (i-h, fl v, r, g, and b); *T. mollissima* (c-h, fl pi); *T. Van-Volxemii* (i-h, fl r); *Tecoma filicifolium* (st, fl v); *Trachelospermum jas-minoides* (c-h, fl w, sc; fol when young, y-g).

DECIDUOUS TRAILERS.—**Hardy.**—*Arctostaphylos alpina* (fl w or pi-w); *Pyxidanthus barbulate* * (fl w or pi); *Rubus fruticosus* (fl w or pi; fr blk or r-p).

EVERGREEN TRAILERS.—**Hardy.**—*Arctostaphylos Uva-ursi* (fl pi-w and r); *Astragalus monspessulanus* * (fl p); *Aubrietia deltoidea* (fl p) and var.; *Cassiope hypnoides* (fl r and w); *C. virginica* (fl b); *Dryas Drummondii* (fl g-y); *D. octopetala* (fl w, stamens y); *Epigaea repens* (fl w, tinged r, sc); *Ercilla spicata* (fl p); *Frankenia lavis* (fl w-pi); *Fuchsia procumbens* (fl y and b; fr r); *Juniperus procumbens* (fol gl); *J. Sabina* and var.; *Linnaea borealis* * (fl pi-w); *Lithospermum prostratum* (fl b, striped r-r); *Oxyccocis macrocarpus* (fl pi); *O. palustris* (fl pi); *Rosa sinica* (fl w); *Vaccinium Vitis-Idææ* (fl pi; fr r; fol dotted beneath).

Tender.—*Begonia prismatocarpa* (st, fl o and y; fol shining g); *Bertolonia maculata* (st, fl v-p); *Blepharis procumbens* (c-h, fl b); *Calceolaria scabiosifolia* (c-h, fl y); *Ficus barbata* (st); *Hoya bella* (st, fl w, marked r-pi); *H. linearis* (st, fl w); *Othonna crassifolia* (c-h, fl y); *Podanthes geminata* (st, fl o-y, dotted r); *Protea cordata* (c-h, fl p); *P. cynaroides glabrata* (c-h, fl w, g, and pi); *Sarmienta repens* (c-h, fl r); *Senecio mikanioides* * (c-h, fl y); *Solanum Souforthianum* (st, fl r or l); *Tephrosia capensis* (c-h,



AN INDEX TO FLOWERING PERIODS.

object of this section of the Supplement is to enable the gardener to ascertain at a glance the most desirable Shrubs and Herbaceous Plants that are in blossom at any given period of the year, so that suitable subjects for successive flowering may be expeditiously selected, whether for outdoors or for culture under glass. Where in the body of the **DICTIONARY OF GARDENING** the flowering periods are given as Spring, Summer, Autumn, or Winter, they are understood to be: Spring, from March to May; Summer, from June to August; Autumn, from September to November; and Winter, from December to February.

The following are the abbreviations used:—

b, blue; *bk*, black; *br*, brown; *c*, cream; *c-h*, cool-house; *g*, green; *i-h*, intermediate-house; *l*, lilac; *m*, magenta; *mv*, mauve; *o*, orange; *p*, purple; *pi*, pink; *r*, red; *sc*, scented; *si*, silvery; *st*, stove; *v*, violet; *w*, white; *y*, yellow.

The heights are given in feet and fractions of a foot.

JANUARY. — Hardy. — PERENNIALS.—*Acis trichophyllum* (*w*; $\frac{1}{2}$); *Arabis alba* (*w*; $\frac{1}{2}$ – $\frac{3}{4}$); *Eranthis hyemalis* (*y*; $\frac{1}{2}$ – $\frac{3}{4}$); *Helleborus niger* (*w*; $\frac{1}{2}$ – $1\frac{1}{2}$).

SHRUBS.—*Abutilon striatum* (*o-y*; 10); *Chimonanthus f agrans* (*w* or *y*, and *p*, *sc*); *Daphne Laureola* (*y-g*; 3-4); *Erica carnea* (*r*; $\frac{1}{2}$); *Hamamelis arborea* (*y* and *p*; 15-20); *H. virginica* (*y*); *Jasminum nudiflorum* (*y*); *Kerria japonica* (*o-y*; 3-4); *Rosa indica* (*r*; 4-20); *Viburnum Tinus* (*w* or *pi*; 8-10).

Half-hardy. — PERENNIALS.—*Calceolaria Burbidgei* (*y*; 2-4); *Caliphurria subdentata* (*w*; $1\frac{1}{2}$).

SHRUBS.—*Grindelia glutinosa* (*y*; 2); *Plagianthus Lam-penii* (*y*; 6-8).

Tender. — ANNUALS. — *Acroclinium roseum* (*c-h*, *pi*; 1-2); *Whitfieldia lateritia* (*st*, *r* and *o*; 3).

PERENNIALS.—*Aechmea celestis* (*st*, *b*); *Angræcum sesquipedale* (*st*, *w*; 1); *Arpophyllum spicatum* (*c-h*, *r*); *Barkeria elegans* (*c-h*, *pi* and *r*, spotted; 2); *Begonia Berkeleyi* (*i-h*, *pi*); *B. Erxbeli* (*i-h*, *r*); *B. manicata* (*st*, *pi*; 2); *B. megaphylla* (*i-h*, *w*); *B. natalensis* (*c-h*, *pi*; $1\frac{1}{2}$); *B. nelumbifolia* (*i-h*, *w* or *pi*; 1-2); *B. pruinata* (*i-h*, *w*); *B. ricinifolia* (*i-h*); *B. Schmidtiana* (*i-h*, *w*; 1); *B. semperflorens* (*i-h*, *w* or *pi*); *B. sootrana* (*st*, *pi*); *B. Verschaffeltiana* (*i-h*, *pi*); *Billbergia Liboniana* (*st*, *r*, *w*, and *p*; 1); *B. rosea-marginata* (*st*, *b* and *pi*; $1\frac{1}{2}$); *Blotia Shepherdii* (*st*, *p* and *y*; 2); *Brassavola Digbyana* (*i-h*, *c-w*, streaked *p*; $\frac{1}{2}$); *Brassia Lanceana* (*i-h*, *y* and *br*, *sc*; $\frac{1}{2}$) and var.; *Burlingtonia decora* (*st*, *w* or *pi*, spotted *r*); *Calanthe Veitchii* (*st*, *p* and *w*; 3); *Camellia*

January (Tender Perennials)—continued.

japonica (*c-h*, variable; 20) and vars.; *Canarina Campanula* (*c-h*, *y-p* or *o*; 3-4); *Cattleya maxima* (*i-h*, *pi*, *w*, *p-r*, &c.; 1- $1\frac{1}{2}$); *C. Trianae* (*i-h*, *pi-w*, *o* or *y*, and *p*) and vars.; *C. Warscewiczii* (*i-h*, *pi-w* and *r*; 1); *Centropogon Lucyanus* (*st*, *pi*); *Cephaelis Ipecacuanha* (*st*, *w*; $\frac{1}{2}$); *Cœlogyne cristata* (*i-h*, *w* and *y*, *sc*; $\frac{1}{2}$); *C. flaccida* (*i-h*, *w*, *y*, and *r*, *sc*; 1); *C. Gardneriana* (*st*, *w* and *y-y*); *C. Gowerii* (*i-h*, *w* and *y-y*); *C. media* (*i-h*, *c-w*, *y*, and *br*; 1); *C. odoratissima* (*i-h*, *w* and *y*, *sc*); *C. speciosa* (*i-h*, *w*, *br* or *g*, *y*, and *r*; $1\frac{1}{2}$); *Cyanotis Kewensis* (*st*, *pi*); *Cymbidium giganteum* (*st*, *br*, *y*, and *p*); *C. Mastersii* (*i-h*, *w* and *pi*, *sc*); *Cypripedium Haynaldianum* (*st*, *g*, *pi*, *w*, and *br*); *C. insignis* (*i-h*, *y-g*, *w*, *y*, and *r-br*) and var.; *C. venustum* (*c-h*, *g-w* or *pi*, and *y-g*); *Cyrtochilum maculatum* (*st*, *g* and *p*); *Dendrobium endocharis* (*st*, *w* and *br*); *D. Fytchianum* (*st*, *w*); *D. Linawianum* (*c-h*, *pi-l* and *r*); *D. nobile* (*c-h*, *w*, *pi*, and *r*, *sc*); *D. Pierardii* (*c-h*, *c-w* or *pi*, *y*, and *p*); *Eulophia macrostachya* (*st*, *y* and *r-p*); *Gesnera exoniensis* (*st*, *o-r*); *G. pyramidalis* (*st*, *o-r* and *r*); *Goodyera discolor* (*c-h*, *w* and *y-y*); *Grammatophyllum speciosum* (*st*, *o-y*, *p*, and *r*; 10); *Gymnostachyum ceylanicum* (*st*, *w*, *g*, and *y*); *Imantophyllum cyrtanthiflorum* (*c-h*, *pi* or *y*); *I. Gardeni* (*c-h*, *r-o* or *y*); *Impatiens Hookeriana* (*st*, *w* and *r*; 2 $\frac{1}{2}$); *I. Sultani* (*st*, *r*); 1); *I. Walkeri* (*st*, *r*; 1- $1\frac{1}{2}$); *Ipomœa Horsfalliae* (*st*, *pi*); *Laelia alba* (*i-h*, *w*, *pi*, and *y*, *sc*); *L. anceps* (*c-h*, *pi-l*, *p*, and *l*, *sc*); *L. autumnalis* (*i-h*, *pi*, *pi-w*, and *y*, *sc*); *L. superbians* (*i-h*, *pi*, *r*, and *y*); *Lycaste aromatica* (*i-h*, *y*); *L. Deppii* (*i-h*, *y*, *br*, *w*, and *r*); *L. Skinneri* (*i-h*, *w*, *pi-l*,

January (Tender Perennials)—continued.

and *r*); *Masdevallia coccinea* (*c-h, y* and *r*); *M. Lindenii* (*c-h, w, pi*, and *m*); *M. tovarensis* (*c-h, w*); *M. Veitchiana* (*c-h, y, o-r*, and *p*); *Maxillaria luteo-grandiflora* (*i-h, c-w, br-r*, and *o*); *M. venusta* (*i-h, w, y*, and *r*); *Nymphæa Devonienis* (*st ag, pi-r*); *Odontoglossum crispum* (*c-h, w, y*, and *r-br*); *O. grande* (*c-h, o-y, c-w*, and *br*); *O. Inseleyi* (*i-h, y, br, &c.*); *O. luteo-purpureum* (*c-h, br* or *p, w*, and *y*); *O. odoratum* (*c-h, y, br*, and *p, sc*); *O. Rossii* (*c-h, w, br*, and *y*); *O. E. Ehrenbergii* (*c-h, w* and *br*); *O. E. Warnerianum* (*c-h, w, br, y, &c.*); *Oncidium bicallosum* (*i-h, br* and *y*); *O. bifolium* (*st, g-br* and *y*); *O. Cavendishianum* (*st, y*); *O. crispum* (*i-h, br* and *y*); *O. oculatum* (*c-h, br-p* and *pi-p*); *O. dasystyle* (*i-h, ochre, br-p, and p*); *O. incurvum* (*c-h, w, l*, and *br, sc*); *O. leucochilum* (*i-h, g, br* or *r*, and *w* or *y*); *O. ornithorhynchum* (*c-h, pi-p, sc*); *O. o. albiflorum* (*c-h, w*); *O. tigrinum* (*i-h, br* and *y, sc*); *O. varicosum* Rogersii (*i-h, y*); *Peristrophe speciosa* (*st, p*; 4); *Phaius grandifolius* (*st, br, w*, and *r-br*; 3); *Phalænopsis Aphrodite* (*st, w, r, o*, and *y*); *Pterostylis Baptistii* (*c-h, g, w*, and *br*; 1); *Rivina humilis* (*st, w-pi*; 1-2); *Ruellia Portellæ* (*i-h, pi*; 1); *Saccolabium giganteum* (*st, w* and *m-v, sc*); *S. violaceum* (*st, w* and *m*) and var.; *Schomburgkia undulata* (*st, b-p* and *p-v*); *Sophranitis grandiflora* (*c-h, r*); *S. violacea* (*c-h, v*; 4); *Spathoglottis Fortunei* (*c-h, y* and *r*); *Talauma pumila* (*st, c, sc*; 2-4); *Thunbergia erecta* (*st, b, o*, and *y*; 6) and var.; *Tillandsia umbellata* (*st, b, w*, and *g*; 1); *Trichopilia fragrans* (*c-h, y-g, w*, spotted *o, sc*); *Zygopetalum brachypetalum* (*i-h, br, w, &c.*); *Z. candidum* (*i-h, w* and *pi-p*; 4); *Z. crinitum* (*c-h, g, br, w*, and *y*); *Z. Dayanum* (*st, w, p-v*, and *r*) and vars.; *Z. Gairianum* (*st, v, p*, and *o*); *Z. Gautieri* (*c-h, g, br*, and *p-b*); *Z. Klabochorum* (*i-h, p, w*, and *y*); *Z. Mackayi* (*c-h, p, g, w*, and *b*); *Z. maxillare* (*c-h, br, b, p*, and *g*); *Z. rostratum* (*st, w, g, br-p, &c.*); *Z. Sedeni* (*i-h, p-br, g*, and *b-p*); *Z. triumphans* (*i-h, w* and *b*); *Z. Wallisii* (*c-h, w* and *v*).

SHRUBS.—*Abutilon insigne* (*ch, p-r*; 6); *A. megapotamicum* (*c-h, r, y*, and *br*; 3); *Aristolochia Duchartrei* (*st, br* and *c*; 5); *Begonia incarnata* (*st, pi*; 2); *B. Lindleyana* (*st, w*; 3); *B. Lynchiana* (*st, r*); *B. nitida* (*st, pi*; 4-5); *B. prestoniensis* (*st, o-r*; 2); *Bouvardia jasminiflora* (*c-h, w, sc*; 2); *Brunfelsia eximia* (*st, p, sc*; 24); *Crassula lactea* (*c-h, w*; 1-2) and var.; *Daphne odora* Muzeli (*c-h, w* and *pi, sc*); *Dianthera ciliata* (*st, w* and *w*; 2); *Echinopsis Eyriesii* (*st, w* and *g, sc*); *Epacris purpurascens* (*c-h, w* and *r*; 2-3); *Erica hymalis* (*c-h, pi* and *w*; 2); *E. Linneana* (*c-h, w* and *r*; 14); *E. melanthera* (*c-h, pi*; 2); *Eupatorium atrorubens* (*c-h, r* and *b*); *E. ianthinum* (*c-h, p*; 3); *E. Weinmannianum* (*c-h, w, sc*); *Gardenia Thunbergia* (*c-h, w, sc*; 4-5); *Jasminum gracillimum* (*st, w, sc*); *J. Sambac* (*st, w, sc*); *Leonotis Leonurus* (*c-h, r*; 3-6); *Leucopogon australis* (*c-h, w*; 2-4); *L. Richei* (*c-h, w*; 3-4); *Libonia floribunda* (*i-h, r* and *y*); *L. Peurhosiensis* (*i-h, r*); *Mimulus glutinosus* (*c-h, br* or *pi*; 5); *Monochetum Hartwegianum* (*c-h, pi*); *Muralis Heisteria* (*c-h, p*; 2-3); *Mussaenda luteola* (*c-h, y* and *o*; 5-6); *Pentas carnea* (*st, pi-w*; 14); *Pereskia Bleo* (*st, r*; 8-10); *Philodendron fragrantissimum* (*st, c* and *r*); *Phlogoanthus asperulus* (*st, p-r*; 3); *Pleroma macranthum* (*st, p-p*); *Rhododendron javanicum* (*c-h, o* and *r*; 4); *Ruellia Baikiei* (*i-h, r*; 3); *Stachytarpheta mutabilis* (*st, r*; 3); *Thyrsacanthus rutilans* (*st, r*; 2); *T. Schomburgkianus* (*st, r*; 2); *Whitfieldia lateritia* (*st, r* and *o*; 3).

FEBRUARY.—**Hardy.**—**PERENNIALS.**—*Anemone angulosa* (*b*; 4); *Arabis albidia* (*w*; 4-4); *Bulboodium vernum* (*v-p*; 4-4); *Colechicum montanum* (*l-p* or *w*; 4); *Corydalis cava* (*p*; 4) and var.; *Eranthis hlyemalis* (*y*; 4-4); *Galanthus nivalis* (*w*; 4-4); *Helleborus niger* (*w*; 4-4); *Iris reticulata* (*v-p* and *y*); *Petasites fragrans* (*w, sc*; 4); *Scilla sibirica* (*b*); *Rosmarinus officinalis* (*w* or *b-p*; 2-4).

SHRUBS.—*Abutilon striatum* (*o-y*; 10); *Arctostaphylos pungens* (*w*; 1); *Corylopsis spicata* (*y, sc*; 3-4); *Daphne Laureola y-g*; 3-4); *D. Mesereum* (*r*; 3-4); *Enkianthus*

February (Hardy Shrubs)—continued.

japonicus (*w*); *Erica carnea* (*r*; 4); *Hamamelis arborea* (*y* and *p*; 15-20); *H. virginica* (*y*); *Jasminum nudiflorum* (*y*); *Kerria japonica* (*o-y*; 3-4); *Lonicera fragrantissima* (*w, sc*; 6); *Viburnum Tinus* (*w* or *pi*; 8-10).

Half-hardy.—**PERENNIALS.**—*Calceolaria Burroidei* (*y*; 2-4); *Caliphurria subdentata* (*w*; 14).

SHRUBS.—*Grindelia glutinosa* (*y*; 2); *Pittosporum undulatum* (*w*; 10).

Tender.—**ANNUALS.**—*Acroclinium roseum* (*c-h, pi*; 1-2).

PERENNIALS.—*Æchmea cælestis* (*st, b*); *Æ. hystrix* (*st, r*; 24); *Alströméria caryophyllæa* (*st, r, sc*; 4-1); *Arpophyllum spicatum* (*c-h, r*); *Aspasia lunata* (*st, g, w*, and *br*; 1); *A. variegata* (*st, g*, spotted *y-r*; 9); *Barkeria elegans* (*c-h, pi* and *r*, spotted; 2); *Begonia Berkeleyi* (*i-h, pi*); *B. Frobelii* (*i-h, r*); *B. manicata* (*st, pi*; 2); *B. megaphylla* (*i-h, w*); *B. natalensis* (*c-h, pi*; 14); *B. nelumbifolia* (*i-h, w* or *pi*; 1-2); *B. pruinata* (*i-h, w*); *B. ricinifolia* (*i-h*); *B. Schmidtiana* (*i-h, w*; 1); *B. semperflorens* (*i-h, w* or *pi*); *B. scootrana* (*st, pi*); *B. Vershaffeltiana* (*i-h, pi*); *Billbergia Liboniana* (*st, r, w*, and *p*; 1); *B. Moreli* (*st, r* and *p-v*; 1); *Bletia Shepherdii* (*st, p* and *y*; 2); *Brassavola Digbyana* (*i-h, c-w*, streaked *p*; 4); *Brassia caudata* (*i-h, y* and *b*; 1); *Burlingtonia decora* (*st, w* or *pi*, spotted *r*); *Calanthe Veitchii* (*st, p* and *w*; 3); *Camellia japonica* (*c-h*, variable; 20) and vars.; *Canarina Campanula* (*c-h, y-p* or *o*; 3-4); *Cattleya maxima* (*i-h, pi, w, p-r, &c.*; 1-14); *C. Trianae* (*i-h, pi-w, o* or *y*, and *p*) and vars.; *C. Warszewiczii* (*i-h, p-w* and *r*; 1); *Cœlogyne cristata* (*i-h, w*, and *y, sc*; 4); *C. Cumingii* (*i-h, w* and *y*; 2); *C. flaccida* (*i-h, w, y*, and *r, sc*; 1); *C. Gardneriana* (*st, w* and *g-y*); *C. Gowerii* (*i-h, w* and *g-y*); *C. media* (*i-h, c-w, y*, and *br*; 1); *C. odoratissima* (*i-h, w* and *y, sc*); *C. speciosa* (*i-h, w, br* or *g, y*, and *r*; 14); *Cyanotis Kewensis* (*st, pi*); *Cyclamen Coum* (*c-h, r*; 4); *C. ibericum* (*c-h, r*; 4); *Cymbidium eburneum* (*i-h, w* and *y, sc*); *C. giganteum* (*st, br, y*, and *p*); *C. Mastersii* (*i-h, w* and *pi, sc*); *Cypripedium Haynaldianum* (*st, g, pi, w*, and *br*); *C. insigne* (*i-h, y-g, w, y*, and *r-br*) and var.; *C. venustum* (*c-h, g-w* or *pi*, and *y-g*); *Cyrtocochilus maculatum* (*st, g* and *p*); *Dendrobium Ainsworthii* (*st, w, pi*, and *p, sc*); *D. aureum* (*i-h, y, br*, and *p*); *D. Boxallii* (*st, w, p*, and *y*); *D. orassinode* (*st, w, p*, and *o*) and vars.; *D. Kingianum* (*c-h, v-p*); *D. Linawianum* (*c-h, pi-l* and *r*); *D. nobile* (*c-h, w, pi*, and *r, sc*); *D. Pierardii* (*c-h, c-w* or *pi, y*, and *p*); *D. primulinum* (*c-h, pi-w* and *b*); *Gensera exoniensis* (*st, o-r*); *G. pyramidalis* (*st, o-r* and *r*); *Goodyera discolor* (*c-h, w* and *g-y*); *Grammatophyllum speciosum* (*st, o-y, p*, and *r*; 10); *Gymnostachyum ceylanicum* (*st, w, g*, and *y*); *Gynura aurantiaca* (*st, o*; 2-3); *Hæmanthus natalensis* (*ch, g*, bracts *p*); *Hymenocallis macrostephana* (*st, w, sc*; 2); *Imantophyllum cyrtanthiflorum* (*c-h, pi* or *y*); *I. Gardeni* (*c-h, r-o* or *y*); *Impatiens Hookeriana* (*st, w* and *r*; 24); *I. Sultani* (*st, r*; 1); *I. Walkeri* (*st, r*; 1-14); *Ipomœa Horsfallii* (*st, pi*); *Lælia Dormaniana* (*i-h, g, p*, and *p-w*); *L. harpophylla* (*i-h, o-r* and *w*); *L. superbiens* (*i-h, pi, r*, and *y*); *Lycaste aromatica* (*i-h, y*); *L. Deppei* (*i-h, y, br, w*, and *r*); *L. Skinneri* (*i-h, w, pi-l*, and *r*); *Masdevallia coccinea* (*c-h, y* and *r*); *M. Lindenii* (*c-h, w, pi*, and *m*); *M. tovarensis* (*c-h, w*); *M. Veitchiana* (*c-h, y, o-r*, and *p*); *Maxillaria luteo-grandiflora* (*i-h, c-w, br-r*, and *o*); *M. venusta* (*i-h, w, y*, and *r*); *Nymphæa Devonienis* (*st ag, pi-r*); *Odontoglossum crispum* (*c-h, w, y*, and *r-br*); *O. grande* (*c-h, o-y, c-w*, and *br*); *O. Inseleyi* (*i-h, y, br, &c.*); *O. luteo-purpureum* (*c-h, br* or *p, w*, and *y*); *O. odoratum* (*c-h, y, br*, and *p, sc*); *O. Rossii* (*c-h, w, br*, and *y*); *O. E. Ehrenbergii* (*c-h, w* and *br*); *O. E. Warnerianum* (*c-h, w, br, y, &c.*); *Oncidium bicallosum* (*i-h, br* and *y*); *O. bifolium* (*st, g-br* and *y*); *O. Cavendishianum* (*st, y*); *O. crispum* (*i-h, br* and *y*); *O. cruciatum* (*i-h, y, r*, and *w*); *O. oculatum* (*c-h, br-p* and *pi-p*); *O. incurvum* (*c-h, w, l*, and *br, sc*); *O. leucochilum* (*i-h, g, br* or *r*, and *w* or *y*); *O. ornithorhynchum* (*c-h, pi-p, sc*); *O. o. albiflorum* (*c-h, w*);

February (Tender Perennials)—continued.

O. tigrinum (i-h, br and y, sc); *Peristrophe speciosa* (st, p; 4); *Phaius grandifolius* (st, br, w, and r-br; 3); *Phalænopsis Aphrodite* (st, w, r, o, and y); *Pterostylis Baptistii* (c-h, g, w, and br; 1); *Rivina humilis* (st, w-pi; 1-2); *R. levis* (st, w-pi; 7-8); *Ruellia Portellæ* (i-h, pi; 1); *Saccolabium giganteum* (st, w and m-v, sc); *S. violaceum* (st, w and m) and var.; *Sophronis grandiflora* (c-h, r); *S. violacea* (c-h, v; 4); *Stelis ciliaris* (st, p; 4); *Talauma pumila* (st, c, sc; 2); *Thunbergia erecta* (st, b, o, and y; 6) and var.; *Tillandsia umbellata* (st, b, w, and g; 1); *Trichopilia fragrans* (c-h, y-g, w, spotted o, sc); *Zygopetalum brachypetalum* (i-h, br, w, &c.); *Z. candidum* (i-h, w and pi-p; 4); *Z. crinitum* (c-h, g, br, w, and y); *Z. Dayanum* (st, w, p-v, and r) and vars.; *Z. Gairianum* (st, v, p, and o); *Z. Gautieri* (c-h, g, br, and p-b); *Z. Klavochorum* (i-h, p, w, and y); *Z. Mackayi* (c-h, p, g, w, and b); *Z. maxillare* (c-h, br, b, p, and g); *Z. rostratum* (st, w, g, br-p, &c.); *Z. Sedeni* (i-h, p-br, g, and b-p); *Z. triumphans* (i-h, w and b); *Z. Wallisii* (c-h, w and v).

SHRUBS.—*Abutilon insignis* (c-h, p-r; 6); *A. megapotamicum* (c-h, r, y, and br; 3); *Acacia grandis* (c-h, y; 6); *A. viscidula* (c-h, y; 6); *Adenocalymna nitidum* (st, y; 10); *Barosma pulchella* (c-h, r or p; 1-3); *Begonia incarnata* (st, pi; 2); *B. Lindleyana* (st, w; 3); *B. Lynchiana* (st, r); *B. nitida* (st, pi; 4-5); *B. prestoniensis* (st, o-r; 2); *Boronia pinnata* (c-h, pi, sc; 1-3); *Bouvardia jasminiflora* (c-h, w, sc; 2); *Brunfelsia eximia* (st, p, sc; 24); *Chiococca racemosa* (st, w, becoming y and sc; 4-6); *Clematis grandiflora* (st, g-y; 12); *Columnnea Kalbreyeriana* (st, y and r); *Combretum racemosum* (st, w); *Crassula lactea* (c-h, w; 1-2) and var.; *Daphne odora Mazeli* (c-h, w and pi, sc); *Dianthera ciliata* (st, v and w; 2); *Diosma ericoides* (c-h, w and r; 1-3); *Enkianthus quinquefolius* (c-h, r and pi-w; 3-10); *Epacris purpurascens* (c-h, w and r; 2-3); *Erica hymalis* (c-h, pi and w; 2); *E. Linnaea* (c-h, w and r; 14); *Eupatorium atrovirens* (c-h, r and l); *E. ianthinum* (c-h, w; 3); *E. Weinmannianum* (c-h, w, sc); *Gardenia Thunbergia* (c-h, w, sc; 4-5); *Heinsia jasminiflora* (st, w; 5-8); *Hibiscus marmoratus* (c-h, w and pi); *Jasminum gracillimum* (st, w, sc); *J. Sambac* (st, w, sc); *Leonotis Leonurus* (c-h, r; 3-6); *Leucopogon australis* (c-h, w; 2-4); *L. Richei* (c-h, w; 3-4); *Libonia floribunda* (i-h, r and y); *L. Penrhosiensis* (i-h, r); *Mimulus glutinosus* (c-h, br or pi; 5); *Monochæstum Hartwegianum* (c-h, pi); *Mussaenda luteola* (c-h, y and o; 5-6); *Pentas carnea* (st, pi-w; 14); *Plagianthus Lampenii* (c-h, y; 6-8); *Ploroma macranthum* (st, v-p); *Rhododendron javanicum* (c-h, o and r; 4); *Ruellia Baikiei* (i-h, r; 3); *Stachytarpheta mutabilis* (st, r; 3); *Thyracanthus rutilans* (st, r; 2); *T. Schomburgkianus* (st, r; 2); *Whitfieldia lateritia* (st, r and o; 3).

MARCH.—Hardy.—ANNUALS.—*Hutchinsia petraea* (w; 4); *Iberis umbellata* (variable; 4-1); *Limnanthes Douglasii* (y and w, sc; 4); *Malcolmia maritima* (l, pi, r, or w; 4-1); *Moricandia sonchifolia* (v-b; 1-2); *Nemophila insignis* (b; 14); *Sonchus Jacquinii* (o-y; 1-2).

BIENNIALS.—*Althæa caribæa* (pi; 3); *Hesperis tristis* (w, c, br-r, or p, sc at night; 1-2); *Scrophularia chrysantha* (o-y; 4-14).

PERENNIALS.—*Achillea Clavennæ* (w; 4); *Adonis vernalis* (y; 4-1); *Androsace Laggeri* (pi; 4); *Anemone nemorosa* (w; 4) and vars.; *A. ranunculoides* (y or p; 4); *Antirrhinum majus* (2); *Aquilegia glandulosa* (l-b; 4-1); *Arabis albidia* (w; 4-2); *A. alpina* (w; 4); *A. blepharophylla* (pi-p; 4); *Arenaria balearica* (w; 4); *Arisæma ringens* (g, striped w); *Arum italicum* (g-y or w; 4-2); *Aubrieta deltoidea* (p; 4) and var.; *Bulbine ocaulescens* (y; 2); *Bulbocodium vernum* (v-p; 4-4); *Caltha palustris* (o-y; 1); *Cardamine chelidonia* (p; 1); *C. pratensis* (p or w; 1-14) and vars.; *C. rhomboidea* (w) and vars.; *C. trifolia* (w; 4); *Cheiranthus Cheiri* (variable; 1-2); *C. Marshallii* (o; 1-14); *Chionodoxa Lucilæ* (b and w; 4); *C. nana* (w or l; 4); *Claytonia sibirica* (pi; 4); *C. vir-*

March (Hardy Perennials)—continued.

ginica (w; 4); *Colchicum luteum* (y; 4); *C. montanum* (l-p or w; 4); *Convallaria majalis* (w; 4); *Corydalis cava* (p; 4) and var.; *Crocus aureus* (o); *C. biflorus* (w to lavender, p, and y); *C. Imperati* (l-p, sc; 4-4); *C. vernalis* (l, v, or w); *C. versicolor* (variable); *C. varietis*; *Dicentra eximia* (r-p; 4-4); *D. spectabilis* (pi-r; 4-2); *Doronicum austriacum* (y; 1-14); *D. oucaucisium* (y; 1); *D. Pardalianches* (y; 14-3); *D. plantagineum exelsum* (y; 5); *Draba azoides* (y; 4); *D. Mawii* (w); *Epimedium macrorrhynchum* (w; 10-15); *Eranthis hymalis* (y; 4-4); *E. sibiricus* (y; 4); *Erinus alpinus* (p; 4); *Erythronium americanum* (y; 4-4); *E. dens-canis* (p-pi or w; 4); *Fritillaria graeca* (br; 4); *F. tulipifolia* (b and br-p); *Gagea lutea* (y; 4); *Galanthus nivalis* (w; 4-4); *G. plicatus* (w-g; 4); *Gentiana acaulis* (b and y; 4); *Geum montanum* (y; 4-1); *Hæcquetia Epipactis* (y; 4-4); *Helleborus olympicus* (p; 2); *Hyacinthus amethystinus* (b; 4-1); *H. varietis*; *Iris reticulata* (v-p and y); *I. rubro-marginata* (g, p, and r; 4); *Isopyrum thalictroides* (w; 4-14); *Leucocium vernum* (w and g, sc; 4-4); *Linaria Cymbalaria* (h or l); *Lychnis alpina* (pi; 4); *L. diurna* (p-pi; 1-3); *L. fulgens* (r; 4-1); *L. Lagasce* (pi and w; 4); *Mertensia alpina* (b; 4-4); *M. virginica* (p-b; 1-2); *Muscari botryoides* (b; 4-1); *M. Heldreichii* (b; 4-4); *M. moschatum* (p, becoming g-y and v, sc; 4); *M. racemosum* (b, becoming r-p, sc; 4-4); *M. Szovitsianum* (b, sc); *Myosotis dissitiflora* (b; 4-1); *M. palustris* (b; 4-1); *M. sylvatica* (b; 1-2); *Narcissus incomparabilis* (y and o-y); *N. Pseudo-Narcissus* (g-y and o-y); *N. Tazetta* (y and w); *Oenothera speciosa* (w, turning r; 2-3); *Omphalodes verna* (b and w; 4); *Ornithogalum marbonense* (w and g; 1-14); *Oxalis Acetosella* (w and p; 4); *O. corniculata* (y); *Pæonia Emodi* (w; 2-3); *Phlox divaricata* (l or b; 4-14); *P. ovata* (r-p; 1-14); *P. repens* (p or v; 4); *Physocollina physaloides* (p-v; 1-14); *Primula altaica* (m and y; 4-4); *P. Auricula* vars. (4); *P. Boveana* (y; 4); *P. denticulata* (l; 4-1) and var.; *P. involucreta* (c, w, and y; 4) and var.; *P. japonica* vars. (1-14); *P. nivalis* (w; 4-4); *P. obconica* (l or p; 4-1); *P. Parryi* (p and y; 4-14); *P. rosea* (pi and y; 4); *P. sinensis* (w or l; 4); *P. verticillata* sinensis (y; 1-14); *P. viscosa pedemontana* (pi-p and y-w; 4); *P. vulgaris* (y; 4) and var.; *Pulmonaria angustifolia* (pi, turning b; 1); *Puschkinia scilloides* (w, striped b; 4-4); *Romulea Bulbocodium* (y and v; 4); *Saxifraga Burseriana* (c); *S. crassifolia* (r; 1); *S. ligulata* (r-w; 1); *S. Stracheyi* (pi; 4-4); *Scilla amana* (l or w; 4); *S. bifolia* (b, r, or w; 4-4); *Sedum acre aureum* (y); *Spiræa prunifolia flore-pleno* (w; 3); *Thalictrum anemonoides* (w or pi; 4); *Tradescantia virginica* (v, p, or w; 4-2); *Tulipa suaveolens* (r and y; 4); *Uvularia grandiflora* (y); *U. sessilifolia* (y; 1); *Viola cucullata* (v-b, p, or w; 4-4); *V. Munbyana* (v or y).

SHRUBS.—*Abelia floribunda* (pi-p; 3); *Abutilon striatum* (o-y; 10); *Akobea quinata* (p-br; 10); *Amygdalus communis* (w or pi; 10-30); *A. nana* (pi; 2-3); *Azalea ledifolia* (w; 2-6); *Berberis Aquifolium* (y; 3-6); *B. buxifolia* (y; 8); *B. canadensis* (y; 4); *B. repens* (y; 1-2); *B. vulgaris* (y; 8-20); *B. Wallichiana* (y; 6-10); *Cassiope tetragona* (w; 4-4); *Clematis cirrhosa* (w or c; 12); *Comptonia asplenifolia* (w; 3-4); *Crataegus Oxyacantha* (w, sometimes pi, sc; 10-20) and vars.; *Daphne Laureola* (y-g; 3-4); *D. Mezereum* (r; 3-4); *Diervilla rosea* (pi or w; 6); *Dicra palustris* (y; 2-5); *Erica carnea* (r; 4); *Forsythia viridissima* (y; 10); *Garrya elliptica* (g-w or y; 8-10); *Halesia tetraptera* (w; 15-20); *Heli-anthemum vulgare* (y); *Iberis saxatilis* (w; 4-4); *I. sempervirens* (w; 4-1); *Kalmia latifolia* (l-p; 1-2); *Kerria japonica* (o-y; 3-4); *Magnolia parviflora* (w and pi); *Ory-coccus macrocarpus* (pi); *Piptanthus nepalensis* (y; 10); *Prunus Pissardi* (w); *P. sinensis* (w or pi); *P. triloba* (w or pi; 6); *Rhododendron dahuricum* (pi; 3); *R. Metternichii* (pi); *Rhodotypos kerrioides* (w; 15); *Ribes floridum* (w; 4); *R. gracile* (w; 5-8); *R. sanguineum* (pi; 4-8); *R. speciosum* (r; 6-8); *Rosa indica* (r; 4-20);

March (Hardy Shrubs)—continued.

Skimmia japonica (w, sc; 3-4); *S. laureola* (y, sc; 3-4); *Styrax grandifolia* (w; 6); *Viburnum Tinus* (w or pi; 8-10).

Half-hardy.—**ANNUAL.**—*Zaluzianskia capensis* (w; 1).

PERENNIALS.—*Chionographis japonica* (w; 1-1); *Dianella lavis* (b; 2); *Ferraria Ferrariola* (g-br); *F. undulata* (g-br); *Viola pedunculata* (y).

SHRUBS.—*Calceolaria fuchsifolia* (y; 1-2); *Choiranthus mutabilis* (c, turning p; 2-3); *Grindelia glutinosa* (y; 2); *Iberis gibraltaria* (w, and pi or r; 1-2); *Mathiola bicornis* (p-r); *Pernettya furens* (w); *Pittosporum Tobira* (w, sc; 12); *P. undulatum* (w; 10); *Stachyurus prœcox* (y-g; 10).

Tender.—**ANNUAL.**—*Oxalis Barrolieri* (c-h, y; 1-1).

PERENNIALS.—*Aletrœmeria caryophyllœa* (st, r, sc; 2-1); *Amomum Granum Paradisi* (st, w, tinged y or pi; 3); *Anthurium acule* (st, b, sc; 1-3); *Arisœma nepenthoides* (c-h, y, br, and g; 2); *Begonia herbaœa* (i-h, w; 4); *B. laciniata* (i-h, w, tinted pi); *Bilbergia Baraquiniana* (st, g and r; 14); *B. idifolia* (st, r and y, tipped b; 14); *B. zebrina* (st, g and pi; 14); *Brassavola glauca* (i-h, y, o, and w; 1); *Brassia maculata* (i-h, y, spotted br and p; 1); *Bromelia bicolor* (st, r); *CalliPsyche eucrosiodes* (c-h, r and g; 2); *Camellia japonica* (c-h, variable; 20) and vars.; *Canarina Campanula* (c-h, y-p or o; 3-4); *Catasetum saccotum* (st, p, y, and r); *Cattleya amethystoglossa* (i-h, pi-l, p, &c.; 2-3); *Cineraria oruenta* (c-h, r-p; 2) and vars.; *Cirrhopteridium araratum* (st, straw, striped r and g); *Clianthus Dampieri* (c-h, r, blotched bk or p; 2); *Cœlogyne cristata* (i-h, w and y, sc; 2); *C. flaccida* (i-h, w, y, and r, sc; 1); *C. Gowerii* (i-h, w and g-y); *C. ocellata* (i-h, w, y, and br; 1); *C. speciosa* (i-h, w, br or g, y, and r; 14); *Crinum Moorei* (c-h, g and r); *C. zeylanicum* (st, g and r, sc); *Cyanotis Kowensis* (st, pi); *Cyamelum Coum* (c-h, r; 4); *C. ibericum* (c-h, r; 4); *C. persicum* (c-h, w and p; 4); *C. repandum* (c-h, pi-r); *Cymbidium giganteum* (st, br, y, and p); *C. Lowianum* (st, g, br, w-y, and p); *Cypripedium Argus* (st, w, pi, g, bk-p, and p-br; 1); *C. barbatum* (st, p and w; 1) and vars.; *C. levigatum* (st, p, br, g, and y); *C. superbiens* (st, w and br); *Cyrtoclitium maculatum* (st, g and p); *Cyrtopodium Andersoni* (st, y); *Dendrobium Ainsworthii* (st, w, pi, and p, sc); *D. Boxallii* (st, w, p, and y); *D. Brymerianum* (st, y); *D. crassinode* (st, w, p, and o) and vars.; *D. Devonianum* (st, w, p, and o) and vars.; *D. fimbriatum* (st, o); *D. Jenkinsonii* (c-h, buff and y); *D. luteolum* (c-h, y, o, and r); *D. nobile* (c-h, w, pi, and r, sc); *D. primum* (i-h, pi-w and b); *D. pulchellum* (i-h, pi-w, pi, and o); *D. scabrilingue* (st, w, g, y, and o, sc); *D. superbum* (st, pi and p); *D. transparent* (st, w, p-pi, r, and y); *Elisena longipetala* (c-h, w; 3); *Epidendrum aurantiacum* (st, o and r; 1); *Eurycles amboinensis* (st, w; 1-2); *Griffinia dryades* (i-h, p-l and w; 14); *G. hyacinthina* (i-h, b and w); *G. ornata* (i-h, b-l; 1-14); *Hymenocallis calathinum* (c-h, w, sc); *Imantophyllum myrtilloflorum* (c-h, pi or y); *I. miniatum* (c-h, o; 1-2); *Impatiens Sultanii* (st, r; 1); *Kennedy prostrata* (c-h, r); *K. p. Marryattæ* (c-h, r); *Lachenalia tricolor* (c-h, g, r, and y; 1); *Lœlia cinnabarina* (i-h, o-r); *L. flammea* (i-h, o-r and p-r); *L. harpophylla* (i-h, o-r and w); *Lycaste aromatica* (i-h, y); *L. Deppæ* (i-h, y, br, w, and r); *L. Skinneri* (i-h, w, pi-l, and r); *Masdevallia Lindeni* (c-h, w, pi, and w); *Maxillaria luteo-grandiflora* (i-h, c-w, br-r, and o); *Nymphæa Devonienensis* (st, aq, pi-r); *Odontoglossum Cervantesii* (i-h, pi-l, w, and r-br); *O. crispum* (c-h, w, y, and r-br); *O. luteo-purpureum* (c-h, br or p, w, and y); *O. maculatum* (c-h, y, br-r, and br); *O. odoratum* (c-h, y, br, and p, sc); *O. Pescatorei* (c-h, w, p-r, and y); *O. pulchellum* (i-h, w, and p, sc); *O. triumphans* (c-h, y, br-r, pi, and w); *Oncidium ampliatum* (st, y); *O. oculatum* (c-h, br-p and pi-p); *O. macranthum* (i-h, y and p-br); *O. sarcoodes* (i-h, o-y and r); *Oxalis rosea* (c-h, pi;

March (Tender Perennials)—continued.

1-1); *O. versicolor* (c-h, w and r; 4); *Phaius grandifolius* (st, br, w, and r-br; 3); *P. tuberosus* (st, w, y, and br); *P. Wallichii* (st, o-y, p, and br; 4-5); *Phalœnopsis Aphrodite* (st, w, r, o, and y); *Pitcairnia corallina* (st, r and w); *Ponthieva maculata* (st, br, w, and y); *Prepusa Hookeriana* (c-h, y-w; 1); *Ranunculus Lyalli* (c-h, w; 2-4); *Richardia africana* (c-h, w; 2); *Rivina humilis* (st, w-pi; 1-2); *R. lavis* (st, w-pi; 7-8); *Selenipedium Roezii* (st, g and pi-p; 3); *Sobralia dichotoma* (st, w, v, &c.; 6-20); *Sonchus Jacquinii* (c-h, o-y; 1-2); *Streitzia angusta* (i-h, w; 10); *Streptanthera elegans* (c-h, st-l, w, p, &c.; 4); *Talauma pumila* (st, c, &c; 2-4); *Theropogon pallidus* (c-h, w); *Thunbergia coccinea* (st, varying from r to o-pi); *T. erecta* (st, b, o, and y; 6) and var.; *Tigridia Melegans* (c-h, p and r; 14); *T. Van Houttei* (c-h, y, p, and l; 1); *Triohoplia suavis* (c-h, w or c-w, and y, spotted v-pi, sc); *Utricularia Endresii* (c-h, l and y; 1-1); *Vanda œrulescens* (st, w, v, l, and b); *Vinca rosea* (i-h, pi or w).

SHRUBS.—*Acacia Catêchu* (c-h, y; 20-40); *A. grandis* (c-h, y; 6); *A. longiflora* (c-h, y; 10); *A. platyptora* (c-h, y; 6-10); *Acrotriche ovalifolia* (c-h, w; 1-1); *Andersonia sprengelioides* (st, pi; 1-3); *Anthyllis Barba-Jovis* (c-h, y; 4-8); *Aphelix fasciculata* (c-h, p; 2); *Aristolochia caudata* (st, lurid; 5); *Athanasia capitata* (st, y; 14); *Barleria Mackenii* (st, p); *Barosma serratifolia* (c-h, w; 1-3); *Begonia crinita* (st, pi; 1); *B. nitida* (st, pi; 4-5); *B. opuliflora* (st, w; 1); *P. ramentœa* (st, pi and w; 1); *B. sanguinea* (st, w); *Boronia Drummondii* (c-h, pi; 2); *B. pinnata* (c-h, pi, sc; 1-3); *Bosissia disticha* (c-h, y-r; 14); *Bougainvillea speciosa* (c-h, l); *Bouvardia flava* (c-h, y; 14); *Brachysoma undulatum* (c-h, v-r); *Brilliantaisia ovariensis* (st, v-b; 3); *Brunfelsia eximia* (st, p, sc; 24); *Burchellia capensis* (st, r; 3-4); *Calliandra Tweedii* (st, r; 6); *Cantua pyrifolia* (c-h, y-w; 3); *Cereus flagelliformis* (c-h, r or pi); *Cestrum fasciculatum* (c-h, p-r; 5); *Clematis grandiflora* (st, g-y; 12); *Combretum raemosum* (st, w); *Correa cardinalis* (c-h, r and g; 3); *Daphne odora* (c-h, p, sc; 3); *D. o. Mazeli* (c-h, w and pi, sc); *Diosma ericoides* (c-h, w and r; 1-3); *Enkianthus quinquefolius* (c-h, r and pi-w; 3-10); *Epacris impressa* (c-h, w, varying to r; 2-3); *E. purpurascens* (c-h, w and r; 2-3); *E. varieties*; *Eranthemum aspersum* (st, w and p); *Erica andromediflora* (c-h, r or r-p; 1-3); *E. echiiflora* (c-h, r; 14); *E. gracilis vernalis* (c-h, p-r; 2-3); *E. hyemalis* (c-h, pi and w; 2); *E. Linneana* (c-h, w and r; 14); *E. physodes* (c-h, w; 1-2); *Eriostemon myoporoides* (c-h, pi; 1-2); *E. scaber* (c-h, w and pi; 14); *Eupatorium riparium* (c-h, w); *Fuchsia penduliflora* (c-h, r); *Gardenia Thunbergia* (c-h, w, sc; 4-5); *Gastrolobium bilobum* (c-h, y); *Gnidia pinifolia* (c-h, c-w; 1); *Gompholobium polymorphum* (c-h, r, y, and p); *Grevillea fasciculata* (c-h, r and y); *G. lavandulœa* (c-h, pi); *G. Thelemanniana* (c-h, r and y; 3-5); *Hibbertia dentata* (c-h, y); *Hoya Cumingiana* (st, g-y or w, and p-br); *Hypericum balearicum* (c-h, y; 1-2); *Indigofera australis* (c-h, pi; 3-4); *Jasminum Sambac* (st, w, sc); *Leucopogon australis* (c-h, w; 2-4); *L. Richei* (c-h, w; 3-4); *Lonicera sempervirens* (c-h, r and y); *Maclœmia speciosissima* (c-h, r and y); *Medinilla amabilis* (st, pi); *Mimulus glutinosus* (c-h, o-r or pi; 5); *Mitrostigma axillare* (st, w, sc; 5); *Monochetum sericeum multiflorum* (c-h, mv); *Monsonia speciosa* (c-h, pi and p; 4); *Oxylobium onestum obovatum* (c-h, y or p; 2); *Passiflora cinnabarina* (st, r); *P. raemosa* (st, r); *Pentas carnea* (st, pi-w; 14); *Philodendron Simsii* (st, r); *Rhipsalis salicornoides* (c-h, y); *Rhododendron javanicum* (c-h, o and r; 4); *Solanandra grandiflora* (st, g-w; 15); *Stachytarpheta mutabilis* (st, r; 3); *Tetratheca hirsuta* (c-h, pi; 1-14); *Thyrœanthus rutilans* (st, r; 2); *T. Schomburgkianus* (st, r; 3); *Whitfieldia lateritia* (st, r and o; 3).

APRIL.—Hardy.—ANNUALS.—*Androsace coronopifolia* (w); *Bivonea lutea* (y; 1-4); *Hutchinsia petraea* (w; 4); *Iberis umbellata* (variable; 1-1); *Limnanthes Douglasii* (y and w, sc; 4); *Malcolmia maritima* (l, pi, r, or w; 1-1);

April (Hardy Annuals)—continued.

Nemophila insignis (b; 1½); *Oxalis stricta* (y; 1½); *Ranunculus amplexicaulis* (w; ½-2); *R. gramineus* (y; ½-1).

BIENNIALS.—*Heesperia tristis* (w, c, br-r, or p, sc at night; 1-2); *Stachys germanica* (pi and w; 1-3).

PERENNIALS.—*Achillea Clavenna* (w; ½); *Alyssum gemonense* (y; 1); *A. saxatile* (y; 1) and vars.; *A. serpyllifolium* (y; ½); *Anemone apennina* (b; ½); *A. Halleri* (p; ½); *A. Pulsatilla* (v; ½-1); *A. rivularis* (w and p; 1-2); *A. stellata* (p, pi, or w; ½); *A. sylvestris* (w; ½-1½); *A. vernalis* (w and v; ½); *Antirrhinum majus* (variable; 2); *Apios hymale* (g-br; 1); *Aplectrum hymale* (g-br; 1); *Aquilegia canadensis* (r and y; 1-2); *A. glandulosa* (l-b; ½-1); *Arabis alba* (w; ½-2); *A. alpina* (w; ½); *A. arenosa* (pi, w, or b; ½); *A. blepharophylla* (pi-p; ½); *Arenaria balearica* (w; ½); *Arisema ringeri* (g, striped w); *Armeria setacea* (pi; ½); *Arum italicum* (g-y or w; ½-2); *A. tenuifolium* (w; 1); *Aubrietia deltoidea* (p; ½) and vars.; *Bellevalia romana* (w; ½); *Bulbine alooides* (y; 1); *Caltha palustris* (o-y; 1); *C. radicans* (y; ½); *Cardamine pratensis* (p or w; 1-1½) and vars.; *C. rhomboidea* (w) and vars.; *C. trifolia* (w; ½); *Carpolyza spiralis* (w and r); *Cheiranthus Cheiri* (variable; 1-2); *C. Marshallii* (o; 1-1½); *Chionodoxa Lucilia* (b and w; ½); *C. nana* (w or l; ½); *Colchicum luteum* (y; ½); *Convallaria majalis* (w, sc; ½-1); *Corydalis cava* (p; ½) and var.; *C. Marschalliana* (g-y; ½); *C. solida* (p; ½); *Crocus aureus* (o); *C. biflorus* (w to lavender, pi, and y); *C. vernus* (l, v, or w); *C. versicolor* (variable); *C. varieties*; *Dicentra eximia* (r-p; ½-1½); *D. spectabilis* (pi-r; ½-2); *Dodecatheon Meadia* (pi-p, w, or l; 1-1½) and vars.; *Doronicum austriacum* (y; 1-1½); *D. oncasicum* (y; 1); *D. Pardalianches* (y; 1½-3); *D. plantagineum excelsum* (y; 5); *Draba Aizoon* (y; ½); *D. alpina* (y; ½); *D. Mawii* (w); *Epidemium macranthum* (w; 10-15); *Eranthis sibiricus* (y; ½); *Erinus alpinus* (p; ½); *Erysimum ochroleucum* (y); *E. pulchellum* (g-y; 1); *Erythronium americanum* (y; ½-2); *E. dens-canis* (p-pi or w; ½); *Fragaria chilensis* (w; 1) and var.; *Fritillaria imperialis* (varying from y to r; 3); *F. lutea* (y and p; ½-1); *F. macrophylla* (pi; 3); *F. Meleagris* (p; 1); *F. tenella* (y); *Gagea lutea* (y; ½); *Galanthus nivalis* (w; ½-2); *G. plicatus* (w-g; ½); *Gentiana acaulis* (b and y; ½); *G. pyrenaica* (b; ½); *G. verna* (b; ½); *Geum montanum* (y; ½-1); *Haberlea rhodopensis* (l; ½-2); *Hacquetia Epipactis* (y; ½-2); *Helleborus olympicus* (p; 2); *H. acinthus amethystinus* (b; ½-1); *H. varieties*; *Iberidella rotundifolia* (pi-l and y, sc; ½-2); *Iris balkana* (l-p; 1); *I. biflora* (v-p and y); *I. Chamairis* (y and br; ½-2); *I. cretensis* (l); *I. cristata* (l and y; ½); *I. Pseudo-acorus* (y and br; 2-3); *I. pumila* (l-p and w; ½-2); *I. rubro-marginata* (g, p, and r; ½); *I. susiana* (w, l, and br-bk; 1-1½); *I. tuberosa* (p and g-y; 1); *Isopyrum thalicroides* (w; ½-1½); *Leucojum aestivum* (w and g; 1½); *L. vernum* (w and g, sc; ½-2); *Linaria Cymbalaria* (b or l); *Lychnis alpina* (pi; ½); *L. diurna* (p-pi; 1-3); *L. fulgens* (r; ½-1); *L. Lagaëæ* (pi and w; ½); *Mertensia alpina* (b; ½-2); *M. virginica* (p-b; 1-2); *Muscari botryoides* (b; ½-1); *M. Elwesii* (b); *M. Heldreichii* (b; ½-2); *M. moschatum* (p, becoming g-y and v, sc; ½); *M. paradoxum* (b-bk and g, sc); *M. racemosum* (b, becoming r-p, sc; ½-2); *M. Szovitsianum* (b, sc); *Myosotis dissitiflora* (b; ½-1); *M. palustris* (b; ½-1); *M. sylvatica* (b; 1-2); *Narcissus Bulbocodium* (y); *N. incomparabilis* (y and o-y); *N. Jonquilla* (y, sc); *N. Maulei* (w and y); *N. poeticus* (w and r, sc); *N. triandrus* (w); *N. varieties*; *Oenothera speciosa* (w, turning r; 2-3); *Omphalodes verna* (b and w; ½); *Ophrys spifera* (g and pi; 1); *Ornithogalum narbonense* (w and g; 1-1½); *O. nutans* (w and g); *Oxalis Acetosella* (w and p; ½); *O. corniculata* (y); *Paeonia Wittmanniana* (y-w; 2); *Petasites frigida* (w; ½); *Phlox divaricata* (l or b; ½-1½); *P. ovata* (r-p; 1-1½); *P. repens* (p or v; ½); *P. subulata* (pi or w) and vars.; *Physoclaina physaloides* (p-v; 1-1½); *Polemonium reptans* (b or w; ½); *Primula Allionii* (m and w); *P. altaica* (m and y; ½-2); *P. Auricule* vars. (½); *P. capitata* (v-b; ½-2);

April (Hardy Perennials)—continued.

P. denticulata (l; ½-1) and vars.; *P. involucreta* (e-w and y; ½) and var.; *P. japonica* (variable; 1-1½); *P. marginata* (v-pi; ½); *P. nivalis* (w; ½-2); *P. obconica* (w; ½-1); *P. Parryi* (p and y; ½-1½); *P. rosen* (pi and y; ½); *P. sinensis* (w or l; ½); *P. Steinii* (p); *P. verticillata simensis* (y; 1-1½); *P. viscosa pedemontana* (pi-p and y-w; ½); *P. vulgaris* (y; ½) and var.; *Pulmonaria angustifolia* (pi, turning b; 1); *Puschkinia scilloides* (w, striped b; ½-2); *Romanzoffia sitchensis* (w; ½); *Sanguinaria canadensis* (w; ½); *S. Bursariana* (c); *S. crassifolia* (w; 1); *S. granulata* (w; ½-1½); *S. ligulata* (r-w; 1); *S. oppositifolia* (p) and vars.; *S. peltata* (w or pi; 1-2); *S. virginiana* (w; ½-2); *Scilla nutans* (b, p, w, or pi) and var.; *Scopolia carniolica* (r and y, or r and g; 1); *Sodium acre aurum* (y); *Soldanella alpina* (v; ½); *S. montana* (p; ½); *Spiraea prunifolia flore-pleno* (w; 3); *Thalictrum anemonoides* (pi or w; ½); *Tiarella cordifolia* (y; ½-1); *Tradesantia virginica* (v, p, or w; ½-2); *Trillium erythrocarpum* (w, striped p; 1); *T. nivale* (w; 2-4); *Tulipa Eichleri* (r and y, blotched bk); *T. elegans* (r and y); *T. Greigi* (r, blotched bk; 2); *T. Oculus-solis* (r and y, blotched bk; 1-1½); *T. pubescens* vars. (sc); *T. suaveolens* (r and y; ½); *T. sylvestris* (y; 1-2); *Uvularia grandiflora* (y); *U. sessilifolia* (y; 1); *Vesicaria utriulata* (y; 1); *Vinca major* (b-p); *V. minor* (b-p); *Viola ocellata* (v-b, p, or w; ½-2); *V. Munbyana* (v or y); *V. rothomagensis* (b, striped bk).

SHRUBS.—*Abutilon striatum* (o-y; 10); *Adonocarpus frankenioides* (y; 1-3); *Amelanchier canadensis* (w; 6-8); *A. vulgaris* (w; 3-9); *Amygdalus inoana* (r; 2); *Arctostaphylos alpina* (w or pi-w); *A. Uva-ursi* (pi-w and r); *Azalea amoena* (r; 1); *Berberis Aquifolium* (y; 3-6); *B. buxifolia* (y; 8); *B. canadensis* (y; 4); *B. repens* (y; 1-2); *B. vulgaris* (y; 8-20); *B. Wallichiana* (y; 6-10); *Caragana jubata* (w and r; 1-2); *C. spinosa* (y; 4-6); *Cassandra angustifolia* (w; 1-2); *C. calyculata* (w; 1-3); *Ceanothus azureus* (b; 10); *Clematis florida* (w; 10); *Comptonia asplenifolia* (w; 3-4); *Cotonaster buxifolia* (w; 3-4); *C. frigida* (w; 10); *C. microphylla* (w; 3-4); *C. nummularia* (w; 10-15); *C. thymifolia* (pi; ½-1); *Crataegus Oxyacantha* (w, sometimes pi, sc; 10-20) and vars.; *Cydonia Maulei* (r); *Daphne Blagayana* (w, sc; 1); *D. Cneorum* (pi, sc; 1); *D. Mezereum* (r; 3-4); *D. oleoides* (w; 2); *D. pontica* (g-y, sc; 4-5); *Deutzia gracilis* (w; 1-2); *Diervilla rosea* (pi or w; 6); *Douglasia nivalis* (pi; ½); *Erica carnea* (r; ½); *Fromontia californica* (y; 6-10); *Garrya elliptica* (g-w or y; 8-10); *Halesia tetraptera* (w; 15-20); *Heliopsis vulgare* (y); *Hydrangea hortensis* (variable; 2-3); *Iberis saxatilis* (w; ½-2); *I. sempervirens* (w; ½-1); *Kalmia glauca* (l-p; 1-2); *Korria japonica* (o-y; 3-4); *Laburnum vulgare* (y; 20); *Lonicera Periclymenum* (r); *L. tatarica* (pi; 4-6); *Magnolia parviflora* (w and pi); *Oxycoceus macrocarpus* (pi); *Pieris floribunda* (w; 2-6); *Piptanthus nepalensis* (y; 10); *Prunus Pissardii* (w); *P. sinensis* (w or pi); *P. triloba* (w or pi; 6); *Pyrus Maulei* (r); *Rhododendron ferrugineum* (r and y; 1); *R. Matternichii* (pi); *Ribes aureum* (o-y; 6-8); *R. floridum* (w; 4); *R. gracile* (w; 4-5); *R. sanguineum* (pi; 4-8); *R. speciosum* (r; 6-8); *Rosa indica* (r; 4-20); *Sambucus racemosa* (w; 10-20); *Skimmia Laureola* (y, sc; 3-4); *Stuartia virginica* (w; 8); *Styrax grandifolia* (w; 6); *Syringa Emodi* (p or w; 6).

Half-hardy.—*Abromia umbellata* (pi; ½-2); *Zaluzianskia capensis* (w; ½-1).

PERENNIALS.—*Chionographis japonica* (w; ½-1); *Erodium E-richardi* (w and pi; ½); *Ferraria Ferraricola* (g-br); *F. undulata* (g-br); *Helicodiceros ornitus* (g-br, 1-1½); *Sarracenia Drummondii* (w) and vars.; *S. flava* (y) and vars.; *S. purpurea* (p; 1); *Triteleia uniflora* (l); *Viola pedunculata* (y).

SHRUBS.—*Calceolaria fuchsifolia* (y; 1-2); *Ceanothus cuneatus* (b or w; 4); *Cistus vaginatus* (pi; 2); *Clematis indivisa* (w and c; 20); *Cneorum pulverulentum* (y; 1-3); *Grindelia glutinosa* (y; 2); *Iberis gibraltarica* (w, and pi or r; 1-2); *Illicium floridanum* (r; 8); *Mathiola bicornis*

April (Half-hardy Shrubs)—continued.

(p-r); *Photinia serrulata* (w; 10-20); *Pittosporum crassifolium* (br-p; 4-10); *P. Tobira* (w, sc; 12); *P. undulatum* (w; 10); *Rhododendron campanulatum* (p-l; 4); *R. cinnabarinum* (br-r); *R. Dalhousie* (w or pi-w; 6-8).

Tender.—ANNUAL.—*Oxalis Barrelieri* (c-h, y; 4-1).

PERENNIALS.—*Aerides mitratum* (st, w and v; 2); *Anthurium acule* (st, b, sc; 1-3); *Arisema curvatum* (c-h, g, striped w; 4); *A. nepenthoides* (c-h, y, br, and g; 2); *Arpophyllum giganteum* (c-h, p and pi); *Begonia herbacea* (i-h, w; 4); *B. laciniata* (i-h, w, tinted pi); *Hillbergia Baraquiniensis* (st, g and r; 1½); *B. Zebrina* (st, g and pi; 1½); *Brassavola glauca* (i-h, y, o, and w; 1); *Brassia maculata* (i-h, y, spotted br and p; 1); *Burlingtonia candida* (st, w, stained y; 1); *B. fragrans* (st, w); *Cattleya amethystoglossa* (i-h, pi-l, p, &c.; 2-3); *C. gigas* (i-h, pi, p, or r-w, and y) and var.; *C. Mendellii* (i-h, w to pi and m); *C. Skinneri* (i-h, pi-p and w); *Chysis bracteosa* (st, w, blotched y); *Cineraria cruenta* (c-h, r-p; 2) and vars.; *Cirrhopetalum auratum* (st, straw, tinted r and o); *Cœlia macrostachya* (st, r; 1½); *Coslogyne flaccida* (i-h, w, y, and r, sc; 1); *C. Gowerii* (i-h, w and g-y); *C. ocellata* (i-h, w, y, and br; 1); *C. speciosa* (i-h, w, br, or g, y, and r; 1½); *Crinum Moorei* (c-h, g and r); *Cyanotis Kewensis* (st, pi); *Cyclamen persicum* (c-h, w and p; ½) and vars.; *Cymbidium bicolor* (st, p and r); *C. canaliculatum* (st, p-br and g-w); *C. giganteum* (st, br, y, and p); *Cypripedium Argus* (st, w, pi, g, bk-p, and p-br; 1); *C. barbatum* (st, p and w; 1) and vars.; *C. lævigatum* (st, p, br, g, and y); *C. superbiens* (st, w and br); *Cyrtoclophium citrinum* (st, g; 1); *C. maculatum* (st, g and p); *Cyrtopodium Andersoni* (st, y); *C. punctatum* (st, y, br, and p); *Darlingtonia californica* (c-h, g; 1-1½); *Dendrobium Brymerianum* (st, y); *D. cariniferum* (c-h, y, and r); *D. Dalhousianum* (st, y, r, and pi); *D. densiflorum* (st, y, and o) and vars.; *D. Devonianum* (st, w, p, and o) and vars.; *D. fimbriatum* (st, o); *D. Jenkinsii* (c-h, buff and y); *D. luteiflorum* (st, pi-p, w, and p); *D. nobile* (c-h, w, pi, and r, sc); *D. scaberrimum* (st, w, g, y, and o, sc); *D. superbum* (st, pi and p); *Epidendrum anrantiaum* (st, o and r; 1); *Griffithia dryades* (i-h, p-l and w; 1½); *G. hyacinthina* (i-h, b and w); *G. ornata* (i-h, b-l; 1-1½); *Hemanthus abyssinicus* (st, r); *H. cinnabarinus* (st, r); *Hesperanthes radiata* (c-h, w; ½); *Hesaea crispata* (c-h, pi; 4); *Hymenocallis calathinum* (c-h, r, sc); *Hypoxis stellata* (c-h, w and b; ½); *Imantophyllum cyrtanthiflorum* (c-h, pi or y); *I. miniatum* (c-h, o; 1-2); *Impatiens Sultani* (st, r; 1); *Ixia capillaris* (c-h, pi-w or l; 1½); *I. hybrida* (c-h, w; 1); *I. maculata* (c-h, o; 1); *I. patens* (c-h, pi; 1); *Kennedyia prostrata* (c-h, r); *K. p. Marryatæ* (c-h, r); *Lachenalia pendula* (c-h, p, r, and y); *L. purpureo-œrulea* (c-h, p-b; ½-1); *L. tricolor* (c-h, g, r, and y; 1); *Lælia flammea* (i-h, o-r and p-r); *L. præstans* (i-h, pi and r-p); *Lycaste aromatica* (i-h, y); *L. Deppoi* (i-h, y, br, w, and r); *L. jugosa* (i-h, c, w, and p); *Mantlea rubra* (c-h, y; 1-2); *Martica lutea* (i-h, y, r, w, and g; ½); *Masdevallia Estradæ* (c-h, p-mv and y); *M. Lindeni* (c-h, w, pi, and m); *Maxillaria luteo-grandiflora* (i-h, c-w, br-r, and o); *Mormodes bucinator* (st, r-br; 1-1½); *Nymphæa Devonensis* (st, aq, pi-r); *Odontoglossum bionense* (i-h, variable); *O. Cervantesii* (i-h, pi-l, w, and r-br); *O. crispum* (c-h, w, and y); *O. r-br*; *O. luteo-purpureum* (c-h, br or p, w, and y); *O. maculatum* (c-h, y, br-r, and br); *O. odoratum* (c-h, y, br, and p, sc); *O. Pescatorei* (c-h, w, p-r, and y); *O. pulchellum* (i-h, w and p, sc); *O. triumphans* (c-h, y, br-r, pi, and w); *Oncidium ampliatum* (st, y); *O. onculatum* (c-h, br-p and pi-p); *O. macranthum* (i-h, y and p-br); *O. sarcoodes* (i-h, o-y and r); *Oxalis rosea* (c-h, pi; ½-1); *O. versicolor* (c-h, w and r; ½); *Pelargonium pulchellum* (c-h, w and r); *Phœdranassa rubro-viridis* (st, r and g; 1); *Phaius tuberculatus* (st, w, y, and br); *P. Wallichii* (st, o-y, p, and br; 4-5); *Phalænopsis Aphrodite* (st, w, r, o, and y); *Pitcairnia coralina* (st, r and w); *Ranunculus Lyalli* (c-h, w; 2-4); *Richardia africana* (c-h, w; 2); *Rivina humilis*

April (Tender Perennials)

(st, w-pi; 1-2); *R. lævis* (st, w-pi; 7-8); *Sanchezia longiflora* (st, p); *Selenipedium caudatum* (st, y, br, and r-b; 1-1½); *S. Roezlii* (st, g and pi-p; 3); *Sparaxis grandiflora* (c-h, p, w, or variegated; 1-2); *Stenomoness vitellinum* (i-h, y; 1); *Strelitzia Reginae* (i-h, o and p; 5); *Streptanthera elegans* (c-h, pi-w, p, and c; ½); *Talauma pumila* (st, c and sc; 2-4); *Theropogon pallidus* (c-h, w); *Thunbergia coccinea* (st, r varying to o-pi); *T. erecta* (st, b, o, and y; 6) and var.; *Tigridia atrata* (c-h, p, g, and br; 2); *T. Melegris* (c-h, p and r; 1½); *T. Van Houttei* (c-h, y, p, and l; 1); *Tricophylla crispata* (c-h, p, w, and r); *T. suavis* (c-h, w or c-w, and y, spotted v-pi, sc); *Typhonium Brownii* (st, p); *Utricularia Endresii* (c-h, l and y; ½-1); *Vanda œrulescens Boxallii* (st, w, and l); *Vinca rosea* (i-h, pi or w); *Wahlenbergia saxicola* (c-h, l; ½-1).

SHRUBS.—*Abutilon Darwini* (c-h, o; 4); *Acacia brachybotrya* (c-h, y; 8); *A. onitriciformis* (c-h, y; 4); *A. onicata* (c-h, y; 6); *A. Drummondii* (c-h, y; 10); *A. grandis* (c-h, y; 6); *A. hispidissima* (c-h, w; 3-6); *A. lunata* (c-h, y; 2-4); *A. oxycedrus* (c-h, y; 6-10); *Acorotriche cordata* (c-h, w; 1); *Agapetes buxifolia* (st, r; 5); *Agathosma acuminata* (c-h, y; 1-2); *A. bruniaides* (c-h, l or w; 1-2); *A. ciliata* (c-h, w; 1-2); *A. erecta* (c-h, y; 1-2); *Anopterus glandulosa* (c-h, pi-w; 3); *Anthocerois albicans* (c-h, w; 1½-2); *Anthyllis Hermannis* (c-h, y; 2-4); *Aphelaxis ericoides* (c-h, w; 1); *A. humilis* (c-h, pi; 2); *Athrixia capensis* (c-h, r; 3); *Barleria Mackenii* (st, p); *Barosma dioica* (c-h, p; 1-2); *B. serratifolia* (c-h, w; 1-3); *Begonia crinita* (st, pi; 1); *B. nitida* (st, pi; 4-5); *B. opuliflora* (c-h, y-r; 1); *B. ramentacea* (st, pi and w; 1); *B. sanguinea* (st, w); *Blæria articulata* (st, r; 1); *Boronia Drummondii* (c-h, pi; 2); *B. pinnata* (c-h, pi; 1-3); *Bossia disticha* (c-h, y-r; 1½); *B. rhombifolia* (c-h, y and r; 1-8); *Bougainvillea speciosa* (c-h, l); *Braohysema latifolium* (c-h, r); *Brunfelsia acuminata* (st, b-w, sc; 1-2); *B. eximia* (st, p, sc; 2½); *B. hydrangeiformis* (st, b-p, sc; 1-3); *Burtonia scabra* (c-h, p; 2); *Calliandra Tweedii* (st, r; 6); *Camellia japonica* (c-h, variable; 20) and vars.; *Cantua buxifolia* (c-h, r; 4); *Colastrum lucidum* (c-h, w; 1-3); *Cestrum fasciculatum* (c-h, p-r); *Chorizema angustifolium* (c-h, o-r; 1½); *C. cordatum* (c-h, r or y; 1); *C. Henchmannii* (c-h, r; 2); *Clematis grandiflora* (st, g-y; 12); *Combretum racemosum* (st, w); *Conocarpus erectus* (st, w; 6-8); *Correa pulchella* (c-h, pi; 6); *Crassula jasmines* (c-h, w, turning r); *Diosma ericoides* (c-h, w and r; 1-3); *Echium fastuosum* (c-h, b; 2-4); *Enkianthus quinqueflorus* (c-h, r and pi-w; 3-10); *Eranthemum pulchellum* (st, b; 2); *Eria andromedæiflora* (c-h, r or r-p; 1-3); *E. Chamissonis* (c-h, pi; 1½); *E. colorans* (c-h, r varying to w; 2); *E. echiiflora* (c-h, r; 1½); *E. gracilis vernalis* (c-h, p-r; 2-3); *E. hymalis* (c-h, pi and w; 2); *E. Linneana* (c-h, w and r; 1½); *E. physodes* (c-h, w; 1-2); *E. Savileana* (c-h, r or p-r; 1); *Eriostemon buxifolius* (c-h, pi; 1-2); *E. intermedius* (c-h, w and pi; 3); *E. myoporoides* (c-h, pi; 1-2); *E. nerriifolius* (c-h, pi; 3); *E. scaber* (c-h, w and pi; 1½); *Eupatorium riparium* (c-h, w); *Gærtnera racemosa* (st, y and pi, sc); *Gastrolobium bilobum* (c-h, y); *Gaultheria fragrantissima* (c-h, w or pi); *Gnidia pinifolia* (c-h, c-w; 1); *Gompholobium polymorphum* (c-h, r, y, and p); *G. venustum* (c-h, p; 1-3); *Goodia lotifolia* (c-h, y and r; 2-4); *Grevillea fasciculata* (c-h, r and y); *G. lavandulæa* (c-h, pi); *G. macrostylis* (c-h, r and y; 4-6); *G. Thelemanniana* (c-h, r and y; 3-5); *Hibbertia dentata* (c-h, y); *Hovea elliptica* (c-h, b; 2-4); *Hoya Cumingiana* (st, g-y or w, and p-br); *H. globulosa* (st, w-y or c, and pi); *Hydrangea petiolaris* (c-h, w); *Hypericum balearium* (c-h, y; 1-2); *Indigofera australis* (c-h, pi; 3-4); *Jasminum Sambac* (st, w, sc); *Leucopogon australis* (c-h, w; 2-4); *L. Richei* (c-h, w; 3-4); *Lonicera sempervirens* (c-h, r and y); *Macleodiana pulchra* (c-h, y and r); *M. speciosissima* (c-h, r and y); *Magnolia fuscata* (c-h, p, sc; 2-4); *Medinilla amabilis* (st, pi); *Mimulus glutinosus* (c-h, br or pi; 5); *Mitrostigma axillare* (st, w, sc; 5); *Monochæstum sericeum multiflorum* (c-h, mv); *Monsonia speciosa*

April (Tender Shrubs)—continued.

(c-h, pi and p; †); *Morinda jasminoides* (st, y-br); *Oxylobium obtusifolium* (c-h, o, y, and r; 1-3); *O. trilobatum* (c-h, y; 2); *Passiflora alata* (st, r, p, and w, sc); *P. racemosa* (st, r); *Pentas ornata* (st, pi-w; 1‡); *P. parviflora* (st, r-y; 2); *Philodendron grandifolium* (st, g-p and w); *Philotheca australis* (st, r; 3); *Pimelea suaveolens* (c-h, y; 1-3); *Polygala myrtifolia grandiflora* (c-h, p; 4-6); *Protea cordata* (c-h, p; †-1); *P. Scoulymus* (c-h, p; 3); *Pultenaea obovata* (c-h, y; 2); *P. rosea* (c-h, pi; 2); *P. stricta* (c-h, y; 1-8); *P. villosa* (c-h, y; 1-3); *Rhipsalis salicornoides* (c-h, y); *Rhododendron Anthopogon* (c-h, y; 1-1‡); *R. formosum* (c-h, w, p, and y; 3-8); *R. javanicum* (c-h, o and r; 4); *Siphocampylus manettiiflorus* (st, r and y; 1); *Solandra grandiflora* (st, g-w; 15); *Stachytarpheta nutabilis* (st, r; 3); *Steriphoma oleomoides* (i-h, y; 6); *Thyracanthus rutilians* (st, r; 2); *T. Schomburgkianus* (st, r; 2); *Wigandia macrophylla* (i-h, l; 10).

MAY.—Hardy.—ANNUALS.—*Adonis autumnalis* (r; 1); *Anagallis grandiflora* (b and r; †); *Androsace coronopifolia* (w); *Campanula Erinus* (b-pi or w; †-‡); *Collinsia grandiflora* (p and b; 1); *C. verna* (w and b; 1); *Fumaria capreolata* (w and p; 4); *Hutchinsia petraea* (w; †); *Iberis umbellata* (variable; †-1); *Ionopidium acule* (l, or w and v; †); *Lasthenia glabrata* (y; †-1‡); *Limnantes Douglasii* (y and w, sc; †); *Linaria reticulata* (p, and y or br; 2-4); *Loasa Pentlandii* (o; 4); *Lunaria annua* (v-l; 1‡-3); *Malcolmia maritima* (l, ps, r, or w; †-1); *Mathiola annua* (variable; 1-2); *Nemophila insignis* (b; 1‡); *Oxalis striata* (y; 1‡); *Papaver alpinum* (y; †); *P. bracteatum* (r; 4); *Ranunculus aconitifolius* (w; †-2); *R. amplexicaulis* (w; †-‡); *R. asiaticus* (variable; †); *R. cortusifolius* (y; 2); *E. gramineus* (y; †-1); *Silene pendula* (pi-w).

BIENNIALS.—*Anagallis fruticosa* (r; 2); *Hesperis tristis* (w, c, br-r, or p, sc at night; 1-2); *Lunaria annua* (v-l; 1‡-3); *Stachys germanica* (pi and w; 1-3).

PERENNIALS.—*Achillea Clavennæ* (w; †); *A. Herbarota* (w; †); *Aetna alba* (w; 1-1‡); *A. spicata* (w or b; 1) and vars.; *Adenophora stylosa* (b; 1-1‡); *Ajuga australis* (b; †); *A. genevensis* (varying from b to pi or p; †-1); *A. orientalis* (b; 1-1‡); *A. pyramidalis* (b or p; †); *A. reptans* (b or pi; †); *Alyssum gemonense* (y; 1); *A. serpyllifolium* (y; †); *Androsace helvetica* (w); *A. sarmentosa* (pi); *A. villosa* (pi or pi-w, sc; †); *A. Vitaliana* (y; †); *Anemone alpina* (variable; †) and vars.; *A. baldensis* (w; †); *A. blanda* (b; †); *A. decapetala* (w; 1); *A. dichotoma* (w; 1‡); *A. fulgens* (r and bk; 1); *A. narcissiflora* (c, or c and p; 1); *A. palmata* (y; †); *A. pratensis* (p; †-1); *A. virginiana* (p-g or p; 2); *Antennaria dioica* (pi; †) and vars.; *Anthericum Liliago* (w; 1-1‡); *Antirrhinum Asarina* (r and y; †); *A. majus* (variable; 2); *Aquilegia alpina* (b, or b and w; 1); *A. atropurpurea* (p or b-v; 2-3); *A. cærulea* (b and w, or w; †-1); *A. californica* (y and o-r; 2-4); *A. canadensis* (r and y; 1-2); *A. chrysantha* (y and p; 3-4); *A. formosa* (r and y; 2-4); *A. fragrans* (w or p-r, sc; 1‡-2); *A. glandulosa* (l-b; †-1); *Arabis albidia* (w; †-‡); *A. alpina* (w; †); *A. arenosa* (pi, w, or b; †); *A. blepharophylla* (pi-p; †); *A. rosea* (pi-p; 1); *Arrenaria balearica* (y; †); *A. purpurascens* (p; †); *Arisæma ringens* (G, striped w; †-1); *Aristolochia Sipho* (y-b; 15-30); *Aristolochia Macqui* (g; 6); *Armeria dianthoides* (pi; †); *A. juniperifolia* (pi; †); *A. setacea* (pi; †); *Arnebia echioides* (y, spotted p; †-1); *Arum italicum* (g-y or w; †-2); *A. proboscideum* (g-p; †); *Asarum canadense* (br; 1); *Asperula odorata* (w; †-1); *Asphodelus albus* (w; 2); *Astragalus austriacus* (b and p); *Astrantia carnioica* (w; †-1); *A. major* (pi; 1-2); *Bellevalia syriaca* (w; 1); *Borago laxiflora* (b); *Brodiaea capitata* (v-p; 1-2); *B. multiflora* (b-p; 1-1‡); *Bulbine alooides* (y; †); *Caltha leptocarpa* (w; 1); *C. palustris* (o-y; 1); *C. radicans* (y; †); *Campanula betonicifolia* (p-b and y; 1‡); *C. oespitosa* (b or w; †-‡); *C. garganica* (b; †-‡); *C. glomerata* (b-v or w; 1-2) and vars.; *Cardamine asarifolia* (w; 1-1‡); *C.*

May (Hardy Perennials)—continued.

rhomboides (w) and vars.; *C. trifolia* (w; †); *Carpolys spiralis* (w and r); *Cedronella cordata* (p; †-‡); *Cephalanthera ensifolia* (w; 1-2); *C. grandiflora* (w; 1-2); *Cheiranthus Cheiri* (variable; 1-2); *C. Marshallii* (o; 1-1‡); *Chionodoxa Lucillie* (b and w; †); *C. nana* (w or l; †); *Chrysogonum virginianum* (y; †); *Cineraria aurantiaca* (o); *Colchicum luteum* (y; †); *Convallaria majalis* (w, sc; †-1); *Cornus canadensis* (p-w; †); *Corydalis bracteata* (g-y; †); *C. cava* (p; †) and var.; *C. lutea* (y; 1); *C. nobilis* (y and g; †); *C. solida* (p; †); *Cypripedium acule* (g, pi, and p); *C. arietinum* (g-br, r, and w; †-1); *C. candidum* (g-br and w; 1); *C. macranthum* (p; †-1); *C. pubescens* (y-br and y; 1‡-2); *Dentaria digitata* (y; 1‡); *D. diphylla* (w and p; †-1); *D. polyphylla* (c; 1); *Diosentra eximia* (r-p; †-1‡); *D. formosa* (r; †); *D. spectabilis* (pi-r; †-2); *Diocleum albus* (w; 1-1‡); *Doronicum austriacum* (y; 1-1‡); *D. cau casium* (y; 1); *D. Pardalianches* (y; 1‡-3); *D. planta gineum excelsum* (y; 5); *Draba glacialis* (y; †); *D. Mawi* (w); *Epimedium macrorrhizum* (w; 10-15); *E. Muschianum* (w); *Erinus alpinus* (p; †); *Erysimum alpinum* (g-y, sc †); *E. ochroleucum* (y); *E. pulchellum* (g-y; 1); *Fragaria chilensis* (w; 1) and var.; *Fritillaria lutea* (y and p; †-1); *F. macrophylla* (pi; 3); *F. pudica* (y; †-2); *F. recurva* (r; 2); *Funkia ovata* (b-l or w); *Gagea lutea* (y; †); *Gentiana scabra* (b and y; †); *G. ornata* (w and b); *G. verna* (b; †); *Geranium macrorhizon* (r or p; 1); *Geum montanum* (y; †-1); *Gratiola aurea* (o-y; †); *G. officinalis* (w and p; 1); *Habenaria blephariglotis* (w); *H. cristata* (y; 1); *Hacquetia Epipactis* (y; †-‡); *Helleborus olympicus* (p; 2); *Heuchera hispida* (veined p); *Hyacinthosus amethystinus* (b; †-1); *H. varieties* (sc); *Iberis Tenoreana* (p or w; †); *Iris cretensis* (l); *I. cristata* (l and y; †); *I. flavescens* (g-y p-br, and o-y; 2-3); *I. florentina* (w, g, br, and y, sc; 2-3); *I. germanica* (p, w, y, and br, sc; 2-3); *I. graminea* (p and y sc; †); *I. lutescens* (y and p-br); *I. rubro-marginata* (l, p and r; †); *I. sambucina* (p and y, sc; 2); *I. sibirica* (g-l and v; 1-2‡); *I. aequalis* (l-p and y; 2-3); *I. tuberosa* (p and g-y; 1); *I. variegata* (br and y; 1-1‡); *Isopyrum thalictroides* (w; †-1‡); *Lathyrus rotundifolius* (pi); *Leucocium æstivum* (w and g; 1‡); *L. vernum* (w and g, sc; †-‡); *Linaria Cymbalaria* (b or l); *Linum narbonense* (b or w; 2); *Lupinus nootkatensis* (b, and p, w, or y; 1-1‡); *L. ornatus* (b; 1-2); *L. perennis* (b; 2); *L. polyphyllus* (b; 4); *Lychnis alpina* (pi; †); *L. diurna* (p-p; 1-3); *L. fulgens* (r; †-1); *L. Lagasce* (pi and w; †); *Mandragora vernalis* (w or b; 1); *Meconopsis cambrica* (y; 1); *Melittis Melisophyllum* (c-w, and pi or p; 1-1‡); *Mertensia alpina* (b; †-‡); *M. lanceolata* (b; †-1); *M. sibirica* (p-b; †-1‡); *M. virginica* (p-b; 1-2); *Meum athamanticum* (w; 1-2); *Mitella pentandra* (y; †); *Muscari botryoides* (b; †-1); *M. Heldreichii* (b; †-2); *M. moschatum* (p, becoming g-l and v, sc; †); *M. racemosum* (b, becoming r-p, sc; †-2); *Myosotis palustris* (b; †-1); *M. sylvatica* (b; 1-2); *Myrrhis odorata* (w; 2-3); *Narcissus biflorus* (w and y); *N. Bulbodium* (y); *N. varieties*; *Oenothera acaulis* (w, turning r; †); *O. speciosa* (w, turning r; 2-3); *Omphalodes verna* (l and w; †); *Orehis foliosa* (y; 1‡-2‡); *O. purpurea* (g and pi); *Ornithogalum narbonense* (w and g; 1-1‡); *O. nutans* (w and g); *O. umbellatum* (w and g); *Orobis flacoides* (p; 6); *O. pannonicus* (variable; 1); *O. vernus* (‡ and b; 1); *Ourisia coccinea* (r; †-1); *Oxalis Aetobaealis* (w and p; †); *O. corniculata* (y); *Paeonia albiflora* (w or pi; 2-3); *P. Moutan* (variable; 3); *P. officinalis* (r; 2-3); *Pedicularis flammea* (r; †-1); *P. verticillata* (pi or w; †-1); *Petasites frigida* (w; †); *Phlox divaricata* (l or b; †-1‡); *P. ovata* (r-p; 1-1‡); *P. pilosa* (pi, p, or w; 1-2); *P. repens* (p or v; †); *Polygonatum biflorum* (g; 1-3); *Potentilla Saxifraga* (w; †-‡); *Potentilla altaica* (w and y; †-‡); *P. Auricula* var. (‡); *P. calycina* (p); *P. capitata* (v-b; †-‡); *P. denticulata* (l; †-1) and vars.; *P. involucrata* (c-w and y; †) and var.; *P. japonica* (variable; 1-1‡); *P. marginata* (v-p; †); *P. mollis* (r and p-r; 1-1‡); *P. nivalis* (w; †-‡); *P. obconica* (w; †-1); *P.*

May (Hardy Perennials)—continued.

Parryi (p and y; 1-1); P. rosea (pi and y; 4); P. sinensis (w or y; 4); P. Steinii (p); P. verticillata sinensis (y; 1-1); P. viscosa pedemontana (pi-p and y-w; 4); P. vulgaris (y; 4) and vars.; Pulmonaria angustifolia (pi, turning b; 1); Puschkinia scilloides (w, striped b; 4-4); Raymondia pyrenaica (p or w; 4); Ruscus Hypophyllum (y; 1-1); Salvia interrupta (v-p, w, and r-p; 3); Sanguinaria canadensis (w; 1); Saponaria ocyroides (r or pi); Saxifraga aretioides (o-y; 4); S. Burseriana (c); S. caesia (c; 4); S. Camposii (w; 4-4); S. Cotyledon (w; 1-2); S. crassifolia (w; 1); S. granulata (w; 4-1); S. Hostii (p-w; 4-1); S. hypnoides (w); S. ligulata (r-w; 1); S. Mawiana (w); S. moschata (y/or p; 2); S. oppositifolia (p) and vars.; S. pygmaea (y; 4); S. retusa (p); S. virginiana (y; 4-4); Scilla hispanica (b, pi-p, or w; 4-4); S. nutans (b, p, w, or pi) and vars.; S. peruviana (r or w; 4-1); S. pratensis (b); Sedum acre aureum (y); Silene alpestris (w; 4); S. Hookeri (pi); Sisyrinchium filifolium (w; 4-4); S. grandiflorum (p; 4); Smilacina oleracea (w; 4); S. stellata (w; 1-2); Spiraea prunifolia flore-pleno (w; 3); Stachys grandiflora (p and v; 1); Streptopus roseus (pi-p; 1-1); Stylophorum diphyllum (y; 1-1); Thalictrum aquilegifolium (w and p, or w; 1-3); Tradescantia virginica (v, pi, or w; 4-2); Trifolium uniflorum (b and p; 4); Trillium erectum (p; 1); T. erythrocarpum (w, striped p; 1); T. grandiflorum (w, turning pi; 1-1); Tulipa Eichleri (r and y, blotched bk); T. Gesneriana (variable; 2); T. macrospila (r and y-w, blotched bk); T. retroflexa (y); T. sylvestris (y); Uvularia grandiflora (y); U. sessilifolia (y; 1); Vesicaria utriculata (y; 1); Vinca major (b-p); V. minor (b); Viola cornuta (b); V. Munbyana (v or y); V. pedata (b or w); V. rothomagensis (b, striped bk); V. tricolor (p, w, or o-y; 4-1); Xerophyllum asphodeloides (w; 1-2); Zephyranthes Atamasco (w; 4-1).

SHRUBS.—Abutilon striatum (o-y; 10); A. vitifolium (b; 30); Acacia albicans (w; 5); Adenocarpus intermedius (y; 3-4); A. parvifolius (y; 3-4); Æthionema grandiflorum (pi; 1); Aretostaphylos nitida (w; 4); Atragene alpina (b, varying to w); A. americana (p-b); Azalea arborescens (r; 10-20); A. calendulacea (y, r, o, and r-br; 2-6); A. pontica (variable; 3-4); A. speciosa (r and o; 3-4); Berberis Aquifolium (y; 3-6); B. buxifolia (y; 8); A. canadensis (y; 4); A. Darwinii (o; 2); D. empetrifolia (y; 1-2); B. repens (y; 1-2); B. sinensis (y; 3-6); B. vulgaris (y; 8-20); B. Walliohiana (y; 6-10); Bignonia capreolata (o; 20); Buddleia globosa (o; 15-20); Calophaca vulgarica (y; 2-3); Calycanthus floridus (p, sc; 4-6); C. glaucus (p, sc; 4-6); C. laevigatus (p, sc; 3-6); Ceanothus azureus (b; 10); C. dentatus (b; 4-6); Celastrus scandens (y); Clematis florida (w; 10); Cotoneaster buxifolia (w; 3-4); C. frigidula (w; 10); C. microphylla (w; 3-4); C. nummularia (w; 10-15); C. vulgaris (r; 3-5); Crataegus Crus-galli ovalifolia (w; 10-20); C. C.-g. prunifolia (w; 15-20); C. Douglasii (w; 10-15); C. flava (w; 10-20); C. heterophylla (w; 10-20); C. nigra (w; 10-20); C. odoratissima (w, sc; 10-20); C. orientalis (w; 12-20); C. Oxycantha (w, sometimes pi, sc; 10-20) and vars.; C. Pyraeantha (w; 10-20); C. tanaostifolia (w; 12-20); Cytisus purpureus (p); Daphne pontica (g-y, sc; 4-5); Diervilla rosea (pi or w; 6); Elaeagnus hortensis (y, sc; 15-20); Empetrum nigrum (pi; 4-1); E. n. rubrum (br-p; 4-1); Epigma repens (w and r, sc); Exochorda grandiflora (w; 6); Fabiana imbricata (w; 3); Fothergilla alnifolia (w, sc; 3-6); Garrya elliptica (g-w or y; 8-10); Gaultheria Shallon (w and r); Halesia tetraptera (w; 15-20); Halimodendron argenteum (p; 4-6); Helianthemum vulgare (y); Hippophae rhamnoides (y; 2-20); Hydrangea hortensis (variable; 2-3); Iberis coraeifolia (w; 1); I. saxatilis (w; 4-4); I. sempervirens (w; 4-1); I. s. Garreiana (w; 4-4); Kalmia glauca (l-p; 1-2); Kerria japonica (o-y; 3-4); Labrunum vulgare (y; 20); Leucothoë axillaris (w; 2-3); L. rosmosa (w; 4-10); Linnaea borealis (pi-w); Lonicera Caprifolium (y and b, sc); L. Periclymenum (r);

May (Hardy Shrubs)—continued.

L. tatarica (pi; 4-6); Lycopium barbarum (p and y); Magnolia glauca (w, sc; 15); M. parviflora (w and pi); Opuntia Engelmannii (y; 4-6); O. Ficus-Indica (y; 2); O. missouriensis (y); Oxycoonus macrocarpus (pi); O. palustris (pi); Pavia californica (w or pi; 12-15); P. flava (y; 20); Philadelphia coronaria (w, sc; 2-10); Phillyrea media (w; 10-15); Pieris floribunda (w; 2-6); Piptanthus nepalensis (y; 10); Prunus sinensis (w or pi); P. triloba (w or pi; 6); Pyrus arbutifolia (w or p-w; 2-10); P. Chamaesepilus (r; 5-6); P. floribunda (pi-r); P. Toringo (w, or pi-w); Rhododendron ciliatum (r-p; 2); R. ferrugineum (r and y; 1); R. Fortunei (pi; 1-2); R. hirsutum (r; 1-2); R. Matternichii (pi); Rhodothamnus Chamaecistus (pi; 4); Ribes aureum (o-y; 6-8); R. floridum (w; 4); R. gracile (w; 4-5); R. sanguineum (pi; 4-8); R. speciosum (r; 6-8); Robinia hispida (pi; 3-8); Rosa blanda (pi; 1-8); R. indica (r; 4-20); R. lucida (r; 1-2) and var.; R. spinosissima (w or pi; 1-4); Rubus biflorus (w); R. spectabilis (r; 6-10); Sambucus racemosa (w; 10-20); Staphylea pinnata (w; 6-12); Stuartia pentagona (c; 10); Styraz grandifolia (w; 6); Syringa Josikaea (b-p; 5-10); S. vulgaris (r, b, or w; 8-20) and vars.; Viburnum plicatum (w or pi; 4-6); V. prunifolium (w or pi); Wistaria chinensis (b).

Half-hardy.—ANNUALS.—Schizopetalon Walkeri (w; 1-2); Zaluzianskia capensis (w; 4-1).

PERENNIALS.—Abronia fragrans (w; 1-2); Andryala lanata (y; 1); Anigozanthus flavidus (y-g; 3); A. pulcherrimus (y; 3); A. trianthinus (p and w; 3); Astilbe japonica (w; 1-2); Calceolaria Fothergillii (y, spotted r; 4-4); Caliphuria Hartwegiana (g-w; 1); Chionographis japonica (w; 4-1); Erodium Reichardi (w and pi; 4); Ferraria Ferraria (g-br); Heteranthera limosa (ag, v-b); Loasa lateritia (r); Lobelia fulgens (r; 1-2); L. splendens (r; 1-2); Moræa edulis (v; 4); M. triucapis (g-w; 1); Neja gracilis (y; 1); Nolina georgiana (w); Sarracenia flava (y) and vars.; S. purpurea (p; 1); S. rubra (r-p; 1-1); Triocytis hirta (w, dotted p; 1-3); T. macropoda (w-p, dotted p; 2-3); Tritoleia uniflora (l); Viola pedunculata (y); Wachen-dorfia thyriflora (y; 2); Zephyranthes carinata (g-pi; 1); Z. rosea (pi; 4).

SHRUBS.—Adenocarpus foliolosus (y; 4-6); Calceolaria hyssopifolia (y; 1-2); C. scabiosifolia (y); Cistus salvifolius Corbariensis (w; 2); C. vaginatus (pi; 2); C. villosus canescens (p, b, and y; 2); Chianthus puniceus (r; 3); Cneorum pulverulentum (y; 1-3); Convolvulus Cneorum (pi; 1-3); Coronilla glauca (y, sc by day; 2-4); Gaylussacia frondosa (g-p; 3-6); G. resinosa (r; 1-3); Geranium anomosifolium (p-r; 1-2); Grindelia glutinosa (y; 2); Hudsonia ericoides (y; 1); Illicium floridanum (r; 8); Linum arboreum (y; 1); Mathiola bicornis (p-r); Mitraria coccinea (r); Ononis arragonensis (y; 1-2); Pernettya pilosa (w; 4); Photinia serrulata (w; 10-20); Pittosporum undulatum (w; 10); Rhododendron cinnabarinum (br-r); R. Dalhousii (w or pi-w; 6-8); R. glaucum (pi-p; 2); R. lepidotum (y or p; 2-4); R. Veitchianum (w; 6); Static macrophylla (w; 2); S. rosea (b; 3); Viburnum odoratissimum (w or pi, sc; 6-10).

Tender.—ANNUAL.—Coccocypselum repens (st, b).

BIENNIAL.—Echium candicans (c-h, b; 2-4).

PERENNIALS.—Aoineta chrysantha (c-h, y, w, and r, sc; 1-4); A. Humboldtii (c-h, y, dotted br; 2); Acriopsis piota (st, w, g, and p; 4); Aerides crispum (st, p-pi and w; 1); Albuca fastigiata (c-h, w; 1-4); Amomum Melegueta (st, pi; 1-2); Anilema sinicum (c-h, b; 1); Anthurium acule (st, b, sc; 1-3); Arethusa bulbosa (c-h, pi-p, sc; 4); Arisæma nepenthoides (c-h, y, br, and g; 2); Arpophyllum giganteum (c-h, p and pi); Arthropodium neo-candolicum (c-h, w; 1); A. paniculatum (c-h, w; 3); Arum palæstinum (c-h, bk and y-w, spotted p); Babiana plicata (c-h, v, b, sc; 4); B. rigens (c-h, r; 4-4); B. stricta (c-h, w and l-b; 1) and vars.; Begonia herbacea (c-h, w; 4); B. laciniata

May (Tender Perennials)—continued.

(i-h, w, tinted pi); *Brassia maculata* (i-h, y, spotted br and p; 1); *B. verrucosa* (i-h, g, blotched bk-p and w); *Brunsvigia falcata* (c-h, r; 2); *Burlingtonia candida* (st, w, stained y; 1); *Calanthe veratrifolia* (i-h, w; 2-3); *Calochilus paludosus* (c-h, g and br; 2); *Canistrum eburneum* (st, w and g; 2); *Caragana Zahnii* (st, y; 1); *Cattleya amethystoglossa* (i-h, pi-l, p, and c; 2-3); *C. citrina* (i-h, y, sc; 2-2); *C. gigas* (i-h, pi, p, or r-v, and y) and var.; *C. intermedia* (i-h, variable; 1); *C. Mendelli* (i-h, w to pi, and m); *C. Mossiae* (i-h, pi, &c.; 1) and vars.; *C. Skinneri* (i-h, pi-p and w); *Ceropegia Barklyi* (c-h, pi); *Chironia jasminoides* (c-h, r or p; 1-2); *Chysis aurea* (st, y and r) and vars.; *C. bractescens* (st, w, blotched y); *Cineraria cruenta* (c-h, r-p; 2) and vars.; *Cirrhaea Loddigesii* (st, g-y and r striped); *Cirrhopetalum auratum* (st, straw, striped r and o); *Clivia nobilis* (c-h, r and y; 1); *Cologyno flaccida* (i-h, w, y, and r, sc; 1); *C. Gowerii* (i-h, w and g-y); *C. Hookeriana* (i-h, pi-p, w, br, and y; 4); *C. speciosa* (i-h, w, br or g, y, and r; 1); *Compantia falcata* (i-h, pi-p; 2); *C. rosea* (i-h, pi-p; 2); *Coryanthes macrantha* (st, y and p); *Crinum Moorei* (c-h, g and r); *Curcuma rubricaulis* (st, r; 1); *Cyanotis Kewensis* (st, pi); *Cymbidium giganteum* (st, br, y, and p); *Cypripedium barbatum* (st, p and w; 1) and vars.; *C. Dayanum* (st, w, p, and g); *C. laevigatum* (st, p, br, g, and y); *D. superbiens* (st, w and br); *C. villosum* (st, o-r, g, p, and br; 1); *Cyrtochilum maculatum* (st, g and p); *Cyrtopodium Andersoni* (st, y); *Dendrobium albo-sanguineum* (st, w and r); *D. Bensonii* (c-h, w, o, and bk); *D. Dalhousianum* (st, y, r, and pi); *D. densiflorum* (st, y and o) and vars.; *D. erythroxanthum* (st, o and p); *D. Falconeri* (st, w, p, and o); *D. Farmeri* (st, y and pi); *D. infundibulum* (st, w); *D. longicornu majus* (st, w); *D. moniliforme* (c-h, w and p; sc); *D. soabriligne* (st, w, g, y, and o, sc); *D. superbum anosmum* (st, pi and p); *D. Wardianum* (st, w, m, o, and r); *Disporum lanuginosa* (c-h, y and g; 1); *Epidendrum atropurpureum* (c-h, pi and p; 2-1); *E. auran-tiacum* (st, o and r; 1); *Episcia villosa* (st, w and p; 1-1); *Fragaria indica* (c-h, y); *Galaxia ovata* (c-h, y); *Geissorhiza grandis* (c-h, y and r); *G. inflexa* (c-h, y and p; 1); *G. Kochensis* (c-h, b and r; 2); *Gesneria Cooperi* (st, r; 2); *Gladiolus cuspidatus* (c-h, variable; 2-3); *G. floribundus* (c-h, w and p, varying to pi-w and r; 1); *Gongora maculata* (st, y and pi-r; 1); *Griffinia dryades* (i-h, p-l and w; 1); *G. hyacinthina* (i-h, b and w); *G. ornata* (i-h, b-l; 1-1); *Hedychium coronarium* (st, w, sc; 5); *Hesperantha radiata* (c-h, w; 2); *Hessea crispa* (c-h, pi; 2); *Hypoxis stellata* (c-h, w and b; 2); *Imantophyllum cyrtanthiflorum* (c-h, pi or y); *I. minutum* (c-h, o; 1-2); *Impatiens Sultani* (st, r; 1); *Ixia hybrida* (c-h, w; 1); *I. maculata* (c-h, o; 1); *I. odorata* (c-h, y, sc; 1); *I. speciosa* (c-h, r; 2); *I. viridiflora* (c-h, g; 1); *Kennedyia prostrata* (c-h, r); *K. p. Maryattae* (c-h, r); *K. rubicunda* (c-h, r); *Lachenalia fragrans* (c-h, r, sc; 2); *L. tricolor* (c-h, g, r, and y; 1); *Laelia praestans* (i-h, pi and r-p); *L. purpurata* (i-h, w and p-r); *L. P. Williamsii* (i-h, br and r); *Lycaste aromatica* (i-h, y); *L. Deppei* (i-h, y, pi, w, and r); *L. jugosa* (i-h, c, w, and p); *Manulea rubra* (c-h, y; 1-2); *Marcia caerulea* (c-h, b, y, br, and o; 2); *Maxillaria luteo-grandiflora* (i-h, c, w, br-r, and o); *Miltonia Phalaenopsis* (i-h, w, p-r, and y; 2); *Nerine undulata* (c-h, pi-w; 1); *Nymphaea Devoniensis* (st, ag, pi-r); *Odontoglossum citrosum* (i-h, w and p, sc); *O. crispum* (c-h, w, y, and r-br); *O. luteo-purpureum* (c-h, br or p, w, and y); *O. maculatum* (c-h, y, br-r, and br); *O. odoratum* (c-h, y, br, and p, sc); *O. Pescatorei* (c-h, w, p-r, and y); *O. pulchellum* (i-h, w and p, sc); *O. triumphans* (c-h, y, br-r, pi, and w); *Oncidium ampliatum* (st, y); *O. onoullatum* (c-h, br-p and pi-p); *O. macranthum* (i-h, y and p-br); *O. sarcoides* (i-h, o-y and r); *Oxalis rosea* (c-h, pi; 2-1); *Peperomia elusifolia* (st, r; 1); *Phaius tuberosus* (st, w, y, and br); *P. Wallichii* (st, o-y, p, and br; 4-5); *Phalaenopsis Aphrodite* (st, w, r, o, and y); *Pitcairnia corallina* (st, r and w); *P. fulgens* (st, r); *P. pungens* (st, r); *Pogonia Gamnieana* (st, l); *Pterodiscus speciosus* (st,

May (Tender Perennials)—continued.

r or l; 2); *Ranunculus Lyalli* (c-h, w; 2-4); *Richardia africana* (c-h, w; 2); *Rivina humilis* (st, w-pi; 1-2); *R. laevis* (st, w-pi; 7-8); *Romulea speciosa* (c-h, pi, y, and w; 2); *Saccolabium curvifolium* (st, r; 2-1); *S. rubrum* (st, pi; 2); *Selenipedium caudatum* (st, y, br, and r-br; 1-1); *S. Lindoni* (st, w; 1); *S. Roezlii* (st, g and pi-p; 3); *Sparaxis tricolor* (c-h, y, spotted br, &c.); *Spiranthes colorans* (st, r; 2); *Stapelia Asterias* (c-h, v, y, and p; 2); *Stenomesson aurantiacum* (i-h, y; 1); *S. coccineum* (i-h, r; 1); *Streptanthera elegans* (c-h, pi-w, p, &c.; 2); *Streptocarpus Dunnii* (i-h, r-pi; 1); *Stylidium bulbiferum macrocarpum* (c-h, g-p); *Synnotia variegata* (c-h, y and v; 1); *Talauma pumila* (st, c, sc; 2-4); *Theropogon pallidus* (c-h, w); *Thunbergia erecta* (st, b, o, and y; 6) and vars.; *Tillandsia Meleagris* (c-h, p and r; 1); *T. Van Houttei* (c-h, y, p, and l; 1); *Tillandsia xiphioides* (st, w, sc); *Trichopilia crispa* (c-h, p, w, and r); *T. marginata* (c-h, variable); *Utricularia Endresii* (c-h, l and y; 2-1); *Vullostylis purpurea* (c-h, r; 2-3) and vars.; *Vanda carulescens Buxallii* (st, w, v, l, and b); *V. insignis* (st, br, y-w, and pi); *Vinca rosea* (i-h, pi or w); *Vitex Lindeni* (l, streaked r); *Watsonia Meriana* (c-h, p or r; 2-2); *Zephyranthes Andersoni* (c-h, o-r; 2).

SHRUBS.—*Acacia affinis* (c-h, y; 5); *A. arabica* (c-h, w; 20); *A. grandis* (c-h, y; 6); *A. heterophylla* (c-h, y; 5); *A. Lebbek* (c-h, y; 20); *A. linearis* (c-h, y; 3-6); *A. Riceana* (c-h, y; 20); *Acacia myriophylla* (c-h, y; 2-1); *Acmena floribunda* (c-h, w; 4); *Acrophyllum venosum* (c-h, pi-w; 6); *Acrotiche divaricata* (c-h, w; 2-1); *Adenandra fragrans* (st, pi; 1-2); *Adesmia glutinosa* (c-h, y; 1-2); *Albizia lophantha* (c-h, y; 6-10); *Alonsoa incisifolia* (c-h, r; 1-2); *Amerimnon Brownei* (st, w, sc; 6-10); *Anona longifolia* (st, pi; 20); *Anopterus glandulosa* (c-h, pi-w; 3); *Anthoeceria viscosa* (c-h, w; 4-6); *Aotus graoillima* (c-h, y and r; 3); *Apeiba aspera* (st, o); *Astilbe Thunbergii* (c-h, w; 1); *Azalea sinensis* (c-h, y-r; 3-4); *Bacchousia myrtifolia* (c-h, w; 16); *Barleria Mackenii* (st, p); *Barnadosia rosea* (c-h, pi; 1); *Barroma serratifolia* (c-h, w; 1-3); *Beaufortia purpurea* (c-h, p-r); *Begonia crinita* (st, pi; 1); *B. nitida* (st, pi; 4-5); *B. opuliflora* (st, w; 1); *B. ramentacea* (st, pi and w; 1); *B. sanguinea* (st, w); *Bignonia speciosa* (i-h, pi, stained p; 4); *Billardiera longiflora* (c-h, g-y, turning p); *B. scandens* (c-h, c, turning p; 10); *Boronia Drummondii* (c-h, pi; 2); *B. elatior* (c-h, pi; 4); *B. pinnata* (c-h, pi; 1-3); *Bossia disticha* (c-h, y-r; 1); *B. linnæoides* (c-h, y and br); *Bougainvillea speciosa* (c-h, l); *Brucea sumatrana* (st, p; 20); *Brunfelsia eximia* (st, p, sc; 2); *Bunchoxia odorata* (c-h, y; 7); *Burtonia villosa* (c-h, p; 2); *Cacoucia coccinea* (st, r); *Camellia japonica* (c-h, variable; 20) and vars.; *Capparis amygdalina* (st, w; 6); *Celastrus lucidus* (c-h, w; 1-3); *Cerothium fothergilloides* (c-h, p; 12); *Chorizanthe diversifolia* (c-h, o-r; 2); *C. Henchmannii* (c-h, r; 2); *Clematis grandiflora* (st, g-y; 12); *Cobaea scandens* (c-h, p; 20); *Comarostaphylis arbutoides* (c-h, w; 6); *Combretum elegans* (st, y); *C. grandiflorum* (st, r); *C. racemosum* (st, w); *Crasula arborescens* (c-h, pi; 2-3); *C. jasminica* (c-h, w, turning r); *Decaisnea insignis* (c-h, g; 8); *Dillwynia ericiifolia* (c-h, y); *D. hispida* (c-h, p-r; 3-6); *Diosma ericoides* (c-h, w and r; 1-3); *Dipladenia amabilis* (st, pi-r; 10); *Echium fastuosum* (c-h, b; 2-4); *Enkianthus quinqueflorus* (c-h, r and pi-w; 3-10); *Epacris longiflora* (c-h, r and w; 2-4); *E. pulchella* (c-h, r or pi; 1-3); *Erica andromedaeflora* (c-h, r or r-p; 1-3); *E. Cavendishiana* (c-h, y; 1); *E. corinthoides* (c-h, r; 3); *E. colorans* (c-h, r, varying to w; 2); *E. echiiflora* (c-h, r; 1); *E. eximia* (c-h, r and g; 2); *E. hybrida* (c-h, r); *E. hymalis* (c-h, pi and w; 2); *E. Lambertiana* (c-h, w; 1-2); *E. Linnæana* (c-h, w and r; 1); *E. McNabiana* (c-h, pi-r and w); *E. odorata* (c-h, w, sc; 1); *E. physodes* (c-h, w; 1-2); *E. primuloides* (c-h, pi-p; 1); *E. Savileana* (c-h, r or p-r; 1); *E. tricolor* (c-h, r, w, and g-y; 2); *Eriostemon buxifolius* (c-h, pi; 1-2); *E. scaber* (c-h, w and pi; 1); *Eupatorium riparium* (c-h, w); *Felicia frutescens* (c-h,

May (Tender Shrubs)—continued.

p and y; 1-2); *Gastrolobium bilobum* (c-h, y); *Gomphia olivæformis* (st, y; 10-15); *Gompholobium polymorphum* (c-h, r, y, and p); *G. venustum* (c-h, p; 1-3); *Goodia lotifolia* (c-h, y and r; 2-4); *Grevillea alpina* (c-h, r and y; 4); *G. fasciculata* (c-h, r and y); *G. lavandulæcea* (c-h, pi); *G. Thelemanniæna* (c-h, r and y; 3-5); *Heliotropium corymbosum* (c-h, l; 4); *Hibbertia dentata* (c-h, y); *Hindsia violæcea* (st, b; 3); *Hovea elliptica* (c-h, b; 2-4); *Hoya Cumingiana* (st, y-y or w, and p-br); *Hydrangea petiolaris* (c-h, w); *Hypericum balearicum* (c-h, y; 1-2); *Indigofera australis* (c-h, pi); 3-4); *Jasminum Sambac* (st, w, sc); *Juanulloa parasitica* (st, o; 3); *Laobnæa buxifolia* (c-h, w; 2); *Leucopogon Richei* (c-h, w; 3-4); *Lonicera sempervirens* (c-h, r and y); *Lotus poliorhynchus* (c-h, r; 2); *Luculia Pinœana* (c-h, w, sc); *Mackaya bella* (c-h, l and p; 6); *Medinilla amabilis* (st, pi); *M. magnifica* (st, pi; 3); *Mosembryanthemum coccineum* (c-h, r); *M. spectabile* (c-h, r; 1); *Mimulus glutinosus* (c-h, br or pi; 5); *Mitriostigma axillare* (st, w, sc; 5); *Monsonia speciosa* (c-h, pi and p; $\frac{1}{2}$); *Myrtus Ugni* (c-h, w; 4); *Opuntia brasiliensis* (c-h, g-y; 10-30); *Oxylobium ellipticum* (c-h, y; 2-3); *Passiflora alata* (st, r, p, and w; sc); *P. alba* (st, w); *P. amabilis* (st, r and w); *P. racemosa* (st, r); *Pelargonium abrotanifolium* (c-h, w or pi; 3); *P. quercifolium* (c-h, p or pi; 3); *Pentas carnea* (st, pi-w; $\frac{1}{2}$); *Petrophila acicularis* (c-h, w and r; 2); *Philodendron crassinervium* (st, r and y-g); *Physostelma Wallichii* (st, g-y); *Pimeloa ferruginea* (c-h, pi or r; 1-2); *P. hispida* (c-h, b; 2-4); *P. spectabilis* (c-h, pi-w; 3-4); *Pitiosporum viridiflorum* (c-h, g-y, sc; 6); *Platylobium triangulare* (c-h, y; 1); *Pteronia elegans* (st, b; 5); *Podalyria calyptata* (c-h, p; 6); *Podanthus geminata* (st, o-y and r-p); *Polygala myrtifolia grandiflora* (c-h, p; 4-6); *Protea formosa* (c-h, v, pi, and w; 6); *Psidium Cattleianum* (st, w; 10-20); *Psoralea pinnata* (c-h, b; 3-6); *Pultenæa stricta* (c-h, y; 1-3); *Quinquæfolia indica* (st, variable); *Rhaphis salicornoides* (c-h, y); *Rhododendron Anthopogon* (c-h, y; 1-1 $\frac{1}{2}$); *R. Aucklandii* (c-h, w, pi, and y; 4-8); *R. calophyllum* (c-h, y-w; 3); *R. Edgeworthii* (c-h, w, sc); *R. formosum* (c-h, w, p, and y; 3-8); *R. jasminiflorum* (c-h, pi-w; 2); *R. javanicum* (c-h, o and r; 4); *R. Nuttallii* (c-h, w, sc; 12-30); *R. Thomsonii* (c-h, r; 6-15); *Sida inaequalis* (st, w; 7); *Solandra grandiflora* (st, g-w; 15); *S. viridiflora* (st, y; 2-3); *Sparmannia africana* (c-h, w; 10-20); *Sphaeralcea minima* (c-h, r; 1); *Sprengelia incarnata* (c-h, pi; 2); *S. Ponceletii* (c-h, r; 1); *Stachytarpheta mutabilis* (st, r; 3); *Stenanthera pinifolia* (c-h, r-y and g; 2-3); *Stephanotis floribunda* (st, w, sc; 10); *Steriphoma cleomoides* (i-h, y; 6); *Thysanotus rutilans* (st, r; 2); *T. Schomburgkianus* (st, r; 2); *Turraea obtusifolia* (i-h, w; 4-6); *Yucca aloifolia* (c-h, w; 15-20).

JUNE.—Hardy.—ANNUALS.—*Acroclinium roseum* (pi; 1-2) and vars.; *Adonis æstivalis* (r; 1); *Æthionema Buxbaumii* (r; $\frac{1}{2}$); *Agrostemma cœli-rosa* (pi, w, or p; 1); *Anagallis grandiflora* (b and r; $\frac{1}{2}$); *Androsace coronopifolia* (w); *Bartonia aurea* (o-y; 1); *Bellium bellidoides* (w; $\frac{1}{2}$); *Brachycome iberidifolia* (b or w; 1); *Calendula maderensis* (o; 2); *C. officinalis* (o; 3); *Campanula Erinus* (b-pi or w; $\frac{1}{2}$); *Castilleja pallida* (w or y; $\frac{1}{2}$); *Cerintho minor* (y, spotted br; 1-1 $\frac{1}{2}$); *Chrysanthemum segetum* (y; 1 $\frac{1}{2}$); *Clarkia elegans* (r; 2); *C. pulchella* (p; 1 $\frac{1}{2}$ -2); *Collinsia grandiflora* (p and b; 1); *Collomia coccinea* (r; 1-1 $\frac{1}{2}$); *C. grandiflora* (r-y; 1 $\frac{1}{2}$ -2); *Coreopsis Drummondii* (y and r-br; 1); *Dolpchinum Ajacis* (b, r, or w; 1-1 $\frac{1}{2}$); *Downingia elegans* (b and w; $\frac{1}{2}$); *D. pulchella* (b and y; $\frac{1}{2}$); *Eschscholtzia californica* (y; 1 $\frac{1}{2}$); *E. c. crocea* (o; 1); *Euharidium concinnum* (l-p; 1); *Fumaria capreolata* (w and p; 4); *Gilia capitata* (b; 1-2); *G. densiflora* (l or w); *G. liniflora* (w; 1); *G. micrantha* (pi; $\frac{1}{2}$); *G. tricolor* (y-o, and p or w; 1); *Glaucium phœniceum* (r and bk; $\frac{1}{2}$); *Helianthus annuus* (y; 6); *Helicichrysum bracteatum niveum* (w and y); *Heliotropium convolvulaceum* (w, sc; 2); *Iberis umbellata* (variable; $\frac{1}{2}$ -1); *Ionopidium aureum* (l, or w and v; $\frac{1}{2}$); *Ipomœa purpurea* (p; 10); *Lasthenia*

June (Hardy Annuals)—continued.

glabrata (y; $\frac{1}{2}$ -1 $\frac{1}{2}$); *Lathyrus grandiflorus* (pi); *L. odoratus* vars.; *Lavatera trimestris* (pi; 3-6); *Limnanthes Douglasii* (y and w, sc; $\frac{1}{2}$); *Linaria reticulata* (p, and y or br; 2-4); *L. spartea* (y); *Linum grandiflorum* (pi; $\frac{1}{2}$ -1); *Loasa Pentlandii* (o; 4); *L. prostrata* (y); *L. vulcanica* (w; 2); *Lunaria annua* (o-l; 1 $\frac{1}{2}$ -3); *Lupinus luteus* (y, sc; 1-1 $\frac{1}{2}$); *L. nanus* (l and b; 1); *Malcolmia maritima* (l, pi, r, or w; $\frac{1}{2}$ -1); *Mathiola annua* (variable; 1-2); *Nemesia cynanchifolia* (l-b; 1 $\frac{1}{2}$ -2); *N. floribunda* (w and y, sc; 1); *Nemophila insignis* (b; $\frac{1}{2}$); *N. maculata* (w and v-p; $\frac{1}{2}$); *N. Menziesii* (w to b; $\frac{1}{2}$); *Nigella damascena* (w or b; 1-2); *N. hispanica* (b; 1-2); *N. orientalis* (y and r; $\frac{1}{2}$); *Nolana paradoxa* (v); *N. tenella* (b); *Nonnea rosea* (pi; $\frac{1}{2}$ -1); *E. Enothera amœna* (pi and r; 1-2); *E. bistorta Veitchiana* (y and r); *E. Whitneyi* (pi-r and r; 1-1 $\frac{1}{2}$); *E.* varieties; *Omphalodes linifolia* (w; $\frac{1}{2}$ -1); *Oxalis stricta* (y; 1 $\frac{1}{2}$); *O. valdiviensis* (y and r; $\frac{1}{2}$ - $\frac{3}{4}$); *Papaver alpinum* (y; $\frac{1}{2}$); *P. nudicaule* (o, y, or w; $\frac{1}{2}$ -1 $\frac{1}{2}$); *P. orientale* (r, spotted p; 2-3) and vars.; *P. pilosum* (r and w, or o and w; 1-2); *P. Rhœas* (r; 1) and vars.; *Phacelia campanularia* (b and w; $\frac{1}{2}$ - $\frac{3}{4}$); *P. Whitlavia* (b; 2); *Podolepis aristata* (y and pi; 1); *Ranunculus aconitifolius* (w; $\frac{1}{2}$ -2); *R. anemonoides* (pi-w; $\frac{1}{2}$ - $\frac{3}{4}$); *R. asiaticus* (variable; $\frac{1}{2}$); *R. gramineus* (y; $\frac{1}{2}$ -1); *R. parnassifolius* (w or p-w; $\frac{1}{2}$ - $\frac{3}{4}$); *R. keseda odorata* (y-w, sc) and vars.; *Sabbatia calycosa* (w; $\frac{1}{2}$ -1 $\frac{1}{2}$); *S. campestris* (pi; 1); *Schizanthus pinnatus* (variable; 2); *Sedum glandulosum* (r-p); *Selenia aurea* (y; $\frac{1}{2}$); *Silene Atocion* (y; $\frac{1}{2}$ -1); *S. pendula* (pi-w); *Sonchus gumifera* (y; 2-3); *Statice Suworowi* (l); *Swertia corymbosa* (b, or b and w; $\frac{1}{2}$ -1 $\frac{1}{2}$); *Tropœolum peregrinum* (y); *Vicia onobrychioides* (p; 2).

BIENNIALS.—*Anagallis fruticosa* (r; 2); *Blumenbachia coronata* (w; $\frac{1}{2}$); *Campanula sibirica divergens* (v; $\frac{1}{2}$); *Celosia crocea* (y, spotted r-y; 4-6); *Dianthus chinensis* (variable; $\frac{1}{2}$ -1); *Digitalis purpurea* (p, varying to w; 3-5); *Glaucium flavum* (y; 1-2); *Grindelia grandiflora* (y or o; 2 $\frac{1}{2}$ -3); *Hesperis tristis* (w, c, br-r, or p, sc at night; 1-2); *Lunaria annua* (v-l; 1 $\frac{1}{2}$ -3); *Meconopsis Wallichii* (b; 4-6); *E. Enothera biennis* (y, sc; 2-4); *Salvia bicolor* (b-v, dotted o, and w; 2-3); *Stachys germanica* (pi and w; 1-3).

PERENNIALS.—*Acantholimon glumaceum* (pi); *A. venustum* (pi; $\frac{1}{2}$ - $\frac{3}{4}$); *Acanthus longifolius* (p; 2-3); *A. mollis* (w; 3-4); *A. spinosus* (p; 3-4); *Achillea ægyptiaca* (y; 1 $\frac{1}{2}$ -2 $\frac{1}{2}$); *A. Ageratum* (w; $\frac{1}{2}$); *A. asplenifolia* (pi; $\frac{1}{2}$); *A. aurea* (y; 1 $\frac{1}{2}$); *A. Clavennæ* (w; $\frac{1}{2}$); *A. Eupatorium* (y; 4-5); *A. moschata* (w; $\frac{1}{2}$); *A. pectinata* (w; 1 $\frac{1}{2}$); *Aconitum angustifolium* (b; 2-3); *A. biflorum* (b; 6); *A. chinense* (b; 4-6); *A. delphinifolium* (b-p; $\frac{1}{2}$ -2); *A. emimens* (b; 2-4); *A. gracile* (b or v; 2); *A. Halleri* (v; 4-6) and vars.; *A. Napellus* (b; 3-4); *A. paniculatum* (w; 2-3); *A. pyrenaicum* (y; 2); *A. rostratum* (w; 1-2); *A. tanricum* (b; 3-4); *A. Willdenovii* (b-p; 2-3); *Acorus Calamus* (y; 3); *Actœa alba* (w; 1-1 $\frac{1}{2}$); *Actinella grandiflora* (y; $\frac{1}{2}$ - $\frac{3}{4}$); *Adenophora Lamarekii* (b; 1-2); *A. verticillata* (b; 2-3); *Ajuga australis* (b; $\frac{1}{2}$); *A. pyramidalis* (b or p; $\frac{1}{2}$); *Alchemilla alpina* (g; 6); *A. sericea* (g; $\frac{1}{2}$); *Allium azureum* (b; 1-2); *A. cœruleum* (b; $\frac{1}{2}$); *A. Moly* (y; 1-1 $\frac{1}{2}$); *A. neapolitanum* (w; 1-1 $\frac{1}{2}$); *A. nigrum* (w or w; 2 $\frac{1}{2}$ -3 $\frac{1}{2}$); *A. reticulatum attenuifolium* (pi or w; 1); *A. roseum* (l-pi; 1-1 $\frac{1}{2}$); *A. sphærocephalum* (r-p and g; 1 $\frac{1}{2}$ -2 $\frac{1}{2}$); *Alstrœmeria aurantiaca* (o; 3-4); *A. chilensis* (p-r or p; 2-3); *A. Simsi* (y, streaked r; 3); *Althœa cannabina* (pi; 5-6); *A. flexuosa* (r; 2-3); *Alyssum alpestre* (y; $\frac{1}{2}$); *A. gemonense* (y; 1); *A. serpyllifolium* (y; $\frac{1}{2}$); *A. Wiersbeckii* (y; $\frac{1}{2}$); *Amsonia salicifolia* (b; 1 $\frac{1}{2}$ -2 $\frac{1}{2}$); *A. Tabernamontana* (b; 1 $\frac{1}{2}$ -2 $\frac{1}{2}$); *Androsace argentea* (w; $\frac{1}{2}$); *A. Chamæjasme* (pi-w; $\frac{1}{2}$); *A. lactea* (w; $\frac{1}{2}$); *A. lanuginosa* (pi; $\frac{1}{2}$ - $\frac{3}{4}$); *A. Vitaliana* (y; $\frac{1}{2}$); *Anemone coronaria* (variable; $\frac{1}{2}$); *A. decapetala* (w; 1); *A. dichotoma* (w; 1 $\frac{1}{2}$); *A. multifida* (y or w-y; $\frac{1}{2}$ -1); *A. obtusiloba* (c; $\frac{1}{2}$); *A. patens* (p or y; 1); *Anomatheca cruenta* (r; $\frac{1}{2}$ -1); *Antennaria dioica* (st pi); *Anthemis Aizoon* (w and y; $\frac{1}{2}$); *Anthericum Liliago* (w; 1-1 $\frac{1}{2}$); *A. Liliastrum* (w; 1-2); *A. ramosum* (w; 2); *Anthyllis montana* (pi or p; $\frac{1}{2}$ - $\frac{1}{2}$); *A. Vulneraria* (y, w, r, or pi); *Antirrhinum*

June (Hardy Perennials)—continued.

Asarina (r and y; 4); *A. tortuosum* (p; 1-1½); *Aphyllanthus monspeliensis* (b; 1); *Apios tuberosa* (br-p, sc; 4); *Aquilegia Bertoloni* (b-v; 1); *A. carulea* (b and w, or w; 2-1½); *A. californica* (y and o-r; 2-4); *A. canadensis* (r and y; 1-2); *A. chrysantha* (y and p; 3-4); *A. formosa* (r and y; 2-4); *A. fragrans* (w or r-p, sc; 1½-2); *A. pyrenaica* (l-b; 2-1); *A. sibirica* (l; 1); *Arabis arvensis* (pi, w, or b; 4); *A. lucida* (w; 1-1½) and vars.; *A. petraea* (w; 4); *A. rosea* (pi-p; 1); *Arenaria balearica* (w; 4); *A. graminifolia* (w; 4-½); *A. grandiflora* (w; 4-½); *A. laricifolia* (w; 4); *A. longiflora* (w; 4-½); *A. populoidea* (w; 4); *Arisæma triphylla* (p-b and y; 2-1); *Armeria dianthoides* (pi; 4); *A. juncea* (r-p; 4); *A. juniperifolia* (pi; 4); *A. plantaginea* (pi; 1); *A. setacea* (pi; 4); *A. vulgaris* (pi, pi-r, l, or w; 1-1); *Arnicæ scopioides* (y; 1-1); *Artemisia alpina* (y; 1-1½); *A. Stelleriana* (y; 1-2); *Asarum canadense* (br; 1); *Asperula longiflora* (w, y, and r; 4); *A. montana* (pi; 4-½); *A. odorata* (w; 1-1); *A. orientalis* (b; 1); *Aster altaicus* (b-p; 1); *A. Bigelovii* (l and y; 2½); *A. pulchellus* (y; 1); *Astragalus adsurgens* (b-p); *A. alepcurroides* (y; 2-5); *A. arenarius* (b; 4); *A. maximus* (y; 2-3); *A. monspessulanus* (p; 4); *A. vulpinus* (y; 2-3); *Astrantia helleborifolia* (pi; 1-2); *Baptisia alba* (w; 2); *B. australis* (b; 4-5); *B. confusa* (b; 1-2); *B. exaltata* (b; 3-4); *Bellidistrum Micheli* (w; 1); *Bellis perennis* (w; 4) and vars.; *Bellium crassifolium* (w-y; 4); *B. minutum* (w and y; 4); *Biarum tenuifolium* (br-p; 4); *Bocconia cordata* (buff; 5-8); *Borago laxiflora* (b); *B. officinalis* (b; 1-2); *Brodiaea coccinea* (r and y-g; 1½); *B. congesta* (b; 1); *B. grandiflora* (b-p; 1½); *B. lactea* (w and g; 1-2); *Bulbine alooides* (y; 1); *Buphthalmum grandiflorum* (y; 1½); *B. salicifolium* (y; 1½); *Butomus umbellatus* (ag, pi); *Cacalia tuberosa* (w; 2-6); *Calamintha grandiflora* (p; 1); *Calliandra leuca* (p-br; 2); *Callirhoe digitata* (r-p; 2-3); *C. involucrata* (r; 4); *C. Papaver* (v-r; 3); *Calochortus albus* (w, blotched r; 1-1½); *C. Benthami* (y; 1-1½); *C. elegans* (g, w, and p; 3); *C. lilacinus* (pi; 2-3); *C. Nuttallii* (y, w, r and p; 4); *Caloscoredum boreale* (w; 1); *Caltha leptosepala* (w; 1); *Calypso borealis* (pi, br, and y); 1); *Calyptoglia Soldanella* (r and y; 4); *Camassia esculenta* (b; 1); *Campanula barbata* (b or w; 1-1½); *C. cuspidata* (b or w; 4-½); *C. carpathica* (b or w; 2) and vars.; *C. cenisia* (b; 4); *C. Elatensis* (b-p; 1-1½); *C. garganica* (b; 4-½); *C. glomerata* (b-v or w; 1-2) and vars.; *C. grandis* (r-b or w; 1-2); *C. nitida* (b or w; 1-1½); *C. Portenschlagiana* (b-p; 1-1½); *C. pulla* (v-b; 1-1½); *C. Raineri* (b; 4); *C. rapunculoides* (b-r; 2-4) and vars.; *C. rotundifolia* (b; 1-1) and vars.; *C. speciosa* (b, p, or w; 1-1½); *C. Waldsteiniana* (v-b; 1-1½); *C. Zoyssii* (b; 4); *Cedronella cordata* (p; 1-1½); *Centaurea atropurpurea* (p; 3); *C. dealbata* (pi; 1-1½); *C. montana* (b; 2) and vars.; *Centranthus ruber* (r; 2-3); *Cephalanthus ensifolia* (w; 1-2); *C. grandiflora* (w; 1-1½); *C. rubra* (pi-p; 1-1½); *Cerastium alpinum* (w; 4); *C. Biebersteinii* (w; 4); *C. Boissieri* (w; 1-1); *C. tomentosum* (w; 4); *Cerintho maculata* (y, spotted p; 1-1½); *Cheiranthus Cheiri* (variable; 1-2); *Chimaphila corymbosa* (g-w, tinged r; 1-½); *C. maculata* (w; 4); *Chlorogalum pomeridianum* (w, veined p; 2); *Chrysosuton Hookeri* (y; 1½-3); *Cineraria alpestris* (y; 2); *Clematis recta* (w, sc; 2-3); *Cnicus acialis* (p; 2); *C. spinosissimus* (y; 3); *C. undulatus* (p; 1); *Commelina virginica* (b; 4); *Coreopsis auriculata* (y and p-br; 1-1½); *C. grandiflora* (y; 3-4); *C. lanceolata* (y; 1-3); *C. verticillata* (y; 1-2); *Coris monspeliensis* (l; 4); *Coroilla varia* (pi and w, or y; 1); *Corydalis bracteata* (g-y; 2); *Crambe cordifolia* (w, sc; 6); *Crinum capense* (r); *Cyananchem roseum* (pi-r; 1-1½); *Cypripedium acule* (g, pi, and p); *C. candidum* (g-br and w; 1); *C. guttatum* (w and pi-p; 1-1½); *C. pubescens* (y-br and y; 1½-2); *C. spectabile* (w and pi; 1½-3); *Delphinium exaltatum* (b or w; 3-6); *D. formosum* (b and w; 1½-3); *D. grandiflorum* (b or w; 1-2); *D. nudicaule* (r and y; 1-1½); *Dianthus alpinus* (pi and r; 4); *D. arenarius* (w); *D. atrorubens* (r; 1); *D. barbatus* vars.; *D. cœsius* (pi,

June (Hardy Perennials)—continued.

sc; 1-1½); *D. cruentus* (r); *D. fimbriatus* (pi; 1); *D. Fischeri* (pi); *D. glacialis* (r-p; 4); *D. monspessulanus* (r; 1-1); *D. neglectus* (pi; 4); *D. petraeus* (pi; 4); *D. plumarius* (w and p, sc; 2-1); *D. Seguieri* (pi-p; 1); *D. superbus* (pi, sc; 1-1½) and var.; *Dicentra eximia* (r-p; 2-1½); *D. spectabilis* (pi-r; 2-2); *Dictamnus albus* (w; 1-1½); *Diphylleia cymosa* (w; 1); *Dodecatheon integrifolium* (pi-r and w; 1-1½); *Doronicum plantagineum excelsum* (y; 5); *Dracocephalum speciosum* (pi-b; 1½); *Drosera filiformis* (p; 1); *Drypis spinosa* (pi or w; 4); *Echinops commutatus* (w; 5-7); *E. Ritro* (b; 3); *Epilobium obovatum* (pi-p); *Epimedium macroranthum* (w; 10-15); *E. pinnatum* (y; 8-12); *Eremurus spectabilis* (g-y and o; 2); *Erigeron glaucus* (p; 1-1); *E. speciosus* (r and y; 1½); *Erinus alpinus* (p; 4); *Erodium macradentum* (r and p; 4); *E. Manescavi* (p-r; 1-2); *E. pelargoniflorum* (w and p); *E. petraeum* (p; 1-1½); *E. trichomanefolium* (pi-w; 1-1½); *Eryngium Bourgatii* (b; 1-2); *Erysimum ochroleucum* (y); *E. pumilum* (g-y, sc; 4); *Ferrula communis* (y; 8-12); *F. glauca* (y; 6-8); *F. tingitana* (y; 6-8); *Fritillaria Hookeri* (l; 4); *F. macrophylla* (pi; 3); *F. pyrenaica* (p; 1½); *Funkia Sieboldiana* (w); *Galega officinalis* (b; 3-4); *G. orientalis* (b; 2-4); *Galtونا candidans* (w; sc); *Gentiana affinis* (b; 1-1); *G. algida* (w and b; 1-1); *G. cruciata* (b; 1); *G. punctata* (y; 1-2); *G. septemfida* (b; 1-1½); *Goranium argenteum* (r; 4); *G. oimereum* (r; 4); *G. macrorhizon* (r or p; 1); *Geum pyrenaicum* (y; 1½); *G. rivale* (r; 1-3); *Gillenia trifoliata* (varying from r to w; 1½); *Gladiolus byzantinus* (r; 2); *Globularia nana* (b); *G. nudicaulis* (b; 2); *G. vulgaris* (b; 4); *Glycyrrhiza glabra* (b; 3-4); *Gymnophila paniculata* (w; 2-3); *Habenaria blephariglotis* (w); *H. fimbriata* (l-p; 1-1½); *H. psycodes* (varying from pi to r, sc); *Hedysarum coronarium* (r; 3-5); *Heliclysum arenarium* (y; 1-1); *Hemeroallis Dumortieri* (o-y; 1-1½); *H. flava* (o-y, sc; 2-3); *H. fulva* (y; 2-4); *H. Middendorffii* (y; 2-3); *H. minor* (y, sc; 4-3); *Hesperis matronalis* (variable; 2-3); *Heuchera americana* (r; 1½); *H. hispida* (veined p); *H. sanguinea* (r; 2-1½); *Hieracium aurantiacum* (o-r; 1-1½); *Holttonia pulustris* (ag, l and y; 1-2); *Houstonia cerulea* (b or w; 4); *H. scorpillifolia* (w; 4); *Humulus Lupulus* (g-y); *Hypericum elegans* (y; 1); *H. patulum* (y; 6); *H. perforatum* (y; 1-3); *Incarvillea Olga* (pi; 3-4½); *Ipomœa pandurata* (w and p); *Iris aurea* (y; 3-4); *I. Douglasiana* (l-p; 1-1); *I. ensata* (l-p and y); *I. fistulidissima* (b-l; 2-3); *I. fulva* (y-br; 2-3); *I. Goldenstadiana* (w, o, and y; 2); *I. hybrida* (w, l-p, and y); *I. iberica* (w or l, p, and p-br; 1-1); *I. hevigata* (p and y; 1½-2); *I. Monnierii* (g-y, sc; 3-4); *I. neglecta* (l, w, and y; 1½-2); *I. ochroleuca* (w and y; 3); *I. sibirica* (l-b and v; 1-2½); *I. squalens* (l-p and y; 2-3); *I. tectorum* (l and w; 1); *I. versicolor* (p; 1-2); *I. vulgare* (p; 1-2); *Lamium maculatum* (p); *Lathyrus magellanicus* (b-p); *L. roscus* (pi); *L. rotundifolius* (pi); *Lavandula vera* (b or w; 1-2); *Leucocium æstivum* (w and g; 1½); *L. Hernandezii* (w and g; 1-1½); *Lilium auratum* (w, y, and p; 2-4); *L. bulbiferum* (r; 2-4); *L. canadense* (y or r, and p; 1½-3); *L. candidum* (w; 2-3); *L. Catesbaei* (o-r and p; 2-3); *L. chalcædonicum* (r; 2-3); *L. longiflorum* (w, sc; 1-2); *L. Martagon* (p-r and p); *L. pardalinum* (o-r and p; 3-7); *L. Parryi* (y and br-r, sc; 2-6); *L. philadelphicum* (o-r and p; 1-3); *L. pomponium* (r or r-o; 1½-3); *L. pyrenaicum* (y; 2-4); *L. speciosum* (w, or p-r and w; 1-3); *L. tenuifolium* (r; 1-1); *L. Washingtonianum* (w, and p or l, sc; 3-5); *Limnanthemum nymphaeoides* (ag, y); *Linaria alpina* (b-v and y; 4); *L. Cymbalaria* (b or l); *L. dalmatica* (y; 3-4); *L. hepaticifolia* (l-p; 4); *L. triornithophora* (p and y); *Linum narbonne* (b or w; 2); *Lithospermum Gastoni* (b; 1-1½); *L. purpureo-caruleum* (r, turning p; 1); *Lotus corniculatus* (y, fading to o, and r); *Lupinus leucophyllus* (pi; 2-3); *L. nootkatensis* (b, and p, w, or y; 1-1½); *L. ornatus* (b; 1-2); *L. porrenis* (b; 2); *L. polyphyllus* (b; 4); *Lychnis alpina* (pi; 4); *L. chalcædonica* (r; 1½-3); *L. diurna* (p-pi; 1-3); *L. fulgens* (r; 1-1); *L. f. Haageana* (r); *L. Lagasæ* (pi and w; 4);

June (Hardy Perennials)—continued.

L. pyrenaica (*pi-w*; 4); *L. vespertina* (*w*, *sc* at evening; 1-3); *L. viscaria* (*pi*; 1); *Lysimachia atropurpurea* (*p*; 2); *L. Nummularia* (*y*); *L. vulgaris* (*y*; 2-3); *Malva moschata* (*pi*; 2-2½); *Marshallia caespitosa* (*b-w*; 1); *Meconopsis cambrica* (*y*; 1); *Mertensia alpina* (*b*; ½-¾); *M. sibirica* (*p-b*; ¼-1½); *M. virginica* (*p-b*; 1-2); *Mimulus cardinalis* (*r*; 1-3); *M. luteus* (*y*; ¾-1); *M. l. cupreus* (*r-br*, *p-br*, or *r*; ½-1); *M. moschatus* (*y*); *Mitchella repens* (*w* and *p*, *sc*); *Mœhringia muscosa* (*w*; 4); *Monarda fistulosa* (*p*; 2-5); *Morina longifolia* (*r*; 2); *Muscari comosum monstrosum* (*b-w*; 1-1½); *Mutisia decurrens* (*w*); *Myosotis alpestris* (*b*, *sc* at night; 4); *Notoscordium fragrans* (*w*, *sc*; 1½-2); *Nuphar advena* (*aq*, *r*); *N. luteum* (*aq*, *y*, *sc*); *Nymphæa alba* (*aq*, *w*); *Oenothera acaulis* (*w*, turning *r*; ½); *O. glauca* (*y*; 1-2); *O. G. Fraseri* (*y*; 1); *O. linearis* (*y*; ¾-1½); *O. pallida* (*w* and *y*, turning *r*; 1½); *O. speciosa* (*w*, turning *r*; 2-3); *O. taraxacifolia* (*w*, turning *r*; 4); *Omphalodes luciliæ* (*l-b*; ¼-½); *Ononis* (*y*; 1½-2); *O. rotundifolia* (*pi*; 1-1½); *Onosma stellatum tauricum* (*y*; ¼-¾); *Oreohis latifolia* (*p* or *r*; 1); *O. maculata* (*p* or *w*, and *p-br*; 1); *Ornithogalum arabicum* (*w* and *bk*, *sc*; 1-2); *O. narbonense* (*w* and *y*; 1-1½); *O. pyramidale* (*w*; 1½-2); *Orobus aurantiatus* (*y*; 1½); *Ourisia coccinea* (*r*; ¼-1); *Oxalis corniculata* (*y*); *O. unnoophylla* (*w* or *pi*; 4); *O. tetraphylla* (*r* or *p-w*); *Oxytropis pyrenaica* (*b*; ¼-½); *Pæonia albiflora* (*w* or *pi*; 2-3); *P. tenuifolia* (*r*; 1-1½); *Panicratium illyricum* (*w*; 1½); *P. maritimum* (*w*; 2); *Pediicularis dolichorrhiza* (*o-y*; 1-1½); *P. flammea* (*r*; ¼-1); *P. verticillata* (*pi* or *w*; ½-1); *Peltaria alliacea* (*w*; 1); *Pentstemon antirrhinoides* (*y*; ¾-1½); *P. campanulata* (*variable*; 1½); *P. Hartwegii* (*r* or *r-p*; 2); *P. Menziesii* (*Douglasii* (*l-p* and *pi-r*; 1); *P. venustus* (*p*; 2); *Phlox amœna* (*p*, *pi*, or *w*; 1½); *Phormium Cookianum* (*y*; 3-6) and var.; *Phytolacca decandra* (*w*; 3-10); *Pinguicula grandiflora* (*v-b*); *Polemonium œruleum* (*b*; 2); *P. confertum* (*b*; 4); *Polygonatum multiflorum* (*w*; 2-3); *Polygonum cuspidatum* (*c-w*; 4-8); *Potentilla ambigua* (*y*; ½); *P. argyrophylla* (*y*; 1½-3); *P. grandiflora* (*y*); *P. Hopwoodiana* (*pi* and *y*; 1½); *P. nitida* (*pi*); *P. Saxifraga* (*w*; ¼-½); *Pratia angulata* (*w*; 4); *P. repens* (*o-w*; 4); *Primula auriculata* (*p* and *w*; 4); *P. calycina* (*p*); *P. capitata* (*v-b*, ¼-¾); *P. cortusoides* (*pi*; ¼-¾); *P. denticulata* (*l*; ¾-1); *P. farinosa* (*p* and *y*; ¼-1); *P. glutinosa* (*b-p*; 4); *P. luteola* (*y*; 1½-2); *P. marginata* (*v-pi*; 4); *P. minima* (*pi* or *w*); *P. mollis* (*r* and *p-r*; 1-1½); *P. obconica* (*w*; ¼-1); *P. scotica* (*p* and *y*; 4); *P. sikkimensis* (*y*; 1½-2); *P. viscosa* (*pi-p* and *w*; 4); *Pulmonaria saccharata* (*pi*; 1); *Pyrethrum achillefolium* (*y*; 2); *P. Tchihatchewii* (*y* and *w*; 2); *Pyrola rotundifolia* (*w*, *sc*; 4); *Pyxidanthra barbulate* (*w* or *pi*; 4); *Rudbeckia speciosa* (*o*; 2-3); *Ruscus Hypophyllum* (*g*; 1-1½); *Salvia hians* (*b*; 2); *Saponaria ocyroides* (*r* or *pi*); *Saussurea pulchella* (*p*; 2); *Saxifraga aizoides* (*o-y*, dotted *r*); *S. aretioides* (*o-y*; 4); *S. Bursaria* (*c*); *S. cœsia* (*c*; 4); *S. Cotyledon* (*w*; 1-2); *S. granulata* (*w*; ¼-1); *S. hypnoides* (*w*; *S. linguata cochlearis* (*w*); *S. Mawsonia* (*w*); *S. moschata* (*y* or *p*; 4); *S. purpurascens* (*p*; ¼-½); *S. pygmaea* (*y*; 4); *S. retusa* (*p*); *S. Rocheliana* (*w*; 4) and var.; *S. sancta* (*y*); *S. sarmentosa* (*w*, spotted; ¾); *S. umbrosa* (*pi-w*; ¼-1); *S. virginiana* (*w*; ¼-¾); *Scabiosa amœna* (*l* or *pi*; 2-3); *S. caucasicola* (*b*; 1); *Scilla nutans* (*b*, *p*, or *pi*) and var.; *Scorzonera hispanica* (*y*; 3); *Sedum album* (*w*; ¼-½); *S. japonicum* (*y*); *S. reflexum* (*y*; ¾); *S. Rhodiola* (*g* or *r-p*); *Sempervivum arachnoideum* (*r* and *pi* and var.; *S. arenarium* (*y*; ¼-¾); *S. atlanticum* (*r*; 1); *S. calcaratum* (*r-w*; 1); *S. calcareum* (*g-r*; 1); *S. Lamottei* (*pi* and *p*; 1); *S. montanum* (*m-p*; 4); *S. soboliferum* (*y*; ¼-¾); *S. Wulfeni* (*y* and *m-p*; ¼-¾); *Senecio Doronicum* (*y*; 1); *S. pulcher* (*p* and *y*; 1-2); *Sida Napaea* (*w*; 4-10); *Silene acaulis* (*pi* or *w*; 4); *S. alpestris* (*w*; 4); *S. maritima* (*w*); *S. Saxifraga* (*y*; ¼-½); *S. Schafta* (*p*; 4); *S. virginica* (*r*; 1-2); *Solanum crispum* (*b-p*; 12-14); *Solidago Drummondii* (*y*; 1-3); *Spiraea Filipendula* (*w* or *pi*; 2-3); *S. palmata* (*r*; 1-2); *S. Ulmaria* (*w*; 2-4); *Statice*

June (Hardy Perennials)—continued.

latifolia (*b*; 1); *S. tatarica* (*r*; 1); *Symphandra Wanneri* (*b*; 4); *Symphytum tuberosum* (*o*; 1-2); *Tanacetum leucophyllum* (*o-y*; ¾); *Thalictrum aquilegifolium* (*w*, or *w* and *p*; 1-3); *T. tuberosum* (*w*; 1); *Thermopsis barbata* (*p*; 1); *T. montana* (*y*; 1-2); *Trifolium alpestre* (*p*; ¼-1); *T. Lupinaster* (*p*; 1-1½); *T. uniflorum* (*b* and *p*; 4); *Trollius europæus* (*y*; ½-2); *Tropaeolum polyphyllum* (*y*); *T. speciosum* (*r*); *Tulipa Gesneriana* (*variable*; 2); *Veratrum nigrum* (*bk-p*; 2-3); *Vesicaria utriculata* (*y*; 1); *Vicia argentea* (*pi*, spotted *bk*; 1); *Viola cornuta* (*b*; *V. pedata* (*b* or *w*); *V. rothomagensis* (*b*, striped *bk*); *V. tricolor* (*p*, *w*, or *o-y*; 1-1½); *Wahlenbergia Kitaibelii* (*p-b*; 4); *W. tenuifolia* (*v-b* and *w*; 4-4½); *Waldsteinia fragarioides* (*y*); *Zygadenus glaberrimus* (*b*; 2).

SHRUBS.—*Abutilon striatum* (*o-y*; 10); *Actinidia Kolumikta* (*w*); *A. volubilis* (*w*); *Adenocarpus hispanicus* (*y*; 2-4); *A. telonensis* (*y*; 2-4); *Aethionema coridifolium* (*pi-l*; ¼-¾); *Æ. grandiflorum* (*pi*; 1½); *Æ. saxatilis* (*p*; ¾); *Ammodendron Sieversii* (*p*; 2); *Amorpha fruticosa* (*b-p*; 6); *Asclepias Douglasii* (*p-l*; 2-3); *Astragalus Tragacantha* (*v*; 1½-3); *Azalea nudiflora* (*variable*; 3-4); *Benthamia fragifera* (*w*; 10-15); *Berberis floribunda* (*y*; 10); *Bignonia capreolata* (*o*; 20); *Calceolaria alba* (*w*; 1); *Calophaca wolgarica* (*y*; 2-3); *Calycanthus occidentalis* (*r*, *sc*; 6-12); *Capparis spinosa* (*w* and *r*; 3); *Cassiope hypnoides* (*r* and *w*; 4); *Ceanothus americanus* (*w*); *C. dentatus* (*b*; 4-6); *C. floribundus* (*b*); *Celastrus scandens* (*y*); *Clematis œrulea* (*v*; 8) and vars.; *C. florida* (*w*; 10); *C. Fortunei* (*w*, *sc*; 10); *C. graveolens* (*y*; 15); *C. lanuginosa* (*b*; 10); *C. virginiana* (*w*, *sc*; 15-20); *C. Vitiella* (*b*, *p*, or *pi*; 20); *Colutea arborescens* (*y*; 6-10); *Convolvulus lanuginosus* (*y*); *Cornus sanguinea* (*g-w*; 6-8); *C. sericea* (*w*; 5-8); *C. stricta* (*w*; 8-15); *Cotoneaster vulgaris* (*r*; 3-5); *C. spinosa* (*y*; 1); *C. Umbilicus* (*y*; ¾); *Crataegus Crus-galli ovalifolia* (*w*; 10-20); *C. C. g. prunifolia* (*w*; 15-20); *C. nigra* (*w*; 10-20); *C. odoratissima* (*w*, *sc*; 10-20); *C. orientalis* (*w*; 12-20); *Cytisus hirsutus* (*y*); *Daboecia polifolia* (*w*, *pi*, or *p*; 1-2); *Decumaria barbara* (*w*; *sc*); *Dendromecon rigida* (*y*); *Diervillea grandiflora* (*pi*; 8); *Doryenium suffruticosum* (*w* and *r*; 2); *Dryas Drummondii* (*y*); *D. octopetala* (*w*); *Enkianthus campanulatus* (*g-w* and *r*); *Ephedra vulgaris* (*w*; 1-2); *Enonymus atropurpureus* (*p*; 6-14); *Halimodendron argenteum* (*p*; 4-6); *Helianthemum formosum* (*y* and *bk*; 4); *H. halimifolium* (*y*; 3-4); *H. vulgare* (*y*); *Hydrangea hortensis* (*variable*; 2-3); *H. paniculata grandiflora* (*w*); *Hypericum calycinum* (*y*; 1); *Iberis corœsifolia* (*w*; 1); *I. saxatilis* (*w*; ¼-¾); *I. sempervirens* (*w*; ¾-1); *Jasminum officinale* (*w*, *sc*); *Kalmia angustifolia* (*p* or *r*; 2-3); *K. latifolia* (*pi*, varying to *w*; 3-10); *Kerria japonica* (*o-y*; 3-4); *Laburnum alpinum* (*y*; 15-20); *L. vulgare* (*y*; 20); *Leucothoë racemosa* (*w*; 4-10); *Ligustrum Iboia* (*w*); *L. japonicum* (*w*, *sc*; 6-8); *L. Massalongianum* (*w*, *sc*; 6); *L. ovalifolium* (*w*); *Linnaea borealis* (*pi-w*); *Lithospermum prostratum* (*b* and *r-w*); *Lonicera Caprifolium* (*y* and *b*, *sc*); *L. flava* (*y*, *sc*); *L. Periclymenum* (*r*); *Lupinus arboreus* (*y*, *sc*); *Lycium afrum* (*y*; 6-10); *L. barbarum* (*p* and *y*); *Magnolia glauca* (*w*, *sc*; 15); *Margyricarpus setosus* (*y*; 2-4); *Neillia opulifolia* (*w*; 5); *Opuntia Engelmanni* (*y*; 4-6); *O. missouriensis* (*y*); *Osmantinus fragrans* (*y* or *w*; 6-10); *Passiflora œrulea* (*w*, *w*, and *b*, *sc*); *Philadelphus grandiflorus* (*w*, *sc*; 6-10); *P. hirsutus* (*w*; 3); *P. inodorus* (*w*; 6); *Phlomis ferruginea* (*y*; 2-3); *P. fruticosa* (*y*; 2-4); *Potentilla fruticosa* (*y*; 2-4); *Pyrus americana* (*w* and var.; *P. arbutifolia* (*w* or *p-w*; 2-10); *P. Chamaemespilus* (*r*; 5-6); *Rhododendron ferrugineum* (*r* and *y*; 1); *R. hirsutum* (*r*; 1-2); *Rhus Cotinus* (*p* or *pi-c*; 6-8); *R. glabra* (*g-y* or *g-r*; 5-18) and var.; *R. Toxicodendron* (*g-y*); *R. typhina* (*g-y*; 10-30); *Robinia hispida* (*pi*; 3-8); *Rosa acicularis* (*pi-w*; 8); *R. alba* (*w* or *pi-w*, *sc*; 4-7); *R. alpina* (*pi* or *r*; 3) and vars.; *R. Banksiae* (*w*, *sc*; 20); *R. blanda* (*pi*; 1-3); *R. canina* (*pi*; 6-8) and vars.; *R. centifolia* (*pi-p*, *sc*; 3-6) and vars.; *R. damascena* (*w* or *r*, *sc*; 2-4) and

June (Hardy Shrubs)—continued.

vars.; *B. gallica* (r; 2-3); *B. indica* (r; 4-20); *B. lucida* (r; 1-2) and var.; *B. lutea* (y; 3) and var.; *B. multiflora* (w, pi, or p; 12) and vars.; *B. rubiginosa* (pi, sc; 5); *R. rugosa* (r; 4); *R. sempervirens* (w, sc) and vars.; *R. sinica* (w); *R. spinosissima* (w or pi; 1-4); *Rubus australis* (pi or w, sc); *R. Chamæmoris* (w; 1-1); *R. laciniatus* (w or pi); *Salvia ringens* (r-p; 1-2); *Smilax rotundifolia* (g); *Solanum acanthodes* (b-p; 3-6); *Staphylea colchica* (w; 3-5); *S. pinnata* (w; 6-12); *Stuartia pentagyna* (c; 10); *Symphoricarpos occidentalis* (pi-w); *Tamarix parviflora* (p); *Tecoma radicans* (r; 25); *Veronica carnosula* (w); *V. Lyallii* (w and pi); *V. pinguifolia* (w; 1-4); *V. Traversii* (w; 2); *Viburnum dentatum* (w or pi; 5-10); *V. dilatatum* (w or pi; 10); *V. macrocephalum* (w or pi; 20); *V. Opulus* (w; 6-8); *Wistaria chinensis* (b); *Yucca filamentosa* (g-w; 4-8) and vars.; *Zenobia speciosa* (w; 2-4).

Half-hardy.—ANNUALS.—*Ageratum mexicanum* (b; 2); *Calandrinia grandiflora* (pi; 1); *C. Menziesii* (p-r; 1); *C. umbellata* (m-r; 1); *Grammatocarpus volubilis* (y); *Maurandya Barclayana* (v-p and g); *Mentzelia bartonioides* (g-y); *Nicotiana acutiflora* (w; 1-2); *N. suaveolens* (w, sc; 1-2); *N. Tabacum* (r; 4); *Portulaca grandiflora* (y-p; 1); *Salpiglossis sinuata* (p and y; 2) and vars.; *Schizanthus Grahami* (l or pi, and y; 2); *Schizopetalon Walkeri* (w; 1-2); *Zinnia elegans* and vars.

BIENNIALS.—*Anarrhinum bellidifolium* (w or b; 2); *Anchusa pensilis* (b; 1); *Mathiola incana* (p; 1-2).

PERENNIALS.—*Adlumia cirrhosa* (pi; 15); *Alströméria Pelegrina* (w or y, striped pi; 1); *Anarrhinum bellidifolium* (w or b; 2); *Anigozanthus coccineus* (r; 5); *Arctotis acaulis* (y and r; 1); *Calceolaria arachnoidea* (p; 1); *C. Fothergillii* (y, spotted r; 1-1); *Centaurea ragusina* (y; 2); *Commelina celestis* (b; 1); *Conandron ramondioides* (w, or pi and p; 1); *Crocsmia aurea* (o-r; 2); *Erodium Reichardi* (w and pi; 1); *Ferraria Ferrariola* (g-br); *Hedychium Gardnerianum* (g-y, sc; 3-5); *Heteranthera limosa* (aq, v-b); *Lilium giganteum* (w; 4-10); *L. japonicum* (w; 1-2); *Linum flavum* (y; 1-1); *L. Macraei* (o; 1); *Lobelia fulgens* (r; 1-2); *L. splendens* (r; 1-2); *Maurandya scandens* (p-v); *Mazus pumilio* (v); *Moræa unguiculata* (w and p-r; 1); *Myosotis azorica* (p, becoming b; 1-1); *Neja gracilis* (y; 1); *Nierembergia gracilis* (w, p, and y; 1-1); *Ophiopogon japonicus* (w); *Romneya Coulteri* (w; 2-4); *Scilla chinensis* (pi-p; 1); *Sisyrinchium iridifolium* (y-w; 1-1); *Tigridia pavonia* (o; 1-2); *Tropæolum tricolorum* (o-r, tipped bk and o); *Verbena venosa* (l or p; 2).

SHRUBS.—*Calceolaria hysopifolia* (y; 1-2); *C. scabiosæfolia* (y); *C. violacea* (v, spotted; 2); *Camellia japonica* (variable; 20) and vars.; *Cassia corymbosa* (y; 6-10); *Ceanothus integrissimus* (w; 3-6); *C. rigidus* (p-b; 5-6); *Ceratiola ericoides* (br); *Cistus albidus* (p and y; 2); *C. crispus* (r-p; 2); *C. heterophyllum* (r and y; 2); *C. hirsutus* (w, marked y; 2); *C. ladaniferus* (w; 4) and var.; *C. longifolius* (w, marked y; 4); *C. monspeliensis florentinus* (w and y; 3); *C. oblongifolius* (w, spotted y; 4); *C. obtusifolius* (w, spotted y; 1-1); *C. psilosepalus* (w, marked y; 2-3); *C. purpureus* (r-p; 2); *C. rotundifolius* (p, marked y; 1); *C. vaginatus* (pi; 2); *C. villosus* (r-p; 3); *Clematis montana* (w; 20); *Cneorum pulverulentum* (y; 1-3); *Coronilla glauca* (y, sc by day; 2-4); *C. minima* (y, sc; 1); *Embothrium coccineum* (o-r; 3); *Escallonia macrantha* (r; 3-6); *Fuchsia macrostema globosa* (p-v and p-r; 5-6); *F. m. gracilis* (p and r; 6-10); *Gaylussacia frondosa* (g-p; 3-6); *G. resinosa* (r; 1-3); *Grindelia glutinosa* (y; 2); *Hudsonia ericoides* (y; 1); *Hydrangea quercifolia* (w; 4-6); *Hypericum empetrifolium* (y; 1-1); *H. Hookerianum* (y; 2); *Illicium anisatum* (y-w; 4); *I. floridanum* (r; 8); *Leycesteria formosa* (w and p; 4-6); *Linum arboreum* (y; 1); *Mitraria coccinea* (r); *Olearia dentata* (pi-w); *Ononia aragonensis* (y; 1-2); *Othonopsis cheirifolia* (y; 1-1); *Pentstemon cordifolius* (r); *Photinia serrulata* (w; 10-20); *Phygelius pensilis* (r; 3); *Pittosporum undulatum* (w; 10); *Rhododendron Dalhousiae* (w or pi-w; 6-8); *R. lepi-*

June (Half-hardy Shrubs)—continued.

dotum (y or r; 2-4); *R. Maddeni* (w; 6-8); *Salvia oppositiflora* (r; 2); *Sutherlandia frutescens* (r; 3); *Tecoma australis* (y-w, tinged p or r); *Veronica Hulkeana* (l; 1-3); *Yucca Whipplei violacea* (v; 4-12); *Zauschneria californica* (r; 1).

Tender.—ANNUALS.—*Begonia humilis* (i-h, w; 1); *Browallia dimissa* (c-h, b, r, or p; 1-1); *B. Jamesoni* (c-h, o; 4); *Heliotropium indicum* (st, b; 1); *Impatiens Balsamina* (st, r; 1-2); *Martynia fragrans* (c-h, r-p and y, sc; 2); *Waitzia aurea* (c-h, o-y; 1-2); *W. nivea* (c-h, w, pi, or y; 1-1).

BIENNIAL.—*Cleome rosea* (pi; 1).

PERENNIALS.—*Acanthophippium bicolor* (st, p and y; 1); *A. Curtisii* (st, pi and p; 1); *Achimenes grandiflora* (i-h, v-p; 1); *Actinotis helianthi* (c-h, w; 2); *Fuchsia discolor* (st, r; 2); *Æ. Maris Regine* (st, b; 2); *Aerides cylindricum* (st, w and pi; 1); *Aschynomene sensitiva* (st, w; 3-6); *Agalmyla staminea* (st, r; 2); *Agapanthus umbellatus* (c-h, b; 2-3); *Albucca aurea* (c-h, w; 2); *A. Nelsoni* (c-h, w, striped r; 4-5); *Allamanda Aubletii* (st, y; 10); *A. cathartica* (st, y); *A. chelsoni* (st, y); *A. grandiflora* (st, y; 12); *A. nerifolia* (st, y); *Anchomanes Hookeri* (st, w; 3); *Antholyza affra* (c-h, r; 2); *A. Canonia* (c-h, r and bk; 2); *Arisema concinna* (c-h, w, and g or p; 1-2); *Arthropodium pendulum* (c-h, w; 1); *Babiana disticha* (c-h, b, sc; 1); *B. plicata* (c-h, v-h, sc; 1); *B. ringens* (c-h, r; 1-1); *Bæa hygrometrica* (c-h, b; 1); *Batatas paniculata* (i-h, p); *Begonia acutiloba* (i-h, w); *B. amabilis* (i-h, pi or w; 1); *B. amœna* (i-h, pi; 1); *B. boliviensis* (i-h, r; 2); *B. Brunatii* (i-h, w or p); *B. Chelsoni* (i-h, o-r; 2); *B. Clarkii* (i-h, r); *B. coriacea* (i-h, pi; 1); *B. Davisii* (i-h, r; 1); *B. Dregii* (i-h, w; 1); *B. echinosepala* (i-h, w; 1); *B. eximia* (i-h, p and r); *B. geraniifolia* (i-h, r and w; 1); *B. geranioides* (i-h, w; 1); *B. hydrocotylifolia* (i-h, pi; 1); *B. imperialis* (i-h, w; 3); *B. malabarica* (i-h, pi; 2); *B. maxima* (i-h, w); *B. monoptera* (i-h, w; 1-2); *B. Pearcei* (i-h, y; 1); *B. prismatocarpa* (st, o and y; 3); *B. Richardsoniana* (i-h, w; 1); *B. rosæflora* (i-h, pi); *B. rubricaulis* (i-h, w and pi; 1); *B. rubro-venia* (i-h, w; 1-1); *B. strigillosa* (i-h, pi; 1); *B. Sutherlandii* (st, br-r and y; 3); *B. Thwaitesii* (st, w; 1); *B. Veitchii* (i-h, r; 1); *B. xanthina* (i-h, y; 1); *Bifrenaria Hadwenii bella* (st, y; 1); *Blandfordia aurea* (st, o-y; 1-2); *B. Cunninghamii* (st, br-r and y; 3); *B. flammæa* (st, y; 2) and vars.; *Boucerosia maroccana* (c-h, r-p and y; 1); *Brassia Lawrenceana* (i-h, y, spotted br and g; 1); *B. maculata* (i-h, y, spotted br and y; 1); *B. verrucosa* (i-h, g, spotted bk-p and w); *Bromheadia palustris* (st, w, stroaked p; 2); *Broughtonia sanguinea* (st, p-r; 1); *Brunsvigia Cooperi* (c-h, y, edged r; 1); *B. Josephineæ* (c-h, r; 1); *B. multiflora* (c-h, r; 1); *Bulbophyllum Lobbi* (i-h, y); *Burbidgea nitida* (st, o-r; 2-4); *Calanthe Masuca* (i-h, v and v-p; 3-4); *C. veratrifolia* (i-h, w; 2-3); *Calochilus paludosus* (c-h, g and br; 1); *Campana grandiflora* (st, w and r; 2); *Canistrum aurantiacum* (st, o-y); *Canna Annæi* (st, salmon; 6) and vars.; *C. indica* (st, y and r; 3-6); *Catæstum callosum* (st, br-y; 1); *Cattleya citrina* (i-h, y, sc; 1-1); *C. intermedia* (i-h, variable; 1); *C. Mossii* (i-h, pi, &c; 1) and vars.; *C. superba* (st, pi and r; 1); *C. Wageneri* (i-h, w and y); *Centrosolenia picta* (st, w; 1); *Ceropegia Sandersoni* (c-h, g, veined); *Chironia floribunda* (c-h, p; 2); *Chysis aurea* (st, y and r) and vars.; *C. lævis* (st, y and o, blotched r); *Cineraria oruenta* (c-h, r-p; 2) and vars.; *Cirrhopetalum Medusæ* (st, straw, dotted pi); *C. Thouarsii* (st, o and y, dotted r); *Cœlia Baneriana* (st, w, sc; 1); *Cœlogyne asperata* (st, c, br, and y; 2); *C. pandurata* (st, g and bk, sc; 1); *C. Schilleriana* (i-h, y and p; 1); *C. speciosa* (i-h, w, br or g, y, and r; 1); *C. viscosa* (i-h, w and br; 1); *Convolvulus mauritanicus* (c-h, b and w); *Crassula Bolusii* (c-h, pi-w; 1-1); *Crinum amabile* (st, r, sc); *C. cruentum* (st, r); *C. giganteum* (st, w, sc); *C. purpurascens* (st, p-r); *Cyanochees barbatum* (st, g-w and pi); *C. chlorochilum* (st, y-g, sc; 2);

June (Tender Perennials)—continued.

Cypripedium barbatum (st, p and w; 1) and vars.; C. Day-anum (st, w, p, and g); C. Hookeri (st, y, br, and pi-p); C. Parishii (st, g-w and p; 2); C. superbium (st, w and br); Dendrobium albo-sanguineum (st, w and r); D. Bensoniae (c-h, w, o, and bk); D. chrysois (st, y and p); D. clavatum (st, y and r); D. crystallinum (st, w, o, p, and pi); D. erythroanthum (st, o and p); D. formosum (st, w and o); D. infundibulum (st, w); D. longicornu majus (st, w); D. MacArthurii (st, b and p); D. moschatum (st, w, y, pi, and bk-p); D. Parishii (st, p-pi, and w); D. suavissimum (st, y and br-p, sc); Dichorisandra leucophthalmus (st, b-p or w; 1-1½); D. thyrsiflora (st, b; 4); Disa grandiflora (c-h, pi, r, and y; 2-3) and var.; Drosera binata (c-h, w; ½); D. capensis (c-h, p; ½); Eichhornia crassipes (st, v); Epidendrum alatum majus (c-h, y); E. atropurpureum (c-h, pi and p; 1-1); E. bicoloratum (st, w and r); E. falcatum (st, g-y and y, sc); E. prismatocarpum (c-h, y-g, bk, p, and w); Episcia villosa (st, w and p; 1-1½); Fragaria indica (c-h, y); Galaxia ovata (c-h, w); Galeandra Bueri lutea (st, y and p; ½); Gosnera discolor (st, r; 2); G. Donkelaariana (st, r; 1-2); G. mageloides (st, pi, r, and y); Gladiolus blandus (c-h, w and r; ½-2); G. cuspidatus (c-h, variable; 2-3); G. psittacinus (c-h, r, y, g, and p; 3); Gloriosa superba (st, o and r; 6); Gloxinia maculata (st, p-b; 1); Goodyera macrantha (c-h, pi); Grammangis Huttoni (st, br); Grammatophyllum multiflorum (st, g, br, and p; 2); Griffinia dryades (i-h, p-l and w; 1½); G. hyacinthina (i-h, b and w); G. ornata (i-h, b-l; 1-1½); Guzmania tricolor (st, w, y-g, bk-p, and r); Humantus puniceus (c-h, o-r; 1); Hedychium angustifolium (st, r; 3-6); Hesperandra radiata (c-h, w; ½); Hessea crispata (c-h, pi; ½); Hibiscus militaris (c-h, pi; 2-4); Hypoxis stellata (c-h, w and b; ½); Imantophyllum minutum (c-h, o; 1-2); Impatiens Jerdonia (st, y and r; ½); I. Sultanii (st, r; 1); Ixia odorata (c-h, y, sc; 1); I. speciosa (c-h, r; ½); I. viridiflora (c-h, g; 1); Kommpferia ornata (st, y and o); Kennedyya prostrata (c-h, r); K. p. Maryattii (c-h, r); Lælia anceps Warnerii (i-h, pi and r); L. majalis (c-h, l, r-p, and w); L. purpurata (i-h, w and p-r); L. p. Williamsii (i-h, pi and r); Limnorchis Plumieri (i-h, ag, y; 1½); Littonia modesta (c-h, o; 2-6); Lobelia Erinus (c-h, b, and w or y; ½); Lotus jacobinus (c-h, p and y; 1-3); Lycaste cristata (i-h, w and p); Lycoris Sewerzowi (c-h, br-r, sc; 1); Mammillaria clava (c-h, y, g, and r; 1); Manulea rubra (c-h, y; 1-2); Marica corulea (st, b, y, br, and o; 2); M. gracilis (i-h, w or b, and r-br; 2); M. Northiana (st, w, y, r, and b; 4); Miltonia cuneata (i-h, br, w, y-g, and pi); M. flavescens (i-h, y and r); Mimosa pudica (st, r; 1); Mirabilis Jalapa (c-h, variable, sc; 2); Moltkia petraea (c-h, pi-p, becoming v-b; ½-¾); Musschia aurea (c-h, y; 1-2); Nelumbium speciosum (c-h, ag, w, sc); Nerine sarniensis vonusta (c-h, r); Nymphaea Devonensis (st, ag, pi-r); N. gigantea (i-h, ag, b); N. Lotus (st, ag, r or w); N. scutifolia (i-h, ag, b, sc); N. stellata (st, ag, b, sc); N. s. zanzibarensis (st, ag, b); N. thermalis (st, ag, w); Odontoglossum crispum (c-h, w, y, and r-br); O. hastilabium (c-h, c-w, br, and w, sc); O. maxillare (i-h, w, o, and p-br); Oncidium ampliatum (st, y); O. annulare (i-h, br and y); O. barbatum (st, y and br); O. Cobolleta (st, y-r); O. concolor (i-h, y); O. cornigerum (i-h, y and r); O. cucullatum (c-h, br-p, and pi-p); O. divaricatum (i-h, y and br); O. macranthum (i-h, y and p-br); O. Wentworthianum (c-h, g-y and br); Ornithogalum thyrsoides (c-h, y; ½-1½); Otelia ovalifolia (st, ag, g and y); Oxalis lasiandra (c-h, r; ½-1½); Pelargonium Bowkeri (c-h, p and y; 1); P. fissum (c-h, pi; 1); P. glaucifolium (c-h, bk-p, edged g-y, sc); P. oblongatum (c-h, p-c; ½); Pelecyphora aselliformis (c-h, w and pi; ½); Phaius Marshallii (st, w and y; 2); Phalaenopsis Aphrodite (st, w, r, o, and y); Pilea microphylla (st, g; ½); Pitcairnia Karwinskiana (st, r); P. xanthocalyx (st, y); Plagiolirion Horumanni (st, w); Ranunculus Lyalli (c-h, w; 2-4); Renanthera occinea (i-h, p-r); Rhoee discolor (st, b or p); Richardia africana (c-h, w; 2); R. albo-maculata (c-h, g-w; 2); R. melanoleuca c-h, w and p; 1½); Rivina

June (Tender Perennials)—continued.

humilis (st, w-pi; 1-2); R. laevis (st, w-pi; 7-8); Saccoblabium curvifolium (st, r; ½-1); S. rubrum (st, pi; ½); S. Turneri (st, l); Salvia cacaliifolia (c-h, b; 3); S. ianthina (c-h, v-p; 2); Scutellaria costaricana (st, p and r; 1½-3); Senecio pyramidalis (c-h, y; 2); Sinningia concinna (st, p and y); S. conspicua (st, y and p); S. Youngiana (st, v or p; 1-1½); Siphoecampylos Humboldtianus (st, r; 3); Sobralia macrantha (st, p and r, sc; 6-8); Solanum sisymbriifolium (c-h, b or w; 4); Sonchus gummifer (c-h, y; 2-3); Sonerila Bensoni (st, pi-p); S. margaritacea (st, pi) and var.; Sparaxis pendula (c-h, l; 4); Spiranthes cinnabarina (st, y-pi; 2-3); Sprekelia formosissima (c-h, r or w; 2); Stachya coccinea (c-h, r; 1-2); Stapelia Asterias (c-h, v, y, and p; ½); Streptocarpus Dunnii (i-h, r-pi; 1); S. parviflora (c-h, b; ½); S. Bexii (st, b; ½); S. Sandersii (st, b; 1); Styliidium spatulatum (c-h, y; ½); Tacca integrifolia (st, g, p, and y); T. pinnatifida (st, p); Talauma pumila (st, c, sc; 2-4); Thunbergia erecta (st, b, o, and y; 6) and var.; Thysanotus tuberosus (c-h, p); Torenia asiatica (st, b and v); T. flava (st, y and p; ½-¾); T. Fournieri (st, v, l, and y; ½-¾); Trichinium Manglesii (c-h, w or p; ½-1); Trichopilia crispata (c-h, p, w, and r); T. marginata (c-h, variable); Tritonia crocata (c-h, y; 2); Tropaeolum Jarrattii (c-h, o-r, y, and b); T. peregrinum (c-h, y); Turnera ulmifolia (st, y; 2-4); Vanda insignis (st, br, y-w, w, and pi-p); V. Parishii (st, g-y, m, w, &c., sc); V. Roxburghii (st, g, v-p, and w); V. teros (st, w, pi-m, &c.); Vinca rosea (i-h, pi or w); Wahlenbergia tuberosa (c-h, w and pi; ½-2); Warrea tricolor (st, y, pi, and w); Watsonia densiflora (c-h, pi; 1½-2); Zebraia pendula (i-h, w and pi-p); Zygopetalum coeleste (c-h, b, p, m, &c.; 1½-1½).

SHRUBS.—Acacia pulchella (c-h, y; 2-3); A. vestita (c-h, y; 4); Acacia microphylla (c-h, g; ½); Acmaedonia tetragona (c-h, w; 1-2); Acmena floribunda (c-h, w; 4); Acrophyllum vonosum (c-h, pi-w; 6); Actinocarpus minor (c-h, ag, w; ½); Adama oyanoa (c-h, w or pi; 6); A. sylvatica (c-h, b; 6); Adenandra amena (c-h, w and r; 1-2); A. marginata (c-h, pi-w; 1-2); A. umbellata (c-h, pi; 1-2); A. uniflora (c-h, w and pi; 1-2); A. villosa (c-h, pi; 1-2); Adenanthos barbiger (c-h, r; 7); Adesmia microphylla (c-h, y; 1-2); Aeschynanthus cordifolius (st, r, striped bk, and o; 1); Æ. Lobbianus (st, r; 1); Æ. longiflorus (st, r; 2); Æ. miniatus (st, r; 1½); Æ. pulcher (st, r; 1); Æ. speciosus (st, o; 2); Æ. splendens (st, r, spotted bk; 1); Alonsoa incisifolia (c-h, r; 1-2); Amphiphilium paniculatum (st, pi; 6); Anthospermum aethiopicum (c-h, w; 2-3); Ardisia crenulata (st, r-v; 3-6); A. japonica (st, w and r; 1); Argyreia cymosa (st, pi; 10); Artabotrys odoratissimus (st, r-br, sc; 6); Aaystasia macrophylla (st, pi-p; 8-20); Babingtonia Camphorosma (c-h, pi-w; 7); Barleria flava (st, y; 3); Barosma serratifolia (c-h, w; 1-3); Bauhinia corymbosa (st, pi); B. variegata (st, r, w, and y; 20); Beaumontia grandiflora (st, w); Befaria glauca (c-h, pi-w; 3-6); Begonia cinnabarina (st, r; 2); B. coccinea (st, r; 2); B. Evansiana (c-h, pi; 2); B. falcifolia (st, r; 1-2); B. foliosa (st, w, tinged pi); B. fuchsoides (st, r); B. Ingramii (c-h, pi; 2); B. Kunthiana (st, w); B. maculata (st, variable); B. nitida (st, pi; 4-5); B. platanifolia (st, pi-w; 5-6); Berzelia lanuginosa (c-h, w; 1-2); Bignonia Cherere (i-h, o; 10); B. magnifica (i-h, m, or p-r); B. variabilis (i-h, g-y; 10); Billiardiera longiflora (c-h, g-y, turning p); B. scandens (c-h, c, turning p; 10); Boronia Drummondii (c-h, pi; 2); Bougainvillea glabra (c-h, pi); B. speciosa (c-h, l); Brunfelsia americana (st, y, turning w, sc; 4-6); B. eximia (st, p, sc; 2½); Canavalia ensiformis (st, w and r); Capparis odoratissima (st, v, sc; 6); Cassinia denticulata (c-h, y; 6-8); Catebasa latifolia (st; 4-5); Celastrus lucidus (c-h, w; 1-3); Cephaelis tomentosa (st, br; 4); Cereus grandiflorus (st, y, br, and w); Cestrum elegans (c-h, p-r); Chloanthes stuechadii (c-h, g-y; 2); Chorizema diversifolium (c-h, o-r; 2); C. Henchmannii (c-h, r; 2); C. ilicifolium (c-h, y; 3) and var.; C. varium (c-h, y or r; 4); Chrysocoma Coria-aurea (c-h,

June (Tender Shrubs)—continued.

y; 2); *Cleome gigantea* (st, w-g, 6-12); *Clerodendron splendens* (st, r; 6); *C. s. speciosissima* (st, r); *C. squamatum* (st, r; 10); *Cobaea scandens* (c-h, p; 20); *Columnnea aurantiaca* (st, o; 1); *Combretum grandiflorum* (st, r); *C. racemosum* (st, w); *Cotyledon coruscans* (c-h, o; 1-2); *Cowania plicata* (c-h, r; 1-2); *Crassula coccinea* (c-h, r; 1-3); *C. falcata* (c-h, r and w; 3-8); *C. versicolor* (c-h, r and w); *Crotalaria Cunninghamii* (c-h, y-g and p; 3); *Crowea saligna* (c-h, pi; 1-2); *Cytisus onariensis* (c-h, y); *Daphne indica* (c-h, r or w; 4); *Darwinia fimbriata* (c-h, pi; 1-2); *D. macrostegia* (c-h, w, y, and r; 2-3); *Diosma ericoides* (c-h, w and r; 1-3); *Dipladenia amabilis* (st, pi-r; 10); *D. boliviensis* (st, w and y); *Discaria serratifolia* (c-h, g-w, sc; 6-10); *Doryanthus excelsa* (c-h, r; 8-16); *Dracophyllum capitatum* (c-h, w; 1-1½); *D. gracile* (c-h, w, sc); *Drosophyllum lusitanicum* (c-h, y); *Duvalia polita* (c-h, br-p, br or r, and o); *Echium fastuosum* (c-h, b; 2-4); *Elaeocarpus grandiflora* (st, y, r, and w; 7); *Enkianthus himalaicus* (c-h, y-r and r; 20); *E. quinqueflorus* (c-h, r and pi-w; 3-10); *Epacris longiflora* (c-h, r and w; 2-4); *Erica Aitonii* (c-h, r or w; 2); *E. Beaumontiana* (c-h, w and p; 1); *E. Bergiana* (c-h, p; 1½); *E. Candolleana* (c-h, pi-r and w); *E. Cavendishiana* (c-h, y; 1½); *E. cerinthoides* (c-h, r; 3); *E. colorans* (c-h, r, varying to w; 2); *E. Devoniana* (c-h, p); *E. elegans* (c-l, pi and g; ½-1); *E. eximia* (c-h, r and g; 2); *E. Fairciana* (c-h, pi and w); *E. grandiflora* (c-h, y; 3); *E. hybrida* (c-h, r); *E. Irbyana* (c-h, w and r; 1-2); *E. jasmijniflora* (c-h, r; 1-2); *E. Lambertiana* (c-h, w, 1-2); *E. McNabiana* (c-h, pi-r and w); *E. odorata* (c-h, w, sc; 1); *E. Parmentieriana* (c-h, r-p; 1); *E. primuloides* (c-h, pi-p; 1); *E. Savileana* (c-h, r or p-r; 1); *E. Shannoniiana* (c-h, w and p; 1-2); *E. tricolor* (c-h, r, w, and g-y; 2); *E. Victorii* (c-h, p and w); *E. Westphalingia* (c-h, pi-r); *Eriostemon buxifolius* (c-h, pi; 1-2); *E. scaber* (c-h, w and pi; 1½); *Fuchsia corymbiflora* (c-h, r; 4-6); *F. dependens* (c-h, r; 2-4); *F. fulgens* (c-h, r; 4-6); *F. splendens* (c-h, r and g; 6); *F. thymifolia* (c-h, r; 4-6); *Gaultheria ferruginea* (c-h, pi); *Gomphocarpus fruticosus* (c-h, w; 5-7); *Gompholobium grandiflorum* (c-h, y; 2); *G. polymorphum* (c-h, r, y, and p); *G. venustum* (c-h, p; 1-3); *Goodia lotifolia* (c-h, y and r; 2-4); *G. pubescens* (c-h, y and r; 1-3); *Grevillea acanthifolia* (c-h, r; 4); *G. robusta* (c-h, o; 5); *G. rosmarinifolia* (c-h, r; 4); *Gnetarda odorata* (st, r, sc at night; 6-10); *Gustavia insignis* (st, c-w and pi; 3-4); *Hakea ocellata* (c-h, r; 4); *H. nitida* (c-h, w; 6-8); *H. suaveolens* (c-h, w; 4); *Heliotropium corymbosum* (c-h, l; 4); *Hermannia flammea* (st, o or r; 1-3); *Hibbertia dentata* (c-h, y); *H. perfoliata* (c-h, y); *Hovea elliptica* (c-h, b; 2-4); *Hoya carnosa* (i-h, pi-w); *H. Cumingiana* (st, g-y or w, and p-br); *H. imperialis* (st, r-br); *H. pallida* (st, y or y-w, and pi, sc); *H. Shepherdii* (st, w and pi; 3); *Hypericum balearicum* (c-h, y; 1-2); *Hypocalyptus obovatum* (c-h, p; 1-2); *Indigofera australis* (c-h, pi; 3-4); *Ioehroma fuchsoides* (c-h, o-r; 5); *I. lanceolata* (c-h, p-b; 4-5); *Ixora chelsoni* (st, o-pi); *I. coccinea* (st, r; 3-4); *I. javanica* (st, o; 3-4); *Jasminum grandiflorum* (i-h, w); *J. Sambac* (st, w, sc); *Jatropha podagrica* (st, o-r; 1½); *Justicia ventricosa* (st, pi; 3); *Lachnæa buxifolia* (c-h, w; 2); *L. purpurea* (c-h, p; 2); *Lagerstrœmia indica* (st, pi; 6-10); *Leechenaultia biloba* (c-h, b; 1); *L. formosa* (c-h, r; 1); *Leucopogon verticillatus* (c-h, w or pi; 3-6); *Lippia citriodora* (c-h, w; 3); *Lonicera sempervirens* (c-h, r and y); *Luculia Pincoana* (c-h, w, sc); *Melianthus major* (c-h, br; 4-6); *Mesembryanthemum blandum* (c-h, w, becoming pi or r; 1); *M. candens* (c-h, w); *M. coccineum* (c-h, r); *M. densum* (c-h, pi; ½); *M. inclaudens* (c-h, p-pi; 1½); *M. spectabile* (c-h, r; 1); *M. violaceum* (c-h, pi-w to v; 1-2); *Mimulus glutinosus* (c-h, br or pi; 5); *Myrsiphyllum asparagoides* (i-h, g or w); *Myrtus Luma* (c-h, w; 3); *Nerium Oleander* (c-h, r; 6-14); *Opuntia arborescens* (c-h, p; 5); *O. braziliensis* (c-h, g-y; 10-30); *O. echinocarpa* (c-h, g-y); *O. multiflora* (c-h, y); *O. vulgaris* (c-h, g-y; 2); *Oxylobium*

June (Tender Shrubs)—continued.

Callistachys (c-h, y; 3-4); *O. ellipticum* (c-h, y; 2-3); *Pachypodium succulentum* (st, r and w); *Passiflora alata* (st, r, p, and w, sc); *P. caruleo-racemosa* (c-h, p); *P. coccinea* (st, r and o); *P. Habnii* (c-h, w and y); *P. racemosa* (st, r); *Pelargonium ardens* (c-h, r; 1-1½); *P. comptum* (c-h, pi and p); *P. echinatum* (c-h, w spotted r, or p; 1); *P. fragrans* (c-h, w and r; 2); *P. ignoscens* (c-h, r; 1½); *Pentarrhaphia floribunda* (st, r); *P. libanensis* (st, r; ½); *Pentas carnea* (st, pi-w; 1½); *Pergularia odoratissima* (st, g-y, sc); *Persoonia ferruginea* (c-h, y; 2-3); *P. rigida* (c-h, y; 3-4); *Petraea arborea* (st, r-5; 12); *Phanocoma prolifera* (c-h, r; 4); *Philœa buxifolia* (c-h, r; 4); *Phyllanthus Chantrieri* (st, r and y); *P. pallidifolius* (st, y and r); *Phyllocactus Ackermanni* (st, r-p); *P. phyllanthoides* (st, pi and w; 1-3); *Pimelea rosea* (c-h, pi or w; 2); *Pitcairnia aphelandroflora* (c-h, r); *Pleuroma elegans* (st, b; 5); *Plumbago capensis* (i-h, b; 2); *Podalyria calyprata* (c-h, p; 6); *Podanthes geminata* (st, o-y and r-p); *Pomaderris apetala* (st, g; 3-6); *Portlandia platantha* (st, w; 3); *Prostanthera violacea* (c-h, b-p; 4); *Protea pulchella* (c-h, r; 3); *Psoralea aequalis* (c-h, b and w; 2-3); *P. pinnata* (c-h, b; 3-6); *Pultonea stricta* (c-h, y; 1-3); *Quisqualis indica* (st, variable); *Rafnia triflora* (c-h, y; 2-4); *Randia macrantha* (st, y; 9-30); *Rhododendron campylocarpum* (c-h, y; 6); *R. Edgeworthii* (c-h, w, sc); *R. javanicum* (c-h, o and r; 4); *R. lanatum* (c-h, y-w and r); *R. Thomsoni* (c-h, r and g; 6-10); *Rhodomyrtus tomentosa* (c-h, pi; 5); *Rhus succedanea* (c-h, g-y; 10-15); *Rondeletia amœna* (st, pi and o-y; 4); *R. cordata* (st, pi; 4); *R. Purdiei* (st, y, sc; 4); *Ruellia macrophylla* (i-h, r; 3-4); *Salvia albo-eryulæa* (c-h, w and b; 3); *S. Gondotii* (c-h, r; 2); *S. Grahmi* (c-h, p-b; 2); *S. Heerii* (c-h, r; 2-3); *S. rutilans* (c-h, r; 2-3); *Sanchezia nobilis* (st, r and y; 1-3) and var.; *Sarmienta repens* (c-h, r); *Scutellaria Hartwegii* (st, r and v; 1); *S. Mociniana* (st, r and y; 1½); *Selago Gillii* (c-h, pi; ½); *Sempervivum canariense* (c-h, w; ½); *S. tabulariforme* (c-h, y; 1); *Senecio argenteus* (c-h, y; 1-2); *S. macroglossus* (c-h, y); *Solandra viridiflora* (st, g; 2-3); *Solum atrorubrum* (c-h, p and y); *S. Capsianstrum* (c-h, w; 1-2); *S. giganteum* (c-h, b; 10-25); *S. jasmuinoides* (c-h, b-w) and var.; *S. marginatum* (c-h, w and p; 3-4); *S. maroniense* (st, b-v; 6-14); *S. Pseudo-capricum* (c-h, w; 4); *S. pyræanthum* (c-h, b-v; 3-6); *S. Seafortianum* (st, r or l); *Sophora secundiflora* (c-h, w; 6); *Spharaleuca miniata* (c-h, r; 1); *Stachytarpheta mutabilis* (st, r; 3); *Steriphoma cleomoides* (i-h, y; 6); *Streptosolen Jamesonii* (c-h, o; 4); *Strobilanthes anisophylla* (st, l; 2-3); *Tabernaemontana Barteri* (st, w; 6); *Tacsonia insignis* (i-h, r, v-r, and w); *Talinum Arnotii* (c-h, y); *Teucrium frutescens* (c-h, b; 2-3); *Ursinia pulchra* (c-h, o; 1); *Vaccinium leucobotrys* (c-h, w); *Witsenia corymbosa* (c-h, p-b); *Xanthosia rotundifolia* (c-h, w; 1-2); *Yucca aloifolia* (c-h, w; 15-20); *Y. Troculeana* (c-h, w; 20-25).

JULY.—Hardy.—ANNUALS.—*Acroclinium roseum* (pi; 1-2) and vars.; *Agrostemma cœli-rosa* (pi, w, or p; 1); *Amarantus hypochondriacus* (r; 4-5); *A. speciosus* (r-p; 3-5); *Anagallis grandiflora* (b and r; 4); *Androsace carnea* (pi; ½); *A. lanuginosa* (pi; ½-¾); *A. Vitaliana* (y; ½); *Argemone albiflora* (w; 1); *Bartonia albescens* (y; 1-4); *Bellium bellidifolium* (w; ½); *Blumenbachia insignis* (w and r-y; 1); *Brachycome iberidifolia* (b or w; 1); *Calandula maderensis* (o; 2); *C. officinalis* (o; 3); *Callistophus chinensis* (p; 2); *Campanula Erinus* (b-pi or w; ½-¾); *Castilleja coccinea* (y and r; 1); *Centaura Cyanus* variable; 2-3); *C. suaveolens* (y, sc; 1½); *Contranthus macrosiphon* (pi; 2); *Cerinth major* (y and p; 1); *C. retorta* (y and v; 1½); *Chlora perfoliata* (y; 1); *Chrysanthemum coronarium* (y; 4); *C. segetum* (y; 1½); *Clarkia elegans* (r; 2); *C. pulchella* (p; 1½-2); *Collinsia grandiflora* (p and b; 1); *Collomia coccinea* (r; 1-1½); *C. grandiflora* (r-y; 1½-2); *Convolvulus tricolor* (y, b, and w; 1); *Coreopsis Drummondii* (y and r-br; 1); *Delphinium Ajacis*

July (Hardy Annuals)—continued.

(b, r, or w; 1-1½); *Downingia elegans* (b and w; ½); *D. pulchella* (b and y; ½); *Drosera rotundifolia* (w; ½); *Erysimum Perofskianum* (r-o; 1); *Escheholtzia californica* (y; 1½); *E. c. crocea* (o; 1); *Eucharidium concinnum* (l-p; 1); *Fedia Cornucopiæ* (r; ½); *Fumaria capreolata* (w and p; 4); *Gilia capitata* (b; 1-2); *G. liniflora* (w; 1); *G. micrantha* (pi; ½); *Helianthus annuus* (y; 6); *Heliotropium convolvulaceum* (w, sc; 2); *Iberis coronaria* (w; 1); *I. umbellata* (variable; ½-1); *Ionopsidium acaule* (l, or w and v; ½); *Ipomœa purpurea* (p; 10); *Lasthenia glabrata* (y; ½-1½); *Lathyrus grandiflorus* (pi); *L. odoratus* vars.; *Lavatera trimestris* (pi; 3-6); *Limnanthes Douglasii* (y and w, sc; ½); *Linaria reticulata* (p, and y or br; 2-4); *L. spartea* (y); *Linum grandiflorum* (pi; ½-1); *Lousa prostrata* (y); *L. vulcanica* (w; 2); *Lopezia coronata* (pi-p; 1½); *Lunaria annua* (v-l; 1½-3); *Lupinus luteus* (y, sc; 1-1½); *L. nanus* (l and b; 1); *Malcolmia maritima* (l, pi, r, or w; ½-1); *Malope trifida* (p or w; 1); *Mathiola annua* (variable; 1-2); *Mesembryanthemum crystallinum* (w); *Nemesia cyanichilia* (l-b; 1½-2); *N. floribunda* (w and y, sc; 1); *Nemophila insignis* (b; 1½); *N. maculata* (w and v-p; ½); *N. Menziesii* (w to b; ½); *Nicandra physaloides* (b; 2); *Nigella damascena* (w, or b; 1-2); *N. hispanica* (b; 1-2); *N. orientalis* (y and r; 1½); *Nolana lanceolata* (b, w, and g; ½); *N. paradoxa* (v); *N. tenella* (b); *Nonnea rosea* (pi; ½-1); *Oenothera amœna* (pi and r; 1-2); *O. bistorta Veitchiana* (y and r); *O. Whitneyi* (pi-r and r; 1-1½); *O. varieties*; *Omphalodes linifolia* (w; ½-1); *Oxalis stricta* (y; 1½); *O. valdiviœnsis* (y and r; ½-¾); *Papaver alpinum* (y; ½); *P. nudicaule* (o, y, or w; ½-1½); *P. orientale* (r, spotted p; 2-3) and vars.; *P. pilosum* (r or o, and w; 1-2); *P. Rhœas* (r; 1) and vars.; *P. somniferum* (variable; 3-4); *Phacelia viscida* (b and p; 1); *Podolepis aristata* (y and pi; 1); *Ranunculus anemonoides* (pi-w; ½-¾); *R. parnassifolius* (w or p-w; ½-¾); *Reseda odorata* (y-w, sc) and vars.; *Sabbatia calycosa* (w; ½-1½); *S. campestris* (pi; 1); *Salvia coccinea* (r; 2); *Saponaria calabrica* (p; ¾-1); *Scabiosa atropurpurea* (r, sc; 2-3); *Schizanthus pinnatus* (variable; 2); *Sedum œruleum* (b; ½); *S. sempervivoides* (r; ½-¾); *Silene Atocion* (pi; ½-1); *S. pendula* (pi-w); *Sonchus gummiifer* (y; 2-3); *Statice Suworowi* (l); *Tagetes erecta* (y; 2); *Tropæolum peregrinum* (y); *Vesicaria grandiflora* (y; 1); *Wahlenbergia hederacea* (b); *Xeranthemum annuum* (p; 2).

BIENNIALS.—*Anagallis fruticosa* (r; 2); *Bartonia albaecens* (y; 1-4); *Campanula Medium* (b, p, and w; 1-4); *Dianthus chinensis* (variable; ½-1); *Digitalis purpurea* (p, varying to w; 3-5); *Glaucium flavum* (y; 1-2); *Grindelia grandiflora* (y or o; 2½-3); *Hesperis tristis* (w, c, br-r, or p, sc at night; 1-2); *Lunaria annua* (v-l; 1½-3); *Oenothera biennis* (y, sc; 2-4); *Sedum œruleum* (b; ½); *S. sempervivoides* (r; ½-¾); *Silybum Marianum* (pi-p; 1-4); *Stachys germanica* (pi and w; 1-3); *Tragopogon glaber* (p; 1½).

PERENNIALS.—*Acantholimon glumaceum* (pi; ½); *A. venustum* (pi; ½-¾); *Acanthus mollis* (w; 3-4); *A. spinosus* (pi; 3-4); *Achillea ægyptiaca* (y; 1½-2½); *A. Agoratum* (w; ½); *A. asplenifolia* (pi; 1½); *A. aurea* (y; 1½); *A. Clavennæ* (w; ¾); *A. Eupatorium* (y; 4-5); *Aconitum Anthora* (y; 1-2) and vars.; *A. autumnale* (b-p; 3-4); *A. barbatum* (c; 2-6); *A. chinense* (b; 4-6); *A. japonicum* (pi-w; 6); *A. lycoctonum* (v; 4-6); *A. Napellus* (b; 3-4); *A. ochroleucum* (c; 4-6); *A. Ottonianum* (b and w; 2-4); *A. paniculatum* (v; 2-3); *A. uncinatum* (l; 4-8); *A. variegatum* (b; 1-6) and vars.; *A. vulparia* (y; 1-3) and vars.; *Acorus Calamus* (y; 3); *Actinella grandiflora* (y; ½-¾); *Actinomeris helianthoides* (y; 3); *A. squarrosa* (y; 3); *Adenophora coronopifolia* (b; 1-2); *A. denticulata* (b; 1½); *A. Gmelini* (b; 1-2); *A. persikifolia* (b; 1½); *Adonis pyrenaica* (y; 1-1½); *Agrostemma coronaria* (w; 1-2); *A. flos-Jovis* (p or r; 1½); *Ajuga australis* (b; ½); *Aletria aurea* (y; 1-2); *Alisma natans* (aq, w; ½); *A. Plantago* (pi; 3); *Allium acuminatum* (pi;

July (Hardy Perennials)—continued.

½-1); *A. azureum* (b; 1-2); *A. Bidwellii* (pi; ½); *A. Breweri* (pi; ½); *A. nigrum* (v or w; 2½-3½); *A. pedemontanum* (pi-p; 1); *Alstrœmeria aurantiaca* (o; 3-4); *A. chilensis* (p-r or pi; 2-3); *A. versicolor* (y and p; 2-4); *Althœa rosea* (pi; 8) and vars.; *Alyssum Wiersbeckii* (y; 1½); *Amsonia salicifolia* (b; 1½-2½); *A. Tabernœmontana* (b; 1½-2½); *Anagallis linifolia* (b; ¾-1) and vars.; *A. tenella* (pi; ½); *Anemonopsis macrophylla* (p and l; 2-3); *Anomatheca cruenta* (r; ½-1); *Anthemis Aizoon* (w and y; ½); *A. Biebersteinii* (y; 1-2); *Anthericum Liliago* (w; 1-1½); *A. Liliastrum* (w; 1-2); *Anthyllis Vulneraria* (y, w, r, or pi); *Antirrhinum molle* (p, w, and y; 1); *Apio tuberosa* (br-p, sc; ½); *Apocynum androsaemifolium* (r; 1-2); *Aquilegia Bertoloni* (b-v; 1); *A. œrulea* (b and w, or w; ¾-1½); *A. californica* (y and o-r; 2-4); *A. chrysantha* (y and p; 3-4); *A. formosa* (r and y; 2-4); *A. fragrans* (w or p-r, sc; 1½-2); *A. pyrenaica* (l-b; ¾-1); *A. sibirica* (l; 1); *Arabis aronosa* (pi, w, or b; ½); *A. lucida* (w; ½-¾) and vars.; *A. rosea* (pi-p; 1); *Arenaria balearica* (w; ½); *A. rotundifolia* (w; ½-¾); *Argemone grandiflora* (w and y; 2-3); *Arisœma triphylla* (p-b and g; ¾-1); *Aristolochia Clematitis* (y; 2); *Arnica Chamissonis* (y; 1-2); *A. montana* (y; 1); *A. scorpioides* (y; ½-1); *Artemisia alpina* (y; ½-¾); *A. argentea* (y; 1½); *A. Dracunculus* (w-g; 2); *A. Mutellina* (y-g; ½); *A. Stelleriana* (y; 1-2); *A. tanacetifolia* (br; 1½); *Asarum caudatum* (br-r; 1); *Asclepias acuminata* (r and w; 2); *A. amœna* (p; 2-3); *A. incarnata* (r or p; 2); *A. tuberosa* (o; 1-2); *Ascyrum Crux-Andrœe* (y; 1); *Asperula longiflora* (w, y, and r; ½); *A. montana* (pi; ¾-¾); *A. orientalis* (b; 1); *Asphodelus creticus* (y); *Aster œstivus* (b; 2); *A. alpinus* (p; ½-¾); *A. altaicus* (b-p; 1); *A. Bigelovii* (l and y; 2½); *A. caucasicus* (p; 1); *A. peregrinus* (b-p; 1); *A. pyrenaicus* (l-b and y; 1-1½); *A. salsuginosus* (v-p; ¾-1½); *Astilbe rivularis* (y-w or r; 3); *Astragalus leucophyllus* (y; 2-3); *A. onobrychioides* (p; ¾-1); *A. pannosus* (pi; ¾-¾); *A. ulcatus* (v and w; 2-3); *Bellium minutum* (w and y; ½); *Bessera elegans* (r, or r and w; 2); *Bocconia cordata* (buff; 5-8); *Borago laxiflora* (b); *B. officinalis* (b; 1-2); *Bravoa geminiflora* (o-r; 2); *Brodiaea congesta* (b; 1); *B. gracilis* (y; ½); *B. grandiflora* (b-p; 1½); *B. Howellii* (p-b; 1½-2); *B. lactea* (w and g; 1-2); *Bupthalmum speciosissimum* (y; 2); *Butomus umbellatus* (aq, pi); *Callirhoe digitata* (r-p; 2-3); *C. involucrata* (r; ½); *C. Papaver* (v-r; 3); *Calochortus albus* (w, blotched r; 1-1½); *C. Benthamii* (y; ½-¾); *C. œruleus* (l, dotted b; ½-¾); *C. lilacinus* (pi; ¾-¾); *Calopogon pulchellus* (p and y; 1½); *Calypso borealis* (pi, br, and y; 1); *Calytegia dahurica* (pi-p; ½); *Camassia esculenta* (b; 1); *Campanula Adami* (b; ½); *C. Allionii* (b or w; ½); *C. alpina* (b; ¾-¾); *C. bononiensis* (b-v or w; 2-3); *C. cœspitosa* (b or w; ½-¾); *C. carpathica* (b or w; ¾) and vars.; *C. collina* (b; 1); *C. Elatines* (b-p; ¾-¾); *C. fragilis* (l-p and w; ½-¾); *C. garganica* (b; ¾-¾); *C. glomerata* (b-v or w; 1-2) and vars.; *C. lactiflora* (b-v or b; 2-6); *C. latifolia* (b or w; 1-2) and vars.; *C. nitida* (b or w; ½-¾); *C. nobilis* (r-v, w, or c, spotted; ½-¾); *C. peregrina* (v; 2); *C. persicifolia* (b or w; 1-3) and vars.; *C. Portenschlagiana* (b-p; ¾-¾); *C. pusilla* (b and w, or w; ¾-¾); *C. pyramidalis* (b or w; 4-5) and vars.; *C. Ranunculus* (b or w; 2-3); *C. rotundifolia* (b; ½-1) and vars.; *C. sarmatica* (b; 1-2); *C. Scouleri* (b; 1); *C. speciosa* (b, p, or w; 1-1½); *C. thyrsoidea* (y; 1-1½); *C. Tommasiniana* (b; ¾-1); *C. Trachelium* (variable; 2-3); *C. Van Houttei* (b; 2); *Centaurea alpina* (y; 3); *C. atropurpurea* (r; 3); *C. aurea* (o-y; 2); *C. babylonica* (y; 6-10); *C. dealbata* (pi; 1-1½); *C. macrocephala* (y; 3); *C. montana* (b; 2) and vars.; *Centranthus ruber* (r; 2-3); *Cephalanthera rubra* (pi-p; ¾-1½); *Cerastium alpinum* (w; ½); *C. Biebersteinii* (w; ½); *C. Boissieri* (w; ½-1); *C. tomentosum* (w; ½); *Cheiranthus Cheiri* (variable, sc; 1-2); *Chelone Lyoni* (p; 3-4); *Chenopodium Bonus-Henricus* (g; 1); *Chrysanthemum argentum* (w; 1); *Cimicifuga racemosa* (w; 3-5); *Cineraria maritima* (y; 2); *Clematis recta* (w, sc; 2-3); *Clioula*

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uniflora (w; ½); *Cnicus acaulis* (p; 2); *C. spinosissimus* (y; 3); *C. undulatus* (p; 1); *Commelina virginica* (b; ½); *Coreopsis auriculata* (y and p-br; 1-1½); *C. grandiflora* (y; 3-4); *C. lanceolata* (y; 1-3); *C. verticillata* (y; 1-2); *Coris monspeliensis* (l; ½); *Coronilla iberica* (y; ½); *C. varia* (pi and w, or w; 1); *Crinum capense* (r); *Cynanchum roseum* (pi-r; 1-1½); *Delphinium azureum* (b; 3); *D. cashmirianum* (b; 1-1½); *D. exaltatum* (b or w; 3-6); *D. formosum* (b and v; 1½-3); *D. nudicaule* (n and y; 1-1½); *Dianthus alpestris* (r; ½-1); *D. arenarius* (w); *D. atrobubens* (r; 1); *D. barbatus* vars.; *D. cæsius* (pi, sc; ½-1); *D. cruentus* (r); *D. fimbriatus* (pi; 1); *D. Fischeri* (pi); *D. fragrans* (w and p, sc; ½-1); *D. glacialis* (r-p; ½); *D. monopessulanus* (r; ½-1); *D. neglectus* (pi; ½); *D. petraeus* (pi; ½); *D. plumarius* (w and p, sc; ½-1); *D. Seguirii* (pi-p; 1); *D. superbus* (pi, sc; ½-1½) and var.; *Diapensia lapponica* (w; ½); *Dicentra eximia* (r-p; ½-1½); *D. spectabilis* (pi-r; ½-2); *Digitalis ambigua* (y and br; 2-3); *Diphylleia cymosa* (w; 1); *Doronicum altaicum* (y; 1); *D. plantagineum excelsum* (y; 5); *Dracocephalum altaense* (b; ½-1); *D. austriacum* (b; 1½); *D. peregrinum* (b); *Drosera filiformis* (p; 1); *Echinops commutatus* (w; 5-7); *E. Ritro* (b; 3); *Epilobium angustifolium* (r; 3-6); *E. Dodonæi* (pi; 1); *E. hirsutum* (pi or w, sc; 3-5); *E. obovatum* (pi-p); *E. rosmarinifolium* (r; 2); *Epimedium macranthum* (w; 10-15); *E. pinnatum* (y; 8-12); *Erigeron glaucus* (p; ½-1); *E. speciosus* (v and y; 1½); *Erodium macradenum* (w and p; ½); *E. Manescaei* (p-r; 1-2); *E. pelargoniflorum* (w and p); *E. trichomanefolium* (pi-w; ½-1); *Eryngium alpinum* (b; 1½-2); *E. amethystinum* (b; 1-2); *E. Bourgati* (b; 1-2); *E. giganteum* (b; 3-4); *Erysimum ochroleucum* (y); *E. pumilum* (g-y, sc; 4); *Eucomis punctata* (a and br; 2); *Fœniculum vulgare* (y); *Fritillaria Hookeri* (b; ½); *Funkia grandiflora* (w; sc); *Galax aphylla* (w; ½-1); *Galega officinalis* (b; 3-4); *G. orientalis* (b; 2-4); *Galetia canadensis* (w, sc); *Gentiana affinis* (b; ½-1); *G. algida* (w and b; ½-1); *G. bavarica* (b; ½); *G. cruciata* (b; ½); *G. lutea* (y; ½-1); *G. septemfida* (b; ½-1½); *Geranium argenteum* (r; ½); *G. macrorhizon* (r or p; 1); *Geum elatum* (o-y); *G. triflorum* (p and w); *Globularia nana* (b); *G. nudicaulis* (b; ½); *G. vulgaris* (b; ½); *Glycyrrhiza glabra* (b; 3-4); *Goodyera pubescens* (w; ½); *Gypsophila paniculata* (w; 2-3); *Habenaria fimbriata* (l-p; 1-1½); *Habitzia tamnoides* (g); *Hedysarum conarium* (r; 3-5); *Heliochrysum arenarium* (y; ½-1); *Hemerocallis Dumortieri* (o-y; 1-1½); *H. flava* (o-y, sc; 2-3); *H. fulva* (y; 2-4); *H. Middendorfi* (y; 2-3); *H. minor* (y, sc; ½-1); *Heperis matronalis* (variable; 2-3); *Heuchera americana* (r; 1½); *H. hispida* (veined p); *H. sanguinea* (r; ½-1½); *Hieracium aurantiacum* (o-r; 1-1½); *Houstonia cœrulea* (b or w; ½); *H. serpyllifolia* (w; ½); *Humulus Lupulus* (g-y); *Hypericum elegans* (y; 1); *H. patulum* (y; 6); *H. perforatum* (y; 1-3); *Incaevillea Olgae* (pi; 3-4); *Inula glandulosa* (y; 2); *Iris iberica* (w or l, p, and p-br; ½-1); *I. Monnierii* (g-y, sc; 3-4); *I. xiphoides* (p and y; 1-2); *Kniphofia aloides* (r, fading to o and g-y; 3-4); *Lactuca alpina* (p-b; 3); *Lamium maculatum* (p); *Lathyrus magellanicus* (b-p); *L. roseus* (pi); *L. rotundifolius* (pi); *Lavandula vera* (b or w; 1-2); *Leucocium æstivum* (w and g; 1½); *L. Hernandezii* (w and g; 1-1½); *Lilium auratum* (w, y, and p; 2-4); *L. bulbiferum* (r; 2-4); *L. canadense* (y or r, and p; 1½-3); *L. Catesbæi* (o-r and p; 2-3); *L. chalcedonicum* (r; 2-3); *L. croceum* (r-y; 3-6); *L. davuricum* (r; 2-3); *L. elegans* (r); *L. Kramerii* (w and r, sc; 3-4); *L. Leichtlinii* (y, p, and r; 2-3); *L. Martagon* (p-r and p; 2-3); *L. pardalinum* (o-r and p; 3-7); *L. Parryi* (y and br-r, sc; 2-6); *L. philadelphicum* (o-r and p; 1-3); *L. pomponium* (r or r-o; 1½-3); *L. pseudo-tigrinum* (r and bk; 3-4); *L. pyrenaicum* (y; 2-4); *L. speciosum* (w, or p-r and w; 1-3); *L. superbum* (o-r; 4-6); *L. tenuifolium* (r; ½-1); *L. tigrinum* (o-r and p-bk; 2-4) and var.; *L. Washingtonianum* (w, and p or l,

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sc; 3-5); *Limnanthemum nymphoides* (aq, y); *Linaria alpina* (b-v and y; ½); *L. Cymbalaria* (b or l); *L. dalmatica* (y; 3-4); *L. hepaticifolia* (l-p; ½); *L. purpurea* b-p; 1-3); *L. triornithophora* (v and y); *Linum alpinum* (b; ½); *L. narbonense* (b or w; 2); *Liparis lilifolia* (br-p); *Lithospermum Gastoni* (b; 1-1½); *L. purpureo-cœruleum* (r, turning p; 1); *Lophanthus anisatus* (b; 3); *L. scrophulariifolius* (p; 5); *Lotus corniculatus* (y, fading to o, and r); *Lupinus leucophyllus* (pi; 2-3); *L. nootkatensis* (b, and p, w, or y; 1-1½); *L. ornatus* (b; 1-2); *L. perennis* (b; 2); *L. polyphyllus* (b; 4); *L. subarmentosus* (b and y; 1); *Lychnis alpina* (pi; ½); *L. chalcedonica* (r; 1½-3½); *L. coronaria* (r; 3); *L. diurna* (p-pi; 1-3); *L. fulgens* (r; ½-1); *L. f. Haageana* (r); *L. Lagacum* (pi and w; ½); *L. pyrenaica* (pi-w; ½); *L. vesperina* (w, sc at evening; 1-3); *L. Viscaria* (pi; 1); *Lysimachia atropurpurea* (p; 2); *L. ciliata* (y; 2-3); *L. olethroides* (w; 3); *L. Nummularia* (y); *L. punctata* (y; 1); *L. vulgaris* (y; 2-3); *Lythrum Salicaria* (r-p; 2-5); *Malva Alcea fastigiata* (r; 2-3); *M. moschata* (pi; 2-1); *Maconopsis cambrica* (y; 1); *Mertensia alpina* (b; ½-1); *M. sibirica* (p-b; ½-1); *M. virginica* (p-b; 1-2); *Mimulus cardinalis* (r; 1-3); *M. luteus* (y; ½-1); *M. l. cupreus* (r-br, p-br, or r; ½-1); *M. moschatus* (y); *Mitchella repens* (w and p, sc); *Mœhringia muscosa* (w; 4); *Monarda didyma* (r; 1½); *M. fistulosa* (p; 2-5); *Morina longifolia* (r; 2); *Muscari comosum monstrosum* (b-v; 1-1½); *Mutisia decurrens* (o); *Myosotis alpestris* (b, sc at night; ½); *Nierembergia rivalaris* (w); *Nothoscordium fragrans* (w, sc; 1½-2); *Nuphar advena* (aq, r); *N. luteum* (aq, y, sc); *Nymphaea alba* (aq, w); *N. odorata* (aq, v, tinged r, sc); *N. pygmaea* (aq, b, sc); *N. tuberosa* (aq, w, sc); *Enothera acaulis* (w, turning r; ½); *Æ. californica* (w, varying to pi, and y, sc); *Æ. eximia* (w; ½-1); *Æ. glauca* (y; 1-2); *Æ. g. Fraseri* (y; 1); *Æ. linearis* (y; ½-1½); *Æ. pallida* (w and y, turning r; 1½); *Æ. speciosa* (w, turning r; 2-3); *Æ. taraxacifolia* (w, turning r; ½); *Omphalodes Lucifera* (l-b; ½-1); *Ononis Natrux* (y; 1½-2); *O. rotundifolia* (pi; 1-1½); *Onopordon Acanthium* (y; 4-5); *Onosma stellatum tauricum* (y; ½-1); *Ornithogalum arabicum* (w and bk, sc; 1-2); *O. narbonense* (w and g; 1-1½); *O. pyramidalis* (w; 1½-2); *Ouris coccinea* (r; ½-1); *Oxalis corniculata* (y); *Oxytropis montana* (b and p; ½); *Pedicularis dolichorrhiza* (o, y; 1-1½); *Pentstemon antirrhinoides* (y; ½-1); *P. barbatus* (pi; 3) and vars.; *P. confertus* (y; ½-1½); *P. heterophyllus* (pi or pi-p; 1½); *Petalostemon candidus* (w; 1); *P. violaceum* (pi-p; 1); *Phalaris arundinacea* (p; 3-5); *Phlomis cashmeriana* (l; 2); *P. herba-venti* (p-v; 1-1½); *P. glaberrima* (r; 1-2) and vars.; *P. maculata* (p; 2); *Phormium Cookianum* (y; 3-6) and var.; *Phuopsis stylosa* (p; 1); *Physostegia virginiana* (pi-w; r; 1½-4); *Phyteuma comosum* (p or b; ½-1); *P. humile* (b; ½); *Phytolacca decandra* (w; 3-10); *Pinguicula grandiflora* (v-b); *Platycodon grandiflorum* (b; ½-1); *Polemonium œruleum* (b; 2); *P. confertum* (b; ½); *P. humile* (b or p; ½); *Polygonum cuspidatum* (c-w; 4-8); *P. sachalinense* (g-y; 10-12); *P. vacciniifolium* (pi); *Potentilla alpestris* (y; ½-1); *P. argyrophylla* (y; 1½-3); *P. Hopwoodiana* (pi and y; 1½); *P. nitida* (pi); *P. unguiculata* (w; ½-1); *Pratia angulata* (w; ½); *P. repens* (v-w; ½); *Primula auriculata* (p and w; ½); *P. cortusoides* (pi; ½-1); *P. denticulata* (l; ½-1); *P. farinosa* (p and y; ½-1); *P. glutinosa* (b-p; ½); *P. luteola* (y; 1½-2); *P. minima* (pi or w); *P. obconica* (w; ½-1); *P. sikkimensis* (y; 1½-2); *P. viscosa* (pi-p and w; ½); *Pyrethrum achillesifolium* (y; ½); *P. corymbosum* (w; 1); *P. Tohibatchewii* (w and w; 2); *Pyrola rotundifolia* (w, sc; ½); *P. secunda* (g-w; ½-1); *Pyxidanthera barbulata* (w or pi; ½); *Rudbeckia pinnata* (y; 3); *R. speciosa* (o; 2-3); *Salvia asperata* (w; 2); *S. carduacea* (l; 1); *S. Rømeriana* (r; 1-2); *Saponaria ocyroides* (r or pi); *Saxifraga aizoides* (o-y, dotted r); *S. arctioides* (o-y; ½); *S. cespitosa* (w; ½); *S. Cotyledon* (w; 1-2); *S. diversifolia* (y); *S. hypnoides* (w); *S. longifolia* (w, dotted r); *S. Mawana* (w); *S.*

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Rocheliana (*w*; 4) and var.; *S. sancta* (*y*); *S. sarmentosa* (*w*, spotted; 4); *S. umbrosa* (*pi-w*; 4-1); *Scabiosa amona* (*l* or *pi*; 2-3); *S. caucasicas* (*b*; 1); *S. Webbiana* (*c-y*; 4); *Scorzonera hispanica* (*y*; 3); *S. undulata* (*p-pi*; 1-2); *Sedum Aizoon* (*y*; 1); *S. album* (*w*; 4-4); *S. anglicum* (*w* or *pi*; 4); *S. glaucum* (*pi-w*); *S. japonicum* (*y*); *S. lydium* (*pi*); *S. reflexum* (*y*); *S. Rhodiola* (*g* or *r-p*); *Sempervivum arenarium* (*y*; 4-4); *S. atlanticum* (*r*; 1); *S. Boissieri* (*r*; 4); *S. Braunii* (*y*; 4-4); *S. calcaratum* (*r-w*; 1); *S. calcareum* (*g-r*; 1); *S. fimbriatum* (*r*; 4-4); *S. Funckii* (*r-p*; 4-4); *S. Lamottei* (*pi* and *p*; 1); *S. Pomelii* (*pi-r*; 4-4); *S. soboliferum* (*y*; 4-4); *S. Wulfenii* (*y* and *m-p*; 4-4); *Senecio Doronicum* (*y*; 1); *S. pulcher* (*p* and *y*; 1-2); *Sida Napaea* (*w*; 4-10); *Silene acaulis* (*pi* or *w*; 4); *S. alpestris* (*w*; 4); *S. Elizabetha* (*pi* and *p*; 4); *S. maritima* (*w*); *S. Saxifraga* (*y*; 4-4); *S. Schafta* (*p*; 4); *S. virginica* (*r*; 1-2); *Silphium laciniatum* (*y*; 3-6); *Solanum crispum* (*b-p*; 12-14); *Solidago Drummondii* (*y*; 1-3); *Spigelia marilandica* (*y* and *r*; 4-4); *Spiraea Filipendula* (*w* or *pi*; 2-3); *S. palmata* (*r*; 1-2); *S. Ulmaria* (*w*; 2-4); *Stachys lanata* (variable; 1-4); *S. Mawana* (*y*, blotched; 1-4); *Stachys elata* (*b*; 2); *S. tatarica* (*r*; 1); *Symphyantra Wanneri* (*b*; 4); *Symphytum tuberosum* (*o*; 1-2); *Thalictrum aquilegifolium* (*w*, and *p* or *w*; 1-3); *Thermopsis barbata* (*p*; 1); *T. montana* (*y*; 1-2); *Trifolium alpestre* (*p*; 4-1); *T. Lupinaster* (*p*; 1-4); *T. uniflorum* (*b* and *p*; 4); *Trollius europaeus* (*y*; 4-2); *Tulipa Clusiana* (*w*, *r*, and *p-bk*; 1-4); *Veratrum album* (*w*; 3-4); *Veronica incana* (*b*; 2); *V. spicata* (*b* and *p*; 4-4); *V. virginica* (*w* or *b*; 2-6); *Viola oornuta* (*b*); *V. Riviniana* (*b-p* or *l*); *V. rothomagensis* (*b*, striped *bk*); *V. triolor* (*p*, and *w* or *o-y*, &c.; 4-4); *Wahlenbergia Kitaibelii* (*p-b*; 4); *W. tenuifolia* (*w-b* and *w*; 4-4); *Wulfenia carinthiaca* (*b*).

SHRUBS.—*Abutilon striatum* (*o-y*; 10); *Actinidia Kolumbica* (*w*); *Aethionema grandiflorum* (*pi*; 14); *Amorpha canescens* (*b*; 3); *Aesclepias Douglasii* (*p-l*; 2-3); *A. quadrifolia* (*w*, *sc*; 1); *A. syriaca* (*p*, *sc*; 3-5); *Azalea viscosa* (*w*, *sc*; 2-4) and vars.; *Benthamia fragifera* (*w*; 10-15); *Berberis Fortunei* (*y*; 4); *Bignonia opaeolata* (*o*; 20); *Calluna vulgaris* (variable; 1-3); *Calycotome occidentalis* (*r*; 6-12); *Ceanothus americanus* (*w*); *Cephalanthus occidentalis* (*w-y*; 7); *Clematis œrulea* (*v*; 8) and vars.; *C. Flammula* (*w*, *sc*; 20); *C. florida* (*w*; 10); *C. graveolens* (*y*; 15); *C. paniculata* (*w*, *sc*; 20); *C. virginiana* (*w*, *sc*; 15-20); *C. Vitalba* (*w*, *sc*; 8); *C. Viticella* (*b*, *p*, or *pi*; 20); *Clethra acuminata* (*w*, *sc*; 10-15); *C. alnifolia* (*w*; 3-4); *C. paniculata* (*w*, *sc*; 3-4); *C. tomentosa* (*w*; 3-4); *Colutea arborescens* (*y*; 6-10); *Convolvulus Scammonia* (*c* or *r*; 2); *Cornus paniculata* (*w*; 4-8); *C. sericea* (*w*; 5-8); *Daboecia polifolia* (*w*, *pi*, or *p*; 1-2); *Desmodium canadense* (*r-p*; 4-6); *Ephedra vulgaris* (*w*; 1-2); *Erica vagans* (*p-r*; 1); *Frankonia laevis* (*pi-w*); *F. pulverulenta* (*r*; 4); *Gaultheria procumbens* (*w*); *Halimodendron argenteum* (*p*; 4-6); *Helianthemum argenteum* (*y* and *bk*; 4); *H. halimifolium* (*y*; 3-4); *H. vulgare* (*y*); *Hydrangea hortensis* (variable; 2-3); *H. paniculata grandiflora* (*w*); *Hypericum calycinum* (*y*; 1); *Iberis saxatilis* (*w*; 4-4); *I. sempervirens* (*y*; 4-1); *Indigofera Gerardiana* (*r*); *Jasminum officinale* (*w*, *sc*); *Kalmia angustifolia* (*p* or *r*; 2-3); *K. latifolia* (*pi*, varying to *w*; 3-10); *Kerria japonica* (*o-y*; 3-4); *Ligustrum Ibotia* (*w*); *L. Massalanganianum* (*w*, *sc*; 6); *L. ovalifolium* (*w*); *Lithospermum prostratum* (*b* and *r-v*); *Lonicera Periclymenum* (*r*); *Lupinus arboreus* (*y*, *sc*); *Lycium afrum* (*p*; 6-10); *L. barbarum* (*p* and *y*); *Magnolia glauca* (*w*, *sc*; 15); *Margyricarpus setosus* (*g*; 2-4); *Opuntia missouriensis* (*y*); *Osmanthus fragans* (*y* or *w*; 6-10); *Passiflora œrulea* (*p*, *w*, and *b*, *sc*); *Philadelphus Gordonianus* (*w*; 10); *Rhexia ciliosa* (*g*; 1-4); *R. virginica* (*p*; 4-1); *Rhododendron ferrugineum* (*r* and *y*; 1); *R. hirsutum* (*r*; 1-2); *Rhus Cotinus* (*p* or *pi-c*; 6-8); *Rosa alba* (*w* or *pi-w*, *sc*; 4-7); *R. blanda* (*pi*; 1-3); *R. bracteata* (*w*; 2); *R. canina* (*pi*; 6-8) and vars.; *R. centifolia* (*pi-p*, *sc*; 3-6) and vars.; *R. damascena* (*w* or *r*, *sc*;

July (Hardy Shrubs)—continued.

2-4); *R. gallica* (*r*; 2-3); *R. hemisphaerica* (*y*; 3); *R. indica* (*r*; 4-20); *R. lucida* (*r*; 1-2) and var.; *R. nitida* (*r*; 2); *R. sempervirens* (*w*, *sc*) and vars.; *Rubus australis* (*pi* or *w*, *sc*); *R. Chamamorus* (*w*; 4-4); *R. fruticosus* (*w* or *pi*); *R. laciniatus* (*w* or *pi*); *Salvia ringens* (*r-p*; 1-2); *Smilax aspera* (*w* or *pi-w*, *sc*; 5-10); *Solanum acanthodes* (*b-p*; 3-6); *Spartium junceum* (*y*, *sc*; 6-10); *Spiraea cantoniensis* (*w*; 3-4); *Statice arborescens* (*b*; 2); *Stuartia pentagyna* (*c*; 10); *Symphoricarpos occidentalis* (*pi-w*); *S. racemosus* (*pi*; 4-6); *Tamarix gallica* (*w* or *pi*; 5-10); *T. parviflora* (*pi*); *Tecoma radicans* (*r*; 25); *Veronica carnosula* (*w*); *V. Lyallii* (*w* and *pi*); *V. Traversii* (*w*; 24); *Viburnum Opulus* (*w*; 6-8); *Wistaria chinensis* (*b*); *W. japonica* (*w*); *Yucca angustifolia* (*w*; 1); *Y. gloriosa* (*r*; 4-6) and vars.; *Zenobia speciosa* (*w*; 2-4).

Half-hardy.—**ANNUALS.**—*Calandrinia grandiflora* (*pi*; 1); *C. Menziesii* (*p-r*; 4); *C. umbellata* (*m-r*; 4); *Gomphrena globosa* (variable; 14); *Grammatheis chloroformia* (*o-y*, becoming *r*; 4-4); *Grammatocarpus volubilis* (*y*); *Ipomœa hederacea* (*b*; 10); *Maurandya Barclayana* (*w-p* and *g*); *Mentzelia bartonioides* (*g-y*); *M. ornata* (*w*, *sc*; 2); *Nicotiana acutiflora* (*w*; 1-2); *N. suaveolens* (*w*, *sc*; 1-2); *N. Tabacum* (*pi*, 4); *Perilla ocimoides crispata* (*w*; 1-3); *Portulaca grandiflora* (*y-p*; 4); *Ricinus communis* (*g*; 3-5); *Salpiglossis sinuata* (*p* and *y*; 2) and vars.; *Schizanthus candidus* (*w*; 2); *S. Grahami* (*l* or *pi*, and *y*; 2); *Schizopetalon Walkeri* (*w*; 1-2); *Zinnia elegans*, and vars.

BIENNIALS.—*Celosia betonicaefolia* (*y*, spotted *p*; 2); *Lobelia* varieties; *Mathiola incana* (*pi*; 1-2).

PERENNIALS.—*Abronia arenaria* (*y*; 4-4); *Alstrœmeria Pelegrina* (*w* or *y*, striped *pi*; 1); *Arototis acaulis* (*y* and *r*; 4); *A. arborescens* (*w* and *pi*; 2); *A. grandiflora* (*o*; 14); *A. speciosa* (*y*; 14); *Calceolaria arachnoidea* (*p*; 1); *C. Fothergillii* (*y*, spotted *r*; 4-4); *Centaurea ragusina* (*y*; 2); *Colestima ageratoides* (*b*; 1); *Conadron ramondioides* (*w*, or *pi* and *p*; 4); *Crocossia aurea* (*o-r*; 2); *Cypella Herberti* (*y*; 1); *Erodium Reichardi* (*w* and *pi*; 4); *Ferraria Ferraria* (*g-br*); *Francoa appendiculata* (*r*; 2); *F. ramosa* (*w*; 2-3); *F. sonchifolia* (*pi*; 2); *Hedyochium Gardnerianum* (*g-y*, *sc*; 3-5); *Heteranthera limosa* (*ag*, *v-b*); *Lilium giganteum* (*w*; 4-10); *L. japonicum* (*w*; 1-2); *Linum flavum* (*y*; 1-4); *L. Macraei* (*o*; 1); *Lobelia cardinalis* (*r*; 1-2); *L. fulgens* (*pi*; 1-2); *L. splendens* (*r*; 1-2); *Maurandya scandens* (*p-v*); *Mazus pumilio* (*v*); *Myosotis azorica* (*p*, becoming *b*; 4-4); *Neja gracilis* (*y*; 1); *Nierembergia gracilis* (*w*, *p*, and *y*; 4-1); *Ophiopogon japonicus intermedius* (*l*; 14); *Pelargonium Endlicherianum* (*p-pi*; 2); *Romneya Coulteri* (*w*; 2-4); *Statice callicoma* (*p*; 1); *Triteleia laxa* (*b*; 1-4); *T. porrifolia* (*w-v*); *Tropaeolum tricolorum* (*o-r* tippel *bk*, and *y*); *Verbena venosa* (*l* or *p*; 2); *Viola hederacea* (*b* or *w*).

SHRUBS.—*Calceolaria bicolor* (*y* and *w*; 2-3); *C. hyssopifolia* (*y*; 1-2); *C. scabiosifolia* (*y*); *C. varieties*; *Camellia japonica* (variable; 20) and vars.; *Cassia corymbosa* (*y*; 6-10); *Ceanothus integririmus* (*w*; 3-6); *Cedronella triphylla* (*w* or *p*; 3-4); *Celastrus Arcturus* (*y* and *p*; 4); *Cistus laevis* (*w*, marked *y*; 3); *C. monspeliensis* (*w*; 4); *C. palaeopalus* (*w* and *y*; 2-3); *C. rotundifolius* (*p*, marked *y*; 1); *Cneorum pulverulentum* (*y*; 1-3); *Coronilla glauca* (*y*, *sc* by day; 2-4); *C. minima* (*y*, *sc*; 4); *Ecceomocarpus longiflorus* (*y* and *g*); *E. scaber* (*r* or *o-r*); *Embothrium coccineum* (*o-r*; 3); *Ephedra nebrodensis* (*w*; 3-4); *Eucallonia floribunda* (*w*; 10); *E. rubra* (*r*; 3-6); *Fuchsia macrostema globosa* (*p-v* and *p-r*; 5-6); *F. m. gracilis* (*p* and *r*; 6-10); *Grindelia glutinosa* (*y*; 2); *Hudsonia ericoides* (*y*; 1); *Hydrangea quercifolia* (*w*; 4-6); *Hypericum empetrifolium* (*y*; 4-1); *H. Hookerianum* (*y*; 2); *Illicium anisatum* (*y-w* and *g*); *I. floridanum* (*r*; 8); *Layoesteria formosa* (*w* and *p*; 4-6); *Mesembryanthemum edule* (*y*); *Mitraria coccinea* (*r*); *Myrtus communis* (*w*; 3-10); *Olearia dentata* (*pi-w*); *Ononis arragonensis* (*y*; 1-2); *Othonnopsis cheirifolia* (*y*; 4-1); *Ozothamnus rosmarinifolius* (*w*; 8-9); *Periploca*

July (Half-hardy Shrubs)—continued.

græca (g and br); *Pernettya mucronata* (w; 6); *Photinia serrulata* (w; 10-20); *Phytellus capensis* (r; 3); *Reaumuria hypericoides* (p; 2); *Rhododendron Dalhousiae* (w, or pi-w; 6-8); *R. Maddenii* (w; 6-8); *Salvia Candelabrum* (w, p, and v; 3-4); *Teocoma australis* (y-w, tinged p or r); *Veronica Andersonii* (b-v; 14); *V. Hulkeana* (l; 1-3); *Yucca Whipplei violacea* (v; 4-12); *Zauschneria californica* (r; 1).

Tender.—**ANNUALS.**—*Begonia humilis* (i-h, w; 1); *Browallia elata* (c-h, b; 14); *B. grandiflora* (c-h, l; 1-3); *Celosia argentea* (i-h, w); *C. cristata* (i-h, r); *C. Huttonii* (i-h, r; 1-2); *C. pyramidalis* (i-h, variable; 14); *Cleome pungens* (st, w or pi; 1-3); *Desmodium gyrans* (st, v; 1-3); *Heliotropium indicum* (st, b; 1); *Impatiens Balsamina* (st, r; 1-2); *I. flaccida* (c-h, p; 4-14); *Ipomœa Bona-nox* (st, w; 10); *I. filicaulis* (i-h, w or c, and p); *I. Quamoclit* (i-h, r; 6); *Martynia fragrans* (c-h, r-p and y, sc; 2); *M. proboscidea* (c-h, y-w, g, and v); *Pentapetes phœnicea* (st, r; 2-3); *Porana racemosa* (i-h, w); *Waitzia aurea* (c-h, o-y; 1-2); *W. nivea* (c-h, w, pi, or y; 14).

BIENNIALS.—*Convolvulus erubescens* (c-h, r-pi; 12); *Humea elegans* (c-h, br-r, pi, or r; 5-6).

PERENNIALS.—*Achimenes heterophylla* (i-h, r; 1); *A. pedunculata* (i-h, r; 14); *A. picta* (i-h, r; 14); *Acineta Barkeri* (c-h, y and r); *Æchmea Mariae Reginae* (st, b; 2); *Aerides affine* (st, pi; 3); *Agapanthus umbellatus* (c-h, b; 2-3); *Albucca Nelsoni* (c-h, w, striped r; 4-5); *Allamanda chelonii* (st, y); *A. nobilis* (st, y); *Amomum angustifolium* (st, r, y, or r and y; 3); *Anacampseros arachnoides* (c-h, w; 4-5); *A. rubens* (c-h, r; 4-5); *A. rufescens* (i-h, r; 4); *A. varians* (c-h, r; 4); *Aneilema biflora* (c-h, b; 1); *Anthurium Bakeri* (st, g, pi, and r); *Arissæma galeata* (c-h, g and p; 1); *Arthropodium pendulum* (c-h, w; 14); *Astilbe rubra* (c-h, pi; 4-6); *Bibiana disticha* (c-h, b, sc; 4); *Bœa hygrometrica* (c-h, b and b-y; 4); *Barbœnia purpurea* (i-h, p, sc; 14); *B. Rogieri* (i-h, p, sc; 14); *Batatas bignonioides* (i-h, p); *Begonia acutiloba* (i-h, w); *B. amabilis* (i-h, pi or w; 4); *B. amœna* (i-h, pi; 4); *B. boliviensis* (i-h, r; 2); *B. Bruantii* (i-h, w or pi); *B. Chelsoni* (i-h, o-r; 2); *B. Clarkii* (i-h, r); *B. coriacea* (i-h, pi; 4); *B. Davisi* (i-h, r; 4); *B. Dregii* (i-h, w; 1); *B. echinosepala* (i-h, w; 14); *B. eximia* (i-h, w and r); *B. geraniifolia* (i-h, r and w; 1); *B. geranioides* (i-h, w; 14); *B. hydrocotylifolia* (i-h, pi; 4); *B. imperialis* (i-h, w; 3); *B. malabarica* (i-h, pi; 2); *B. maxima* (i-h, w); *B. monoptera* (i-h, w; 1-2); *B. Pearcei* (i-h, y; 1); *B. prismatocarpa* (st, o and y; 3); *B. Richardsonia* (i-h, w; 1); *B. roseiflora* (i-h, pi); *B. rubricaulis* (i-h, w and pi; 1); *B. rubro-venia* (i-h, w; 1-14); *B. strigillosa* (i-h, pi; 4); *B. Sutherlandii* (i-h, o-r; 1-2); *B. Thwaitesii* (st, w; 4); *B. Veitchii* (i-h, r; 1); *B. xanthina* (i-h, y; 1); *Billbergia amœna* (st, g-w, tipped b; 2); *Blandfordia aurea* (st, o-y; 1-2); *B. grandiflora* (st, r; 2); *B. nobilis* (o and y; 2); *Bletia florida* (st, pi; 2); *Blumenbachia contorta* (c-h, o-r); *Bouœrosia marocœana* (c-h, r-p and y; 4); *Brassia Lawrenceana* (i-h, y, spotted br and g; 1); *B. maculata* (i-h, y, spotted br and p; 1); *Bromelia Fernandæ* (st, y); *Broughtonia sanguinea* (st, p-r; 14); *Brunsvigia Cooperi* (c-h, y, edged r; 14); *B. Josephines* (c-h, r; 14); *Bulbophyllum Lobbi* (i-h, y); *Burbridgea nitida* (st, o-r; 2-4); *Calanthe Masœna* (i-h, v and v-p; 3-4); *C. veratrifolia* (i-h, w; 2-3); *Calotie cuneifolia* (c-h, b; 1); *Camaridium ochroleucum* (st, y-w; 1); *Canistrum aurantiacum* (st, o-y); *Canna indica* (st, y and r; 3-6); *Catasotum Russellianum* (st, g; 3); *Cattleya Aolandis* (st, br, y, pi, and p); *C. citrina* (i-h, y, sc; 4-5); *C. crispata* (i-h, w or w-l, and r; 1); *C. Harrisonis* (i-h, pi, tinged y; 2) and var.; *C. intermedia* (i-h, variable; 1); *C. Lemonia* (i-h, pi and y; 1); *C. Regnellii* (i-h, g, b, pi-p, w, &c.); *Ceropegia Sandersoni* (c-h, g, veined); *Chironia lineoides* (c-h, r; 1-2); *Cineraria cruenta* (c-h, r-p; 2) and vars.; *Cirrhopetalum Medusæ* (st, straw, dotted pi); *C. Thouarsii* (st, o and y, dotted r); *Cissampelos mauritanica* (st, y and g); *Cœlogyne asperata* (st, c, br, and y; 2); *C. pandurata* (st, g and bk, sc; 14); *C. speciosa* (i-h, w, br or g, y, and r; 14); *C.*

July (Tender Perennials)—continued.

viscosa (i-h, w and br; 1); *Commelina elliptica* (c-h, w; 14-2); *Convolvulus mauritanicus* (c-h, b and w); *Crassula Bolusii* (c-h, pi-w; 4-4); *C. marginalis* (c-h, w); *C. roularis* (c-h, w; 4); *Crinum amabile* (st, r, sc); *C. cruentum* (st, r); *C. giganteum* (st, w, sc); *C. purpurascens* (st, p-r); *Curcuma albiflora* (st, w and y; 2); *C. cordata* (st, r-y; 1); *Cycnocheilus oblongifolium* (st, y-g, sc; 2); *Cypripedium barbatum* (st, p and w; 1) and vars.; *C. Hookeræ* (st, y, br, and pi-p); *C. Parishii* (st, g-w and p; 2); *C. superbiens* (st, w and br); *Dendrobium Aphrodite* (c-h, o, w, and r); *D. chrysois* (st, y and p); *D. olavatum* (st, y and r); *D. crystallinum* (st, w, o, p, and pi); *D. formosum* (st, w and o); *Dichorisandra thyrsoflora* (st, b; 4); *Dichotrichum ternatum* (st, r); *Dissia grandiflora* (c-h, pi, r, and y; 2-3) and var.; *Drimopsis Kirkii* (c-h, w; 4); *Drosera binata* (c-h, w; 4); *D. capensis* (c-h, p; 4); *D. spatulata* (c-h, p; 4); *Eichhornia crassipes* (st, v); *Epidendrum alatum majus* (c-h, y); *E. bicornutum* (st, w and r); *E. falcatum* (st, g-y and y, sc); *E. nemorale* (st, w or pi-l, and v); *Episcia fulgida* (st, r; 4); *Fragaria indica* (c-h, y); *Galaxia ovata* (c-h, y); *Galeandra Baueri lutea* (st, y, and p; 4); *Gesnera discolor* (st, r; 2); *G. nageloides* (st, pi, r, and y); *Gladiolus braehyandrus* (c-h, r; 2); *G. cardinalis* (c-h, r and w; 3-4); *G. Colvillei* (c-h, r and p; 14); *G. psittacinus* (c-h, r, y, g, and p; 3); *Gloriosa superba* (st, o and r; 6); *Gloxinia maculata* (st, p-b; 1); *Grammatophyllum multiflorum* (st, g, br, and p; 2); *Griffinia dryades* (i-h, p-l and w; 14); *G. hyacinthina* (i-h, b and w); *G. ornata* (i-h, b-l; 1-14); *Guzmania tricolor* (st, w, y-g, bk-p, and r); *Hedyochium flavosum* (st, y, sc; 2-3); *H. flavum* (c-h, o, sc; 3); *Hessea crispata* (c-h, pi; 4); *Hibiscus coccineus* (c-h, r; 4-8); *H. militaris* (c-h, pi; 2-4); *Imantophyllum miniatum* (c-h, o; 1-2); *Impatiens Jordonis* (st, y and r; 4); *I. Sultani* (st, r; 1); *Ipomœa Lerarii* (st, b); *I. rubro-carulea* (st, r, becoming p-b); *Kœmpferia ornata* (st, y and o); *Lœlia anceps Warnorii* (i-h, pi and r); *L. purpurata* (i-h, w and p-r); *Limnocharis Plumieri* (i-h, ag, y; 14); *Litonia modesta* (c-h, o; 2-6); *Lobelia Erinus* (c-h, b, and w or y; 4); *Lotus australis* (c-h, pi, w, or p-r; 2); *L. jacobœus* (c-h, p and y; 1-3); *Lycaste cristata* (i-h, w and p); *Lycoris Sewerzowi* (c-h, br-r, sc; 1); *Mantisia saltatoria* (st, p and y; 1); *Manulea rubra* (c-h, y; 1-2); *Marioia gracilis* (i-h, w or b, and r-br; 2); *Miltonia cuneata* (i-h, y and r); *Mimosa pudica* (st, r; 1); *Mirabilis Jalapa* (c-h, variable, sc; 2); *Mormodes pardinum* (st, y and br); *Nelumbium luteum* (c-h, ag, y, sc); *N. speciosum* (c-h, ag, w, sc); *Nerine flexuosa pulchella* (c-h, pi and r; 2); *Nymphaea Devonensis* (st, ag, pi-r); *N. gigantea* (i-h, ag, b); *N. Lotus* (st, ag, r, sc); *N. soutifolia* (i-h, ag, b, sc); *N. stellata* (st, ag, b, or w); *N. sanzibarënsis* (st, ag, b); *N. thermalis* (st, ag, w); *Odontoglossum crispum* (c-h, w, y, and r-br); *O. hastilabium* (c-h, c-w, br, and w, sc); *O. maxillare* (i-h, w, o, and p-br); *O. Uro-Skinneri* (c-h, g or g-y, w, r, &c.); *Oncidium ampliatum* (st, y); *O. annulare* (i-h, br and y); *O. barbatum* (st, y and br); *O. Cebolleta* (st, y-r); *O. concolor* (i-h, y); *O. cornigerum* (i-h, y and r); *O. oculatum* (c-h, br-p and pi-p); *O. divaricatum* (i-h, y and br); *O. macranthum* (i-h, y and p-br); *O. Wentworthianum* (c-h, g-y and br); *Orthosiphon stamineus* (st, l-b; 2); *Ottelia ovalifolia* (st, ag, g and y); *Oxalis elegans* (c-h, y; 4); *O. lasiandra* (c-h, r; 4-14); *Passiflora incarnata* (c-h, w, p, and g, sc); *Pelargonium Bowkeri* (c-h, p and y; 1); *P. fissum* (c-h, pi; 1); *P. glaucifolium* (c-h, bk-p, edged g-y, sc); *P. oblongatum* (c-h, p-c; 4); *Peristeria elata* (st, w, spotted l; 4); *Phaius Bensonæ* (st, pi-p, w, and y; 1); *Phalaenopsis Aphrodite* (st, w, r, o, and y); *Pitcairnia Andreana* (st, y and r); *P. xanthocalyx* (st, y); *Plagiolirion Horsmanni* (st, w); *Plumbago rosea* (st, pi-r; 2) and var.; *Ranunculus Lyalli* (c-h, w; 2-4); *Rensanthera coccinea* (i-h, p-r); *Richardia africana* (c-h, w; 2); *R. albo-maculata* (c-h, g-w; 2); *R. melanoœnea* (c-h, w and p; 14); *Rivina humilis* (st, w-pi; 1-2); *R. levis* (st, w-pi; 7-8); *Saccolabium furcatum* (st, w, spotted

July (Tender Perennials)—continued.

pi); *Salvia coccinea* (c-h, b; 3); *S. coccinea* (c-h, r; 2); *Sesoclo pyramidalis* (c-h, y; 2); *S. speciosus* (c-h, p; 1-1); *Sinningia concinna* (st, p and y); *S. conspicua* (st, y and p; 1); *S. Youngiana* (st, v or p; 1-1½); *Siphocampylus betulifolius* (st, r; 3); *S. glandulosus* (st, pi; 3); *S. Humboldtianus* (st, r; 3); *Sobralia macrantha* (st, p and r; 6-8); *Solanum sisymbriifolium* (c-h, b or w; 4); *Sollya heterophylla* (c-h, b; 6); *S. parviflora* (c-h; b); *Sonchus gummiifer* (c-h, y; 2-3); *Sonerila Bensonii* (st, pi-p); *S. margaritacea* (st, pi) and var.; *Spathoglottis rosea* (st, pi); *Spigelia splendens* (st, r; 1½); *Stachys coccinea* (c-h, r; 1-2); *Stanhopea oculata* (st, y, spotted l.); *S. tigrina* (st, o, blotched p-br, sc); *Stapelia Asterias* (c-h, v, y, and p; 1); *S. sororia* (c-h, p and y; 1-2); *Stauroopsis Batemanni* (st, y, &c.); *Streptocarpus Saundersii* (st, b; 1); *Stylidium graminifolium* (c-h, p; 1-1½); *S. spatulatum* (c-h, y; 1); *Swainsonia galegifolia* (c-h, r) and vars.; *S. Greyana* (c-h, pi; 2-3); *Talauma pumila* (st, c, sc; 2-4); *Teucrium Chamædrye* (c-h, pi); *Thunbergia erecta* (st, b, o, and y; 6) and var.; *Tillandsia pittacina* (st, r, y, and g); *Toronia flava* (st, y and p; 1-1½); *T. Fournieri* (st, v, l, and y; 1-2); *Tropæolum peregrinum* (c-h, y); *Turnera ulmifolia* (st, y; 2-4); *Tussacia pulchella* (st, r; 1); *Utricularia bifida* (c-h ag, y); *U. montana* (st, y, w, and g); *Vanda Parishii* (st, ag, y, m, w, &c., sc); *V. Roxburghii* (st, g, v-p, and w); *V. teres* (st, w, pi-m, &c.); *Villarsia roniformis* (c-h, y; 1-3); *Vinca rosea* (c-h, pi or w); *Wahlenbergia tuberosa* (c-h, w and pi; 1-2); *Warrea tricolor* (st, y, p, and w); *Watsonia rosea* (c-h, pi; 2); *Zebrina pendula* (c-h, w, and pi-p); *Zygotopetalum Clayi* (i-h, p-br, v-p, and w); *Z. celeste* (c-h, b, p, m, &c; 1-1½).

SHRUBS.—*Abutilon pulchellum* (c-h, w; 8); *A. venosum* (c-h, o, veined r; 10); *Acacia dealbata* (c-h, y; 10-20); *A. Farnesiana* (c-h, y, sc; 6-10); *A. glauca* (c-h, w; 5-10); *A. mollissima* (c-h, y; 10-20); *Aemona floribunda* (w; 4); *Acridocarpus natalitius* (c-h, y); *Acronychia Cunninghamii* (c-h, w; 7); *Adenanthos obovata* (c-h, r; 5); *Adina globiflora* (st, y; 3-4); *Æschynanthus atrosanguineus* (st, r; 1½); *Æ. Boschianus* (st, r; 1); *Æ. longiflorus* (st, r; 2); *Æ. speciosus* (st, o, 2); *Æ. splendens* (st, r, spotted bk; 1); *Æ. tricolor* (st, r, o, and bk; 1); *Alona celestis* (st, b; 2); *Alonsoa incisifolia* (c-h, r; 1-2); *Ardisia acuminata* (st, w; 6-8); *A. macrocarpa* (st, pi-w, dotted; 5-6); *A. Oliveri* (st, pi and w); *A. paniculata* (st, pi; 8-10); *A. serrulata* (st, r; 2-3); *Argyrea capitata* (st, pi); *A. cuneata* (st, p; 2-5); *A. speciosa* (st, pi; 10); *Aristolochia floribunda* (st, p-r and y; 10); *A. Goldieana* (i-h, g and y, veined p); *A. labiosa* (st, g; 20); *A. odoratissima* (st, p, sc; 10); *A. ringens* (st, g, marbled bk-p); *Artabotrys odoratissimus* (st, r-br, sc; 6); *Astelma eximium* (c-h, r; 3); *Astephania triflora* (c-h, w); *Asystasia scandens* (st, c; 6); *Babingtonia Camphorasmæ* (c-h, pi-w; 7); *Barleria flava* (st, y; 3); *Bauhinia corymbosa* (st, pi); *Begonia cinnabarina* (st, r; 2); *B. coccinea* (st, r; 2); *B. Evansiana* (c-h, pi; 2); *B. falculifolia* (st, r; 1-2); *B. foliosa* (st, w, tinged pi); *B. fuchsoides* (st, r); *B. Ingramii* (c-h, pi; 2); *B. Kunthiana* (st, w); *B. maculata* (st, variable); *B. nitida* (st, pi; 4-5); *B. platanifolia* (st, pi-w; 5-6); *Berkheya grandiflora* (c-h, y; 2); *Berzelia lanuginosa* (c-h, w; 1-2); *Bignonia Chereze* (i-h, o; 10); *B. magnifica* (i-h, m or p-r); *B. pallida* (i-h, y and l); *B. variabilis* (i-h, g-y; 10); *Billiardiera longiflora* (c-h, g-y, turning p); *B. scandens* (c-h, c, turning p); *Borbonia barbata* (c-h, y; 3-4); *B. ornata* (c-h, y; 3-6); *Boronia crenulata* (c-h, r; 1); *B. Drummondii* (c-h, pi; 2); *B. serrulata* (c-h, pi; 1-6); *Bossinia linophylla* (c-h, o and p; 1-4); *Bougainvillea glabra* (c-h, pi); *Bouvardia leiantha* (c-h, r; 2); *B. triphylla* (c-h, r; 2-3); *Brownea coccinea* (st, r; 6-10); *B. grandioeps* (st, r); *Brunfelsia eximia* (st, p, sc; 2½); *Brunia nodiflora* (c-h, w; 1-3); *Bunchosia argentea* (c-h, y; 10); *Bursaria spinosa* (c-h, w; 10); *Burtonia conferta* (c-h, v; 2); *Cajanus indicus* (st, y; 6-10); *Candollea cuneiformis* (c-h, y; 7); *Caesia tomentosa* (st, y; 5-7); *Celastrus lucidus* (c-h, w; 1-3);

July (Tender Shrubs)—continued.

Coreus Macdonaldii (c-h, r and o); *C. pentagonus* (c-h, w; 3); *C. speciosissimus* (c-h, r; 3-6); *Cestrum elegans* (v-h, p-r); *C. roseum* (c-h, pi; 4); *Chirita Moonii* (st, b; 2); *C. sinensis* (c-h, l); *Chloanthus strobilatus* (c-h, g-y; 3); *Chorizema diversifolium* (c-h, o-r; 2); *Clavija Baideliana* (st, o); *Clerodendron Bethuneanum* (st, r, spotted w and p; 10); *C. splendens* (st, r; 6); *C. a. speciosissima* (st, r); *C. squamatum* (st, r; 10); *Clitoria heterophylla* (st, b; 1); *C. ternata* (st, b, marked w; 4); *Cobaea scandens* (c-h, p; 20); *Colutea ornata* (c-h, r-y; 4-6); *Combretum grandiflorum* (st, r); *C. racemosum* (st, y); *Coronilla coronata* (c-h, y; 1-2); *Cotyledon Peacockii* (c-h, r; 1); *Cowanja plicata* (c-h, r; 1-2); *Crassula coccinea* (c-h, r; 1-3); *C. falcata* (c-h, r or w; 3-8); *C. versicolor* (c-h, r and w); *Crotalaria oajanifolia* (c-h, y; 4-6); *C. Cunninghamii* (c-h, y-g and p; 3); *Crowea saligna* (c-h, pi; 1-2); *Cryptostegia grandiflora* (st, r-p); *Cytisus canariensis* (c-h, y); *C. racemosus* (c-h, y; 3); *Dianthus arbusculus* (c-h, p-r; 1½); *Diosma ericoides* (c-h, w and r; 1-3); *Dipladenia amabilis* (st, pi-r; 10); *D. amca* (st, pi); *D. boliviensis* (st, w and y); *D. Brearleyana* (st, pi, becoming r); *D. carissima* (st, pi); *D. diadema* (st, pi); *D. hybrida* (st, r); *D. insignis* (st, pi-p); *D. nobilis* (st, pi-p, becoming o-r); *D. Regina* (st, pi-w); *D. splendens profusa* (st, r); *Dolichos lignosus* (c-h, pi and p); *Doryanthes excelsa* (c-h, r; 8-16); *Dracophyllum capitatum* (c-h, w; 1-1½); *Drosocarpum lusitanicum* (c-h, y); *Duvalia polita* (c-h, br-p, br or r, and o); *Echinopsis cristata* (st, c-w and g-p); *Echites atropurpurea* (st, br); *Echium fastuosum* (c-h, b; 2-4); *Elæocarpus grandiflora* (st, y, r, and w; 7); *Enkianthus quinqueflorus* (c-h, r and pi-w; 3-10); *Erica Aitoniana* (c-h, r or w; 2); *E. ampullacea* (c-h, r; 2); *E. Austriana* (c-h, w and r); *E. Bergiana* (c-h, p; 1½); *E. Candolleana* (c-h, pi-r and w); *E. Cavendishiana* (c-h, y; 1½); *E. cerinthoides* (c-h, r; 3); *E. Devoniana* (c-h, p); *E. elegans* (c-h, pi and g; 1-1); *E. Fairiana* (c-h, pi and w); *E. grandiflora* (c-h, y; 3); *E. Irbyana* (c-h, w and r; 1-2); *E. jasmiflora* (c-h, r; 1-2); *E. Lambertiana* (c-h, w; 1-2); *E. Marnockiana* (c-h, p); *E. Massonii* (c-h, r and g-y; 3); *E. McNabiana* (c-h, pi-r and p); *E. odorata* (c-h, w, sc; 1); *E. Parmentieriana* (c-h, r-w; 1); *E. propendens* (c-h, p or r; 1); *E. ramantacea* (c-h, p-r; 1½); *E. Savileana* (c-h, r or p-r; 1); *E. Shannoniana* (c-h, w and p; 1-2); *E. tricolor* (c-h, r, w, and g-y; 2); *E. Victoria* (c-h, p and w); *E. Westphalingia* (c-h, pi-r); *Fuchsia corymbiflora* (c-h, r; 4-6); *F. dependens* (c-h, r; 2-4); *F. fulgens* (c-h, r; 4-6); *F. macrostema* (c-h, r; 6-12); *F. splendens* (c-h, r and g; 6); *F. thymifolia* (c-h, r; 4-6); *Gardenia florida Fortunei* (st, w, sc); *Gasteria brevifolia* (c-h, r); *Gazania uniflora* (c-h, y; 1); *Gomphocarpus fruticosus* (c-h, w; 5-7); *Gompholobium polymorphum* (c-h, r and y, p outside); *G. venustum* (c-h, p; 1-3); *Goodia lotifolia* (c-h, y and r; 2-4); *G. pubescens* (c-h, y and r; 1-3); *Grewia occidentalis* (c-h, p; 10); *Guettarda odorata* (st, r, sc at night; 6-10); *Hakea dactyloides* (c-h, w; 7); *H. suaveolens* (c-h, w; 4); *Heliotropium corymbosum* (c-h, l; 4); *Hermannia flammæ* (st, o or r; 1-3); *Hibbertia dentata* (c-h, y); *H. perfoliata* (c-h, y); *Houttea Gardineri* (st, r; 2); *Hoya carnea* (i-h, pi-w); *H. cinnamomifolia* (i-h, y-g; 10); *H. Cumingiana* (st, g-y or w, and p-br); *H. pallida* (st, y or y-w, and pi, sc); *Hypericum balearicum* (c-h, y; 1-2); *Hypocalyptus obovatus* (c-h, p; 1-2); *Indigofera tinctoria* (st, r; 4-6); *Iochochma fuchsoides* (c-h, o-r; 5); *I. lanceolata* (c-h, p-b; 4-5); *Ixora chelonii* (st, o-pi); *I. coccinea* (st, r; 3-4); *I. javanica* (st, o; 3-4); *Jasminum grandiflorum* (i-h, w); *J. Sambac* (st, w, sc); *Jatropha podagrica* (st, o-r; 1½); *Justicia ventricosa* (st, pi; 3); *Lachnæa buxifolia* (c-h, w; 2); *L. purpurea* (c-h, p; 2); *Lagerstrœmia indica* (st, pi; 6-10); *Lapageria rosea* (c-h, pi-r); *Leschenaultia biloba* (c-h, b; 1); *L. formosa* (c-h, r; 1); *Leucopogon verticillatus* (c-h, w or pi; 3-6); *Lightfootia ciliata* (c-h, b; 1); *Lippia citricolora* (c-h, w; 3); *Lonicera sempervirens* (c-h; r and y); *Luculia Pinceana* (c-h, w, sc); *Mahernia incisa*

July (Tender Shrubs)—continued.

(c-h, r, becoming y; 2-4); *Melianthus major* (c-h, br; 4-6); *Mesembryanthemum candens* (c-h, w); *M. coccineum* (c-h; r); *M. multiflorum* (c-h, w; 2-3); *M. spectabile* (c-h, r; 1); *M. violaceum* (c-h, pi-w to v, 1-2); *Mimulus glutinosus* (c-h, br or pi; 5); *Myrtus Luma* (c-h, w; 3); *Nerium Oleander* (c-h, r; 6-14); *Opuntia arborescens* (c-h, p; 5); *O. echinocarpa* (c-h, g-y); *O. multiflora* (c-h, y); *O. Tuna* (c-h, r-o); *Osbeckia glauca* (st, r or p; 2); *Oryanthus tubiflorus* (st, w; 3-4); *Oxylobium Callistachys* (c-h, y; 3-4); *O. ellipticum* (c-h, y; 2-3); *Oxypetalum caruleum* (i-h, b); *Pachypodium succulentum* (st, r and w); *Passiflora alata* (st, r, p, and w, sc); *P. coruleo-racemosa* (c-h, p); *P. coccinea* (st, r and o); *P. edulis* (st, p-w, sc); *P. Hahnii* (c-h, w and y); *P. racemosa* (st, r); *Pelargonium ardens* (c-h, r; 1-1½); *P. betulinum* (c-h; 3); *P. bicolor* (c-h, p; 1-2); *P. cooptum* (c-h, pi and p); *P. fragrans* (c-h, w and r; 2); *P. igneosens* (c-h, r; 1½); *P. inquinans* (c-h, r or pi, and w; 2); *P. peltatum* (c-h, w or r; 2); *P. tricolor* (c-h, w and r; 1½); *Pentas carnea* (st, pi-w; 1½); *Petræa volubilis* (st, p; 20); *Phanocoma prolifera* (c-h, r; 4); *Phyllanthus Chantrieri* (st, r and y); *P. pallidifolius* (st, y and r); *Phyllocactus Ackermannii* (st, pi); *Physianthus albus* (c-h, w and r); *Pitcairnia aphelandraeflora* (st, r); *Plagianthus Lyallii* (c-h, w; 20); *Platylobium formosum* (c-h, y; 4); *Plumbago capensis* (i-h, b; 2); *Podalyria calyptrata* (c-h, p; 6); *Podanthes geminata* (st, o-y and r-p); *Portulandia platantha* (st, w; 3); *Psoralea aculeata* (c-h, b and w; 2-3); *P. pinnata* (c-h, b; 3-6); *Pultenaea stricta* (c-h, y; 1-3); *Quisqualis indica* (st, variable); *Rhododendron javanicum* (c-h, o and r; 4); *Rhus succedanea* (c-h, g-y; 10-15); *Rondeletia cordata* (st, pi; 4); *R. Purdiei* (st, y, sc; 4); *Ruellia macrophylla* (i-h, r; 3-4); *R. speciosa* (i-h, r; 20); *Russelia juncea* (st, r; 3-4); *R. sarmentosa* (c-h, r; 4); *Salvia albo-carulea* (c-h, w and b; 3); *S. chamædroyides* (c-h, b; 1); *S. fulgens* (c-h, r; 2-3); *S. Goudotii* (c-h, r; 2); *S. Grahami* (c-h, p-b; 2); *S. Heerii* (c-h, r; 2-3); *S. rutilans* (c-h, r; 2-3); *Sarmentaria repens* (c-h, r); *Satyrium aureum* (i-h, o and r; 1-1½); *Scutellaria Hartwegi* (st, r and v; 1); *S. Mociniana* (st, r and y; 1½); *Selago Gillii* (c-h, pi; ½); *Sempervivum aureum* (c-h, y; 1); *S. canariense* (c-h, w; 1½); *S. tabulaforme* (c-h, y; 1); *Senecio argenteus* (c-h, y; 1-2); *S. chordifolia* (c-h, y; 1); *S. macroglossus* (c-h, y); *Siphocampylus coccineus* (st, r; 3); *Solandra viridiflora* (st, g-w; 2-3); *Solanum atropurpureum* (c-h, p and y); *S. Capicastrum* (c-h, w); *S. giganteum* (c-h, b; 10-25); *S. jasminoides* (c-h, b-w) and var; *S. marginatum* (c-h, w and p; 3-4); *S. maroniense* (st, b-v; 6-14); *S. Pseudo-capsicum* (c-h, w; 4); *S. pyracanthum* (c-h, b-v; 3-6); *S. Seafortianum* (st, r or l); *Spheralcea elegans* (c-h, v and p); *S. miniata* (c-h, r; 1); *Stachytarpheta nutabilis* (st, r; 3); *Steriphoma cleomoides* (i-h, y; 6); *Styphelia tubiflora* (c-h, r; 5); *Tabernaemontana Barteri* (st, w; 6); *T. coronaria* (st, w; 4) and vars; *Taonia insignis* (i-h, r, v-r, and w); *T. manicata* (st, r and b); *T. Van Volxemii* (i-h, r); *Talinum Arnotii* (c-h, y); *Tephrosia capensis* (c-h, p); *Tetudinarina elephantipes* (c-h, g-y; 10); *Tetratheca pilosa* (c-h, p; 1-1½); *Teucrium fruticosum* (c-h, b; 2-3); *Thysacanthus bracteolatus* (st, r; 2); *T. callistachyus* (st, r; 2); *Trachelospermum jasminoides* (i-h, w); *Ursinia crithmifolia* (c-h, y; 1-2); *U. pulchra* (c-h, o; 1); *Vaccinium caracasense* (c-h, r-w; 4); *V. leucobotrys* (c-h, w; 4-7); *Westringia rosmariniformis* (c-h, b); *Yucca Treouleana* (c-h, w; 20-25).

AUGUST.—Hardy.—ANNUALS.—*Acroclinium roseum* (pi; 1-2) and vars; *Agrostemma cœli-rosa* (pi, w, or r; 1); *Amarantus caudatus* (p or y; 2-3); *Anagallis grandiflora* (b and r; ½); *Androsæa lanuginosa* (pi; ½-2); *Argemone albiflora* (w; 1); *A. hirsuta* (w; 2); *A. ochroleuca* (y); *Bellium bellidifolides* (w; ½); *Brachycome iberidifolia* (b or w; 1); *Calendula maderensis* (o; 2); *C. officinalis* (o; 3); *Campanula Erinus* (b-pi or w; ½-1); *Chrysanthemum carinatum* (w or p; 2); *C. coronarium* (y; 4); *C. segetum* (y; 1½); *Clarkia elegans* (r; 2); *C. pulchella* (p; 1½-2);

August (Hardy Annuals)—continued.

Collinsia bicolor (w and pi-p; 1); *Collomia coccinea* (r; 1-1½); *C. grandiflora* (r-y; 1½-2); *Convolvulus tricolor* (y, b, and w; 1); *Coreopsis Drummondii* (y and r-br; 1); *Delphinium Ajacis* (b, r, or w; 1-1½); *D. cardinale* (r and y; 3-4); *Downingia elegans* (b and w; ½); *D. pulchella* (b and y; ½); *Drosæra rotundifolia* (w; ½); *Eschscholtzia californica* (y; 1½); *E. c. crocea* (o; 1); *Eucharidium concinnum* (l-p; 1); *Fumaria capreolata* (w and p; 4); *Gilia achillesfolia* (p-b; 1); *G. androsæoa* (l, pi or w, and y; ½-1); *G. capitata* (b; 1-2); *G. liniflora* (w; 1); *G. micrantha* (pi; ½); *Helianthus annuus* (y; 6); *Helichrysum bracteatum* (variable; 3-4); *Heliotropium convolvulaceum* (w, sc; 2); *Iberis umbellata* (variable; ½-1); *Impatiens amphorata* (p and pi-r; 3-6); *I. Roylei* (p; 10); *Ionopidium caule* (l, or w and v; 4); *Ipomœa purpurea* (p; 10); *Lathyrus grandiflorus* (pi); *L. odoratus* vars. (sc); *Lavatera trimestris* (pi; 3-6); *Limnanthes Douglasii* (y and w, sc; ½); *Linaria sparten* (y); *Loasa prostrata* (y); *L. vulcanica* (w; 2); *Lopezia coronata* (pi-p; 1½); *Lupinus luteus* (y, sc; 1-1½); *L. nanus* (l and b; 1); *Madia elegans* (y; 1½); *Malcolmia maritima* (l, pi, r, or w; ½-1); *Malope trifida* (p or w; 1); *Matthiola annua* (variable; 1-2); *Nemosis cynanchifolia* (l-b; 1½-2); *N. floribunda* (w and y, sc; 1); *Nemophila insignis* (b; 1); *N. maculata* (w and v-p; ½); *N. Menziesii* (w to b; ½); *Nicandra physaloides* (b; 2); *Nigella damascena* (w or b; 1-2); *N. hispanica* (b; 1-2); *N. orientalis* (y and r; 1½); *Nolana paradoxa* (v); *N. tenolla* (b); *Nonnea rosea* (pi; ½-1); *Oenothera amœna* (pi and r; 1-2); *O. bistorta Veitchiana* (y and r); *O. Whitneyi* (pi-r and r; 1-1½); *O. varieties*; *Omphalodes linifolia* (w; ½-1); *Oxalis stricta* (y; 1½); *O. valdiviensis* (y and r; ½-1); *Papaver alpinum* (y; ½); *P. nudicaule* (o, y, or w; ½-1½); *P. pilosum* (r or o, and w; 1-2); *P. Rhœas* (r; 1) and vars.; *Podolepis aristata* (y and pi; 1); *Polygonum orientale* (pi-p or w; 3-4); *Ranunculus anomonoides* (pi-w; ½-1); *Roseda odorata* (y-w, sc) and vars.; *Sabbatia calycosa* (w; ½-1½); *S. campestris* (pi; 1); *Scabiosa atropurpurea* (r, sc; 2-3); *Sohizanthus pinnatus* (variable; 2); *Silene pendula* (pi-w); *Sonchus gummiifor* (y; 2-3); *Slatice Suworowi* (l); *Sirexanthus maculatus* (y; 1½); *Tagetes patula* (o-y; 1½); *T. tenuifolia* (y; 2); *Thlaspiolum peregrinum* (y); *Wahlenbergia hederacea* (b).

BIENNIALS.—*Anagallis fruticosa* (r; 2); *Dianthus chinensis* (variable; ½-1); *Digitalis purpurea* (p, varying to w; 3-5); *Glaucium flavum* (y; 1-2); *Grindelia grandiflora* (y or o; 2½-3); *Hesperis tristis* (w, c, br-r, or p, sc at night; 1-2); *Michauxia lævigata* (w; 11); *Oenothera biennis* (y, sc; 2-4); *Silybum Marianum* (pi-p; 1-4); *Stachys germanica* (pi and w; 1-3).

PERENNIALS.—*Acantholimon glumaceum* (pi; ½); *A. venustum* (pi; ½-1); *Acanthus mollis* (w; 3-4); *A. montanus* (pi; 3); *A. spinosus* (pi; 3-4); *Achillea ægyptiaca* (y; 1½-2½); *A. Ageratum* (w; ½); *A. asplenifolia* (pi; 1½); *A. atrata* (w); *A. aurea* (y; 1½); *A. Clavennæ* (w; ½); *A. Eupatorium* (y; 4-5); *A. Millefolium roseum* (pi; 1-3); *A. serrata* (w; 1½); *Acis grandiflorus* (w; ½); *A. roseus* (pi; ½); *Aconitum album* (w; 4-5); *A. chinense* (b; 4-6); *A. japonicum* (pi-w; 6); *A. Napellus* (b; 3-4); *A. Ottonianum* (b and w; 2-4); *A. paniculatum* (v; 2-3); *Acorus Calamus* (y; 3); *Actinella grandiflora* (y; ½-1); *Actinomeris helianthoides* (y; 3); *A. squarrosa* (y; 3); *Adenophora Fischeri* (b or w-b, sc; 1½); *Aletris farinosa* (w; 1½-2); *Allium azureum* (b; 1-2); *A. falcifolium* (y; 1); *A. nigrum* (v or w; 2½-3½); *Alstrœmeria aurantiaca* (o; 3-4); *A. chilensis* (p-r or pi; 2-3); *A. versicolor* (y and p; 2-4); *Althœa narbonensis* (r; 3-6); *Alyssum Wierbeckii* (y; 1½); *Amsonia salicifolia* (b; 1½-2½); *A. Tabernaemontana* (b; 1½-2½); *Anomatheca oruenta* (r; ½-1); *Antennaria margaritacea* (w; 2); *Anthemis Aizoon* (w and y; ½); *Anthyllis Vulneraria* (w, y, r, or pi); *Apios tuberosa* (br-p, sc; ½); *Aquilegia californica* (y and o-r; 2-4); *A. sibirica* (l; 1);

August (Hardy Perennials)—continued.

Arabis lucida (*w*; 1-4); and vars.; *Arenaria balearica* (*w*; 4); *A. rotundifolia* (*w*; 1-4); *Arnica Chamissonis* (*y*; 1-2); *A. foliosa* (*y*; 1-2); *A. scorpioides* (*y*; 1-1); *Artemisia alpina* (*y*; 1-2); *A. cana* (*y*; 2-3); *A. Stelleriana* (*y*; 1-2); *A. vulgaris* (*y*; 3-4); *Asclepias tuberosa* (*o*; 1-2); *Asperula longiflora* (*w, y*, and *r*; 1); *A. orientalis* (*b*; 1); *Aster Amellus* (*p*; 2) and vars.; *A. argentus* (*p*; 1); *A. Bigelovii* (*l* and *y*; 2); *A. Douglasii* (*p*; 3-4); *A. byssopifolius* (*w*; 1-2); *A. peregrinus* (*b-p*; 1); *A. spectabilis* (*b*; 2); *A. Tradescanti* (*w*; 3); *A. versicolor* (*w*; 3); *Astilbe rivularis* (*y-w* or *r*; 3); *Astragalus leucophyllus* (*y*; 2-3); *Bellium micinum* (*w* and *y*; 1); *Bessera elegans* (*r*, or *r* and *w*; 2); *Boconia cordata* (*buff*; 5-8); *Boltonia asteroides* (*pi-w*; 2); *Borago laxiflora* (*b*); *B. longifolia* (*b*; 1); *B. officinalis* (*b*; 1-2); *Brodiaea congesta* (*b*; 1); *B. grandiflora* (*b-p*; 1); *B. Howellii* (*p-b*; 1-2); *Butomus umbellatus* (*aq, pi*; 2); *Callirhoe digitata* (*r-p*; 2-3); *C. involucrata* (*r*; 1); *C. Papaver* (*v-r*; 3); *Calochortus albus* (*w*, blotched *r*; 1-1); *C. Bonthamii* (*y*; 1-2); *C. lilacinus* (*pi*; 1-2); *C. purpureus* (*p, y*, and *g*; 3); *C. splendens* (*l*; 1); *Calophanes oblongifolia* (*b*; 1); *Calopogon pulchellus* (*p* and *y*; 1); *Calypso borealis* (*pi, br*, and *y*; 1); *Campanula Allionii* (*b* or *w*; 4); *C. omissiflora* (*b* or *w*; 1-4); *C. carpathica* (*b* or *w*; 1); and vars.; *C. Elatines* (*b-p*; 1-4); *C. fragilis* (*l-p*; 1-1); *C. garganica* (*b*; 1-4); *C. glomerata* (*b-v* or *w*; 1-2) and vars.; *C. isophylla* (*l-b*) and vars.; *C. lactiflora* (*b-w* or *b*; 2-6); *C. nitida* (*b* or *w*; 1-4); *C. pusilla* (*b* and *w*, or *w*; 1-4); *C. rotundifolia* (*b*; 1-1) and vars.; *C. Scouleri* (*b*; 1); *C. Tommasiniana* (*b*; 1-1); *C. Van Houttei* (*b*; 2); *Cassia marylandica* (*y*; 2-3); *Centaurea atropurpurea* (*p*; 3); *C. aurea* (*o-y*; 2); *C. dealbata* (*pi*; 1-1); *Centranthus ruber* (*r*; 2-3); *Cerastium Boissieri* (*w*; 1-1); *Cheiranthus Cheiri* (variable, *sc*; 1-2); *Cheloni Lyoni* (*p*; 3-4); *Cimicifuga americana* (*w*; 2-3); *C. racemosa* (*w*; 3-5); *Cineraria maritima* (*y*; 2); *C. Clematis recta* (*w, sc*; 2-3); *Cnicus acaulis* (*y*; 2); *C. altissimus* (*p*; 3-10); *C. spinosissimus* (*y*; 3); *C. undulatus* (*p*; 1); *Commelina virginica* (*b*; 1); *Coroepais auriculata* (*y* and *p-br*; 1-1); *C. grandiflora* (*y*; 3-4); *C. lanceolata* (*y*; 1-3); *C. verticillata* (*y*; 1-2); *Coris monspeliensis* (*l*; 1); *Coronilla varia* (*pi* and *w*, or *w*; 1); *Crinum capense* (*r*); *Cynanchum roseum* (*pi-r*; 1-1); *Delphinium exaltatum* (*b* or *w*; 3-6); *D. formosum* (*b* and *v*; 1-3); *D. nudicaule* (*r* and *y*; 1-1); *Dianthus arenarius* (*w*); *D. atrorubens* (*r*; 1); *D. barbatus* vars.; *D. cæsius* (*pi, sc*; 1-1); *D. orcutus* (*r*); *D. fimbriatus* (*pi*; 1); *D. Fischeri* (*pi*); *D. fragrans* (*w* and *p, sc*; 1-1); *D. glacialis* (*r-p*; 1); *D. monspeliensis* (*r*; 1-1); *D. neglectus* (*pi*; 1); *D. petraeus* (*pi*; 1); *D. plumarius* (*w* and *p, sc*; 1-1); *D. Seguierii* (*pi-p*; 1); *D. superbus* (*pi, sc*; 1-1); and var.; *Dicentra eximia* (*r-p*; 1-1); *D. spectabilis* (*pi-r*; 1-2); *Digitalis ambigua* (*y* and *br*; 2-3); *Diphylleia cymosa* (*w*; 1); *Doronicum plantagineum excelsum* (*y*; 5); *Drosera filiformis* (*p*; 1); *Echinops commutatus* (*w*; 5-7); *E. Ritro* (*b*; 3); *Epilobium obovatum* (*pi-p*); *Epimedium macranthum* (*w*; 10-15); *E. pinnatum* (*y*; 8-12); *Erigeron glaucus* (*p*; 1-1); *E. speciosus* (*w* and *y*; 1-1); *Erodium Maoscevi* (*p-r*; 1-2); *E. pelargonifolium* (*w* and *p*); *E. trichomanefolium* (*pi-w*; 1-1); *Eryngium alpinum* (*b*; 1-2); *E. amethystinum* (*b*; 1-2); *E. Bourgati* (*b*; 1-2); *E. giganteum* (*b*; 3-4); *Erysimum pumilum* (*g-y, sc*; 1); *Foeniculum vulgare* (*y*); *Fritillaria Hookeri* (*l*; 1); *Funkia grandiflora* (*w, sc*); *F. subcordata* (*w*); *Galega officinalis* (*b*; 3-4); *G. orientalis* (*b*; 2-4); *Galtonia candicans* (*w, sc*); *Gentiana affinis* (*b*; 1-1); *G. Andreweii* (*b*; 1-2); *G. Pneumonanthe* (*b*; 1-1); *Globularia nana* (*b*); *G. nudicaulis* (*b*; 1); *G. vulgaris* (*b*; 1); *Glycyrrhiza glabra* (*b*; 3-4); *Habenaria fimbriata* (*l-p*; 1-1); *Habitia tannoides* (*g*); *Hedysarum coronarium* (*r*; 3-5); *Helianthus rigidus* (*y* and *br*; 3); *Heliochrysum arenarium* (*y*; 1-1); *Hemerocallis Dumortieri* (*o-y*; 1-1); *H. flava* (*o-y, sc*; 2-3); *H. fulva* (*y*; 2-4); *H. Middendorfi* (*y*; 2-3); *H. minor* (*y, sc*; 1-1); *Hesperis matronalis* (variable);

August (Hardy Perennials)—continued.

2-3); *Heuchera americana* (*r*; 1-1); *H. sanguinea* (*r*; 1-1); *H. villosa* (*v*; 1-3); *Houstonia serpyllifolia* (*w*; 1); *Humulus Lupulus* (*g-y*); *Hypericum elegans* (*y*; 1); *H. patulum* (*y*; 6); *H. perforatum* (*y*; 1-3); *Incarvillea Olgae* (*pi*; 3-4); *Inula glandulosa* (*y*; 2); *Iris iberica* (*w* or *l, p*, and *p-br*; 1-1); *Kniphofia aloides* (*r*, fading to *o* and *g-y*; 3-4); *K. Leichtlinii* (*r* and *y*); *Lamium maculatum* (*p*); *Lathyrus magellanicus* (*b-p*); *L. roseus* (*pi*); *L. sylvestris platyphyllus* (*pi*); *Lavandula vera* (*b* or *w*; 1-2); *Leucoum Hernandezii* (*w* and *g*; 1-1); *Lilium auratum* (*w, y*, and *p*; 2-4); *L. bulbiferum* (*r*; 2-4); *L. canadense* (*y* or *r*, and *p*; 1-3); *L. Cardesbei* (*o-r* and *p*; 2-3); *L. chalcidonicum* (*r*; 2-3); *L. cordifolium* (*w, y*, and *p*; 3-4); *L. Leichtlinii* (*y, p*, and *r*; 2-3); *L. Martagon* (*p-r* and *p*; 2-3); *L. pardalinum* (*o-r* and *p*; 3-7); *L. Parryi* (*y* and *br-r, sc*; 2-6); *L. philadelphicum* (*o-r* and *p*; 1-3); *L. pomponium* (*r* or *r-o*; 1-3); *L. pyrenaicum* (*y*; 2-4); *L. speciosum* (*w*, or *p-r* and *w*; 1-3); *L. superbum* (*o-r*; 4-6); *L. tenuifolium* (*r*; 1-1); *L. tigrinum* (*o-r* and *p-bk*; 2-4) and vars.; *L. Washingtonianum* (*w*, and *p* or *l, sc*; 3-5); *Limnanthum nymphæoides* (*aq, y*); *Linaria alpina* (*b-v* and *y*; 1); *L. Cymbalaria* (*b* or *l*); *L. dalmatica* (*y*; 3-4); *L. hepaticifolia* (*l-p*; 1); *L. purpurea* (*b-p*; 1-3); *L. triornithophora* (*p* and *y*); *Linum alpinum* (*b*; 1); *Lithospermum Gastoni* (*b*; 1-1); *Lotus corniculatus* (*y*, fading to *o*, and *r*); *Lupinus lepidus* (*p-b*; 1); *L. leucophyllus* (*pi*; 2-3); *L. ornatus* (*b*; 1-2); *L. polyphyllus* (*b*; 4); *Lychnis alpina* (*pi*; 1); *L. obalcedonica* (*r*; 1-3); *L. diurna* (*p-pi*; 1-3); *L. fulgens* (*r*; 1-1); *L. f. Haageana* (*r*); *L. Lagasce* (*pi* and *w*; 1); *L. pyrenaica* (*pi-w*; 1); *L. vespertina* (*w, sc* at evening; 1-3); *L. Viscaria* (*pi*; 1); *Lysimachia atropurpurea* (*p*; 2); *L. clethroides* (*w*; 3); *L. Nummularia* (*y*); *L. punctata* (*y*; 1); *L. vulgaris* (*y*; 2-3); *Malva Alcea fastigiata* (*r*; 2-3); *M. moschata* (*pi*; 2-2); *Meconopsis cambrica* (*y*; 1); *Mertensia alpina* (*b*; 1-1); *M. virginica* (*p-b*; 1-2); *Milla biflora* (*w* and *g*; 1); *Mimulus cardinalis* (*r*; 1-3); *M. Lewisii* (*pi*; 1); *M. luteus* (*y*; 1-1); *M. l. cupreus* (*r-br, p-br*, or *r*; 1); *M. moschatus* (*y*); *Mitchella repens* (*w* and *p, sc*); *Möehringia muscosa* (*w*; 1); *Monarda didyma* (*r*; 1-1); *M. fistulosa* (*p*; 2-5); *Mutisia decurrens* (*o*); *Myosotis alpestris* (*b, sc* at night; 1); *Nothoscordum fragrans* (*w, sc*; 1-2); *Nuphar advena* (*aq, r*); *N. luteum* (*aq, y, sc*); *Nymphaea alba* (*aq, w*); *N. odorata* (*aq, w*, tinged *r, sc*); *N. pygmaea* (*aq, b, sc*); *Oenothera acaulis* (*w*, turning *r*; 1); *O. glauca* (*y*; 1-2); *O. g. Fraseri* (*y*; 1); *O. linearis* (*y*; 1-1); *O. pallida* (*w* and *y*, turning *r*; 1); *O. speciosa* (*w*, turning *r*; 2-3); *O. taraxacifolia* (*w*, turning *r*; 1); *Omphalodes Luciliae* (*l-b*; 1-1); *Ononis Natatrix* (*y*; 1-2); *O. rotundifolia* (*pi*; 1-1); *Onosma stellatum tauricum* (*y*; 1-2); *Ornithogalum arabicum* (*w* and *bk, sc*; 1-2); *O. pyramidale* (*w*; 1-2); *Ourisia coccinea* (*r*; 1-1); *Oxalis Bowiei* (*pi-r* and *y*; 1-1); *O. corniculata* (*y*); *Oxytropis Lambertii* (*pi-r*; 1-1); *Pedicularis dolichorhiza* (*o-y*; 1-1); *P. Sceptrum-Carolinum* (*o-y* and *p*; 3-4); *Pentstemon antirrhinoides* (*y*; 1-1); *P. azureus* (*b*; 1); *P. glaber* (*p, v*, or *b*; 1-1); *P. gracilis* (*l-p* or *w*; 1); *P. Murrayanus* (*r*; 2-3); *P. pubescens* (*o* or *p*; 1-3); *Phlomis herba-venti* (*p-v*; 1-1); *Phlox paniculata* (*pi-p* or *w*; 3-4); *Phormium Cookianum* (*y*; 3-6) and var.; *P. tenax* (*y* or *r*) and vars.; *Phytolacca decandra* (*w*; 3-10); *Pinguicula grandiflora* (*v-b*); *Podolepis gracilis* (*p, l*, or *w*; 3); *Polemonium confertum* (*b*; 1); *Polygonum cuspidatum* (*c-w*; 4-8); *P. sachalinense* (*g-y*; 10-12); *P. vacocinifolium* (*pi*); *Potentilla alba* (*w* and *o*); *P. argyrophylla* (*y*; 1-3); *P. congesta* (*y*; 1-2); *P. nitida* (*pi*); *Pratia angulata* (*w*; 1); *P. repens* (*v-w*; 1); *Prænanthes purpurea* (*p*; 4); *Primula luteola* (*y*; 1-2); *P. minima* (*pi* or *w*); *P. obovata* (*w*; 1-1); *P. sikkimensis* (*y*; 1-2); *Pyrethrum achilleifolium* (*y*; 2); *P. uliginosum* (*y* and *w*; 5); *Pyrola rotundifolia* (*w, sc*; 1); *Rudbeckia maxima* (*y*; 4-9); *R. speciosa* (*o*; 2-3); *Salvia Sclarea* (*b-w*; 2-3); *Saponaria officinalis* (*l* or *w*; 1-2); *Saxifraga cespitosa* (*w*; 1); *S.*

August (Hardy Perennials)—continued.

Hirculus (r; †); *S. Roeheliana* (w; †) and var.; *S. saotia* (y); *Scabiosa caucasica* (b; 1); *Scilla hyacinthoides* (bl-; 1-2); *Scorzonera hispanica* (y; 3); *Scutellaria alpina* (p and y) and var.; *S. orientalis* (w and p); *Sedum Aizoon* (y; 1); *S. album* (w; †-‡); *S. Ewersii* (pi or v); *S. japonicum* (y); *S. lydium* (pi); *S. maximum* (w-r; 1-2) and vars.; *S. reflexum* (y); *S. Rhodiola* (o or r-p); *Sempervivum arenarium* (y; †-‡); *S. atlanticum* (r; 1); *S. calcaratum* (r-w; 1); *S. calcareum* (g-r; 1); *S. Heuffelii* (r-br and y; †-‡); *S. Lamottel* (pi and p; 1); *S. soboliferum* (y; †-‡); *S. Wulfeni* (y and m-p; †-‡); *Senecio Doria* (y; 4); *S. Doronicum* (y; 1); *S. pulcher* (p and y; 1-2); *Sida Napaea* (w; 4-10); *Silene acaulis* (pi or w; †); *S. maritima* (w); *S. Saxifraga* (y; †-‡); *S. Schafta* (p; †); *S. virginica* (r; 1-2); *Solanum crispum* (b-p; 12-14); *Solidago Drummondii* (y; 1-3); *Spiraea palmata* (r; 1-2); *S. Ulmaria* (w; 2-4); *Symphyanandra Wanneri* (b; †); *Trifolium Lupinaster* (p; 1-‡); *T. uniflorum* (b and p; †); *Trollius europaeus* (y; †-2); *Veronica spicata* (b and p; †-1‡); *V. virginica* (w or b; 2-6); *Viola Riviniana* (b-p or l); *V. rothomagensis* (b striped bk); *V. tricolor* (p, w, or o-y; †-1‡); *Wahlenbergia Kitaibelii* (p-b; †).

SHRUBS.—*Abutilon striatum* (o-y; 10); *Actinidia Kolumitka* (w); *Aethionema grandiflorum* (pi; 1‡); *Albizia Julibrissin* (w; 30-40); *Artemisia Abrotanum* (y, sc; 2-4); *Asclepias Douglasii* (p-l; 2-3); *Benthamia fragifera* (w; 10-15); *Bignonia capreolata* (o; 20); *Calluna vulgaris* (variable; 1-3); *Calycoanthus occidentalis* (r; 6-12); *Clematis Flammula* (w, sc; 20); *C. florida* (w; 10); *C. graveolens* (y; 15); *C. paniculata* (w, sc; 20); *C. virginiana* (w, sc; 15-20); *C. Vitalba* (w, sc; 8); *C. Vitiocella* (b, p, or pi; 20); *Clethra acuminata* (w, sc; 10-15); *C. alnifolia* (w; 3-4); *C. paniculata* (w, sc; 3-4); *C. tomentosa* (w; 3-4); *Colutea arborescens* (y; 6-10); *Convolvulus cantabricus* (r; †-1); *Cornus paniculata* (w; 4-8); *Cotyledon Sempervivum* (r; †-‡); *Daboecia polifolia* (w, pi, or p; 1-2); *Erica ciliaris* (r; 1); *E. vagans* (p-r; 1); *Helianthemum argenteum* (y and bk; 4); *H. halimifolium* (y; 3-4); *H. vulgare* (y); *Hibiscus syriacus* (variable; 6); *Hydrangea hortensis* (variable; 2-3); *H. paniculata grandiflora* (w); *Hypericum calycinum* (y; 1); *Iberis saxatilis* (w; †-‡); *I. sempervirens* (w; †-1); *Jasminum officinale* (w, sc); *Kalmia latifolia* (pi, varying to w; 3-10); *Kerria japonica* (o-y; 3-4); *Ligustrum Ibota* (w); *L. Massalonganum* (w, sc; 6); *L. ovalifolium* (w); *Lithospermum prostratum* (b and r-r); *Lonicera Periclymenum* (r); *Lupinus arboreus* (y, sc); *Lycium barbarum* (p and y); *Margyricarpus setosus* (y; 2-4); *Olearia Haastii* (w); *Osmanthus fragrans* (y or w; 6-10); *Passiflora cerulea* (b, w, and p, sc); *Rhexia ciliosa* (p; 1-‡); *R. virginica* (p; †-1); *Rhododendron caucasicum* (pi; 1) and vars.; *Rosa canina* (pi; 6-8) and vars.; *R. indica* (r; 4-20); *R. moschata* (y-w; 12); *R. sempervirens* (w, sc) and vars.; *R. varieties* (sc); *Rubus fruticosus* (w or pi); *R. laciniatus* (w or pi); *Salvia ringens* (r-p; 1-2); *Solanum acanthodes* (b-p; 3-6); *Spartium janceum* (y, sc; 6-10); *Spiraea Douglasii* (pi; 3); *Symphoricarpus occidentalis* (pi-w); *S. racemosus* (pi; 4-6); *Tamarix gallica* (w or pi; 5-10); *T. parviflora* (pi); *Tecoma radicans* (r; 2‡); *Veronica Lyallii* (w and pi); *V. Traversii* (w; 2‡); *Vitex Agnus-castus* (l; 6); *Wistaria chinensis* (b); *W. japonica* (w); *Zenobia speciosa* (w; 2-4).

Half-hardy.—**ANNUALS.**—*Calandrinia grandiflora* (pi; 1); *C. Menziesii* (p-r; †); *C. umbellata* (m-r; †); *Castilleja lithospermoides* (r; 1); *Grammatocarpus volubilis* (y); *Ipomoea hederacea* (b; 10); *Manrandya Barolayana* (v-p and g); *Mentzelia bartonioides* (g-y); *M. ornata* (w, sc; 2); *Nicotiana acutiflora* (w; 1-2); *N. longiflora* (w, and p or y-g; 3); *N. suaveolens* (w, sc; 1-2); *N. Tabacum* (pi; 4); *Pennisetum longistylum* (p-w; 1-1‡); *Perilla ocoimoides-crispa* (y; 1-3); *Phlox Drummondii* (r, pi, p, or w; 1) and vars.; *Salpiglossis sinuata* (p and y; 2) and vars.; *Sobisanthus Grahmi* (l or pi, and y; 2); *Sobizopetalon Walkeri* (w; 1-2); *Zinnia elegans* and vars.

August (Half-hardy)—continued.

BIENNIALS.—*Lobelia vars.*; *Mathiola incana* (p; 1-2). **PERENNIALS.**—*Alströméria Pelegrina* (w or y, striped pi; 1); *Amphicoma arguta* (r; 3); *A. Emodi* (pi and o; 1-1‡); *Arctotis acaulis* (y and r; †); *Calceolaria arachnoidea* (p; 1); *C. Fothergillii* (y, spotted r; †-‡); *C. plantaginea* (y; 1); *Colestina ageratoides* (b; 1); *Conandron ramondioideus* (w, or pi and p; †); *Crococsmia auroa* (o-r; 2); *Erodium Reichardi* (w and pi; †); *Eucomis bicolor* (g and p); *Francoa ramosa* (w; 2-3); *Hedyochium Gardnerianum* (g-y, sc; 3-5); *Heteranthera limosa* (ag, v-h); *Lilium giganteum* (w; 4-10); *L. japonicum* (w; 1-2); *Linum flavum* (y; 1-1‡); *L. Macraei* (o; 1); *Lobelia cardinalis* (r; 1-2); *L. fulgens* (r; 1-2); *L. splendens* (r; 1-2); *Maurandya scandens* (p-v); *Myosotis azarica* (p, becoming b; †-‡); *Neja gracilis* (y; 1); *Nierembergia gracilis* (w, p, and y; †-1); *Ophiopogon japonicus intermedius* (l; 1‡); *Petunia intermedia* (y; 1); *P. nyctaginiflora* (w; 2); *P. violacea* (p-v; 1‡); *Romneya Coulteri* (w; 2-4); *Sedum Siboldii* (pi; †); *Statice sinuata* (p-y; 1); *Tropaeolum tricolorum* (o-r, tipped bk and y); *Verbena venosa* (l or p; 2).

SHRUBS.—*Calceolaria bicolor* (y and w; 2-3); *C. hyssopifolia* (y; 1-2); *C. scabiosifolia* (y); *Cassia corymbosa* (y; 6-10); *Celsia Arturum* (y and p; 4); *Cistus pilosopetalus* (w, marked y; 2-3); *C. rotundifolius* (p, marked y; 1); *Cneorum pulverulentum* (y; 1-3); *Coronilla glauca* (y, sc by day; 2-4); *Ecceomocarpus scaber* (r or o-r); *Embothrium coccineum* (o-r; 3); *Ephedra nebrodensis* (w; 3-4); *Escaallonia rubra* (r; 3-6); *Fuchsia macrostema globosa* (p-v and p-r; 5-6); *F. m. gracilis* (p; 1); *F. m. globosa* (w and p; 2); *Grindelia glutinosa* (y; 2); *Hydrangea quercifolia* (w; 4-6); *Hypericum empetrifolium* (y; †-1); *H. Hookerianum* (y; 2); *Illicium anisatum* (y-w; 4); *Leycesteria formosa* (w and p; 4-6); *Micromeria Piperella*; *Olearia dentata* (pi-w); *Rhododendron Maddoni* (w; 6-8); *Tecoma australis* (y-w, tinged p or r); *T. capensis* (o-r; 15); *Veronica Hulkeana* (l; 1-3); *Yucca Whipplei* violacea (v; 4-12); *Zauschneria californica* (r; 1).

Tender.—**ANNUALS.**—*Begonia humilis* (i-h, w; 1); *Heliotropium indicum* (c-h, b; 1); *Impatiens Balsamina* (st, r; 1-2); *I. fasciata* (c-h, p; †-1‡); *Ipomoea Bona-nox* (st, w; 10); *I. Quamoclit* (i-h, r; 6); *Martynia fragrans* (c-h, r-p and y, sc; 2); *Porana racemosa* (i-h, w); *Waitzia auroa* (c-h).

BIENNIALS.—*Convolvulus erubescens* (c-h, r-pi; 12); *Humea elegans* (c-h, br-r, pi, or r; 5-6); *Phyllis capensis* (c-h, r; 3).

PERENNIALS.—*Achimenes Kleei* (i-h, l; †); *A. multiflora* (i-h, l; 1); *Aechmea fulgens* (st, r and b); *Aerides quinquevulverum* (st, w, r, and p, sc); †); *Agapanthus umbellatus* (c-h, b; 2-3); *Aglaonema pictum* (st, y; 1-2); *Albuca Nelsoni* (c-h, w, striped r; 4-5); *Allamanda chelsoni* (st, y); *Amomum Cardamomum* (st, br; 8); *Amphicoma arguta* (c-h, r; 3); *A. Emodi* (c-h, pi and o; 1-1‡); *Angelonia salicariaefolia* (st, b; 1‡-3); *Arthropodium pendulum* (c-h, w; 1‡); *Astilbe rubra* (c-h, pi; 4-6); *Bæa hygrometrica* (c-h, b and b-y; †); *Barkeria melanocaulon* (c-h, pi-l, r-p, and blotched g; 1); *Batatas Cavanillii* (i-h, w-r); *Begonia acutiloba* (i-h, w); *B. amabilis* (i-h, pi or w; †); *B. amena* (i-h, pi; †); *B. boliviensis* (i-h, r; 2); *B. Bruntii* (i-h, w or pi); *B. Chelsoni* (i-h, o-r; 2); *B. Clarkii* (i-h, r); *B. coriacea* (i-h, pi; †); *B. Davisii* (i-h, r; †); *B. Dregii* (i-h, w; 1); *B. eohinosepala* (i-h, w; 1‡); *B. eximia* (i-h, w and r); *B. geraniifolia* (i-h, r and w; 1); *B. geranioides* (i-h, w; 1‡); *B. hydrocotylifolia* (i-h, pi; †); *B. imperialis* (i-h, w; 3); *B. malabarica* (i-h, pi; 2); *B. maxima* (i-h, w); *B. monopectera* (i-h, w; 1-2); *B. Pearcei* (i-h, y; 1); *B. prismatocarpa* (st, o and y; 3); *B. Richardsiana* (i-h, w; 1); *B. roseiflora* (i-h, pi); *B. rubricaulis* (i-h, w and pi; 1); *B. rubrovenia* (i-h, w; 1-1‡); *B. strigillosa* (i-h, pi; †); *B. Sutherlandii* (i-h, o-r; 1-2); *B. Thwaitesii* (st, w; †); *B. Veitchii* (i-h, r; 1); *B. xanthina* (i-h, y; 1); *Billbergia amena* (st, y-w, tipped b; 2); *Blandfordia aurea* (st, o-y; 1-2); *Bletia*

August (Tender Perennials)—continued.

florida (st, pi; 2); Boucnerosia marocana (c-h, r-p and y; 4); Brassia Lawrenceana (i-h, y, spotted br and g; 1); Broughtonia sanguinea (st, p-r; 1½); Brunsvigia Cooperi (c-h, y, edged r; 1½); B. Josephinae (c-h, r; 1½); Bulbophyllum Lobbi (i-h, y); Burbridgea nitida (st, o-r; 2-4); Calanthe Masuca (i-h, v and v-p; 3-4); Calotis cuneifolia (c-h, b; 1); Canistrum aurantiacum (st, o-y); Canna Achiras variegata (st, r); C. indica (st, y and r; 3-6); C. speciosa (st; 3); C. Warsowiczii (st, r and p; 3) and vars.; Cattleya citrina (i-h, y, sc; ½-¾); C. crispata (i-h, w, or w-l and r; 1); C. eldorado (i-h, pi, p-r, and o); C. granulosa (i-h, y-g, w, br, &c.); C. Harrisonii (i-h, pi, tinged y; 2) and vars.; Ceropogon Sandersonii (c-h, g, veined); Cineraria cruenta (c-h, r-p) and vars.; Cirrhopetalum Medusæ (st, straw, dotted pi); C. Thouarsii (st, o and y, dotted r); Cologlyne asperata (st, c, br, and y; 2); C. plantaginea (i-h, g-y, w, and br; 1); C. speciosa (i-h, w, br or g, y, and r; 1½); C. viscosa (i-h, w and br; 1); Convolvulus mauritanicus (c-h, b and w); Crassula Bolusii (c-h, pi-w; ½-¾); Crawfordia fasciculata (st, p); Crinum amabile (st, r, sc); C. oruentum (st, r); C. giganteum (st, w, sc); C. purpurascens (st, p-r); Curouma Roscoeana (st, r, bracts o; 1); Cyanella odoratissima (c-h, pi, sc; 1); Cyclamen neapolitanum (c-h, w or r; 4); Cypripedium barbatum (st, p and w; 1) and vars.; C. Hookeri (st, y, br, and pi-p); C. Parishii (st, g-w and p; 2); C. superbians (st, w and br); Cyrtanthus sanguineus (c-h, o-r and y); Dendrobium chrysoctis (st, y and p); D. clavatum (st, y and r); D. crystallinum (st, w, o, p, and pi); D. formosum (st, w and o); Dichorisandra thyrsoifera (st, b; 4); Dias megaceras (c-h, w and p; 1-2); Drosera binata (c-h, w; 4); Eichhornia crassipes (st, v); Epidendrum bicornutum (st, w and r); E. fulcatum (st, g-y and y, sc); Fragaria indica (c-h, y); Galaxia ovata (c-h, y); Galeandra Baueri lutea (st, y and p; 4); Gesneria discolor (st, r; 2); G. nageloides (st, pi, r, and y); Gladiolus cardinalis (c-h, r and w; 3-4); G. psittacinus (c-h, r, y, g, and p; 3); G. purpureo-auratus (c-h, r-y and p; 3-4); Globba Schomburgkii (st, y and o-r; ½-1); Gloriosa superba (st, o and r; 6); Gloxinia glabra (st, w, y, and p; 4); G. maculata (st, p-b; 1); G. pallidiflora (st, b; 1); Grammatophyllum multiflorum (st, y, br, and p; 2); Griffinia dryades (i-h, p-l and w; 1½); G. hyacinthina (i-h, b and w); G. ornata (i-h, b-l; 1-1½); Guzmania tricolor (st, w, y-g, bk-p, and r); Habenaria rhodochila (c-h, r, and g); Hessea crispata (c-h, pi; 4); Hibiscus coccineus (c-h, r; 4-8); H. militaris (c-h, pi; 2-4); Imantophyllum miniatum (c-h, o; 1-2); Impatiens Jerdonii (st, y and r; 4); I. Sultani (st, r; 1); Ipomœa Learii (st, b); I. rubro-cerulea (st, r, becoming p-b); Kamperferia ornata (st, y and o); Limnocharis Plumieri (i-h ag, y; 1½); Lobelia Erinus (c-h, b, and w or y; 4); Lotus jacobus (c-h, p and y; 1-3); Lycaste cristata (i-h, w and p); Lycoris aurea (c-h, y; 1); L. Sewerzowi (c-h, br-r, sc; 1); Manulea rubra (c-h, y; 1-2); M. tomentosa (c-h, o; 1); Marica gracilis (i-h, w or b, r-br; 2); Mimosa pudica (st, r; 1); Mirabilis Jalapa (c-h, variable, sc; 2); Nelumbium speciosum (c-h ag, w, sc); Nymphaea Devonensis (st ag, pi-r); N. gigantea (i-h ag, b); N. Lotus (st ag, r or w); N. scutifolia (i-h ag, b, sc); N. stellata (st ag, b, sc); N. s. zanzibarensis (st ag, b); N. thermalis (st ag, w); Odontoglossum crispum (c-h, w, y, and r-br); O. maxillare (i-h, w, o, and p-br); O. Uro-Skinners (c-h, g or g-y, w, r, &c.); Oncidium amulare (i-h, br and y); O. barbatum (st, y and br); O. Cobolleta (st, y-r); O. cornigerum (i-h, y and r); O. oculatum (c-h, br-p and pi-p); O. divaricatum (i-h, y and br); O. Wentworthianum (c-h, g-y and br); Otelia ovalifolia (st ag, g and y); Ouvirandra fenestralis (st ag, g-w); Oxalis lasiandra (c-h, r; 4-1½); Passiflora incarnata (c-h, w, p, and g, sc); Pelargonium Bowkeri (c-h, p and y; 1); P. fessum (c-h, pi; 1); P. glaucifolium (c-h, bk-p, edged g-y, sc); P. oblongatum (c-h, p-c; 4); Pellionia Davouana (st, g; 4); Peristeria olata (st, w, spotted l; 4);

August (Tender Perennials)—continued.

Phalenopsis Aphrodite (st, w, r, o, and y); Pilea microphylla (st; 4); Pitcairnia xanthocalyx (st, y); Rannunculus Lyalli (c-h, w; 2-4); Renanthera coccinea (i-h, p-r); Richardia africana (c-h, w; 2); R. albo-maculata (c-h, g-w; 2); Rivina humilis (st, w-pi; 1-2); R. laevis (st, w-pi; 7-8); Ruellia spectabilis (i-h, p-b; 2); Salvia cacaliifolia (c-h, b; 3); Senecio pyramidalis (c-h, y; 2); Sinningia concinna (st, p and y); S. conspicua (st, y and p; 1); S. Youngiana (st, v or p; 1-1½); Siphocampylus Humboldtiana (st, r; 3); Sobralia macrantha (st, p and r; 6-8); Solanum sisymbriifolium (c-h, b or w; 4); Sonchus gummiifer (c-h, y; 2-3); Sonorila Bensoni (st, pi-p); S. margaritacea (st, pi) and vars.; Stachys coccinea (c-h, r; 1-2); Stanhopea Buophalus (st, y dotted p, sc; 2); S. insignis (st, y, spotted p, sc); S. oculata (st, y, spotted l); S. tigrina (st, o, blotched p-br, sc); Stapelia Astarias (c-h, v, y, and p; 4); Stanropsis Batomanni (st, y, &c.); Stenomeson incarnata (i-h, r; 2) and vars.; Stokesia carynea (c-h, b; 1-1½); Streptocarpus Saunderei (st, b; 1); Styliidium spatulatum (c-h, y; 4); Talauma pumila (st, c, sc; 2-4); Teucrium Chamædris (c-h, pi); Thunbergia erecta (st, b, o, and y; 6) and vars.; Thysanotus juncus (c-h, p. 1-2); Tillandsia glaucophylla (st, g-w, p, r, g, and y); T. xiphostachys (st, p, g, y, and r); Torenia flava (st, y and p; 4-4); T. Fournieri (st, v, l, and y; 4-4); Trichopilia Galeottiana (c-h, g, br, y, and pi-p); Tritonia miniata (c-h, r; 4-1); T. Pottsii (c-h, y and r; 3-4); Tropæolum perigrinum (c-h, y); Turnera ulmifolia (st, y; 2-4); Vanda Parishii (st, g-y, m, w, &c., sc); V. Roxburghii (st, g, v-p, and w); V. teres (st, w, pi-m, &c.); Villarsia parnsifolia (c-h, y; 1-2); Vinca rosea (i-h, pi or w); Wahlenbergia tuberosa (c-h, w and pi; 4-2); Zebрина pendula (i-h, w and pi-p); Zephyranthes citrina (st, y; 4); Zygopetalum Clayi (i-h, p-br, v-p, and w).

SHRUBS.—Acmena floribunda (c-h, w; 4); Acradenia Franklinii (c-h, w; 8); Eschynanthus cordifolius (st, r, bk, and o; 1); Æ. grandiflorus (st, r and o; 5); Æ. longiflorus (st, r; 2); Æ. speciosus (st, o; 2); Æ. splendens (st, r, spotted bk; 1); Alloplectus peltatus (st, w; 1); Alonsoa incisifolia (c-h, r; 1-2); Aloysia citriodora (c-h, w or l); Apeiba Tibourbou (st, y; 10); Aphelandra cristata (st, o-r; 3); Aristolochia triauctata (st, p-br); Babingtonia Camphorosæ (c-h, pi; 7); Barleria flava (st, y; 8); Bauhinia corymbosa (st, pi); Befaria æstuanus (c-h, p; 10-15); B. ledifolia (c-h, p; 3-4); Begonia cinnabarina (st, r; 2); B. coccinea (st, r; 2); B. Evansiana (c-h, pi; 2); B. falcoifolia (st, r; 1-2); B. foliosa (st, w, tinged pi); B. Ingramii (c-h, pi; 2); B. Kunthiana (st, w); B. maculata (st, variable); B. nitida (st, pi; 4-5); B. platanifolia (st, pi-w; 5-6); Berzelia lanuginosa (c-h, w; 1-2); Bignonia Cherers (i-h, o; 10); B. magnifica (i-h, m or p-r); B. variabilis (i-h, g-y; 10); Billardiera longiflora (c-h, g-y, turning p); Bonatea speciosa (st, w; 2); B. Drummondii (c-h, pi; 2); Bossia linophylla (c-h, o and p; 1-4); Bougainvillea glabra (c-h, pi); Bouvardia leiantha (c-h, r; 2); Brachylsena nerifolia (c-h, y; 2); Brownea coccinea (st, r; 6-10); Bursaria spinosa (c-h, w; 10); Cassia tomentosa (st, y; 5-7); Celastrus lucidus (c-h, w; 1-3); Cereus speciosissimus (c-h, r; 3-6); Cestrum aurantiacum (c-h, o; 4); C. elegans (c-h, p-r); Chætogastra strigosa (c-h, pi-p; 1); Cloanthus stoechadica (c-h, g-y; 2); Clavija fulgens (st, o-r); Clematis caripensis (st, w, sc; 12); Clerodendron foetidum (c-h, l-pi; 5); C. fragrans (c-h, w; 6); C. scandens (st, w; 10); C. splendens speciosissima (st, r); C. squamatum (st, r; 10); Cobæa scandens (c-h, p; 20); Colea floribunda (st, y-w; 10); Colutea cruenta (c-h, r-y; 4-6); Convolvulus pannifolius (c-h, v-p and w); Coronilla coronata (c-h, y; 1-2); Crassula coccinea (c-h, r; 1-3); C. falcata (c-h, r or w; 3-8); C. versicolor (c-h, r and w); Crotalaria Cunninghamii (c-h, y-g and p; 3); Crowea saligna (c-h, pi; 1-2); Cytisus canariensis (c-h, y); Datura arborea (c-h, w; 7-10); Diplanthe amabilis (st, pi-r; 10); D. amœna (st, pi); D. boliviensis (st, w and y); D. Brearleyana (st, pi, becoming

August (Tender Shrubs)—continued.

r); *D. carissima* (st, pi); *D. diadema* (st, pi); *D. hybrida* (st, r); *D. insignis* (st, pi-p); *D. nobilis* (st, pi-p, becoming o-r); *D. Regina* (st, pi-w); *D. splendens profusa* (st, r); *Dombeya Burgessis* (c-h, w and pi; 10); *Doryanthes excoela* (r; 8-16); *Draoophyllum capitatum* (c-h, w; 1-1½); *Duranta Plumieri* (st, b; 6-15); *Duvalia polita* (c-h, br-p, br, or, r, and o); *Echium fastuosum* (c-h, b; 2-4); *Elaeocarpus grandiflora* (st, y, r, and w; 7); *Enkianthus quinqueflorus* (c-h, r and pi-w; 3-10); *Erica Aitonia* (c-h, r or w; 2); *E. Austriana* (c-h, w and r); *E. cerinthoides* (c-h, r; 3); *E. Devoniana* (c-h, p); *E. elegans* (c-h, pi and g; ½-1); *E. Fairiana* (c-h, pi and w); *E. jasminiflora* (c-h, r; 1-2); *E. Marnockiana* (c-h, p); *E. Massonii* (c-h, r and g-y; 3); *E. Parmentieriana* (c-h, r, p-r; 1); *E. ramentacea* (c-h, p-r; 1½); *E. Savileana* (c-h, r or p-r; 1); *E. Shannonianna* (c-h, w and p; 1-2); *E. Victoria* (c-h, p and w); *E. Westphalingia* (c-h, pi-r); *Eutaxia myrtifolia* (c-h, y; 2-6); *Fuchsia corymbiflora* (c-h, r; 4-6); *F. dependens* (c-h, r; 2-4); *F. fulgens* (c-h, r; 4-6); *F. macrostema* (c-h, r; 6-12); *F. thymifolia* (c-h, r; 4-6); *Gardenia florida* (st, w, sc; 2-6); *Gasteria Croucheri* (c-h, w and pi; 2); *Gazania uniflora* (c-h, y; 1); *Geissomeria coccinea* (st, r; 3); *Gomphocarpus fruticosus* (c-h, w; 5-7); *Gompholobium Knightianum* (c-h, pi or p; 1); *G. polymorphum* (c-h, r, y, and p); *Goodia pubescens* (c-h, y and r; 1-3); *Grevillea Banksii* (c-h, r; 15); *Grewia occidentalis* (c-h, p; 10); *Guettarda odorata* (st, r, sc at night; 6-10); *Hakea suaveolens* (c-h, w; 4); *Heliotropium corymbosum* (c-h, l; 4); *Hermannia flammea* (st, o or r; 1-3); *Hibbertia dentata* (c-h, y); *H. perfoliata* (c-h, y); *Houttea Gardneri* (st, r; 2); *Hoya carnosa* (i-h, pi-w); *H. Cumingiana* (st, g-y or w, and p-br); *H. pallida* (st, y or y-w, and pi, sc); *Hypericum balearicum* (c-h, y; 1-2); *Ischroma fuchsoides* (c-h, o-r; 5); *I. lanceolata* (c-h, p-b; 4-5); *Ixora chelsoni* (st, o-pi); *I. coccinea* (st, r; 3-4); *I. javanica* (st, o; 3-4); *Jasminum grandiflorum* (i-h, w); *J. Sambac* (st, w, sc); *Jatropha podagrica* (st, o-r; 1½); *Lagerströmia indica* (c-h, p; 6-10); *Lapageria rosea* (c-h, pi-r); *Leschenaultia biloba* (c-h, b; 1); *L. formosa* (c-h, r; 1); *Leucopogon verticillatus* (c-h, w or pi; 3-6); *Lindenia rivalis* (st, w and r; 3); *Lippia citriodora* (c-h, w; 3); *Lisianthus pulcher* (i-h, r; 5); *Lonicera sempervirens* (c-h, r and y); *Luculia Pinceana* (c-h, w, sc); *Mahernia incisa* (c-h, r, becoming y; 2-4); *Mascarenhasia Carnowiana* (st, r); *Melianthus major* (c-h, br; 4-6); *Mesembryanthemum candens* (c-h, w); *M. coccineum* (c-h, r); *M. formosum* (c-h, p; 1); *M. purpureo-album* (c-h, w and p); *M. spectabile* (c-h, r; 1); *M. violaceum* (c-h, pi-w, y, and p; 1-2); *Mimulus glutinosus* (c-h, br or pi; 5); *Myrtus Luma* (c-h, w; 3); *Nerium Oleander* (c-h, r; 6-14); *Nicotiana glauca* (c-h, y; 10-20); *Opuntia arborescens* (c-h, p; 5); *O. echinocarpa* (c-h, g-y); *O. multiflora* (c-h, y); *Oxylobium Callistachys* (c-h, y; 3-4); *O. ellipticum* (c-h, y; 2-3); *Pachypodium succulentum* (st, r and w); *Passiflora alata* (st, r, p, and w, sc); *P. cæruleo-racemosa* (c-h, p); *P. cincinnata* (c-h, v-p and w); *P. coccinea* (st, r and o); *P. edulis* (st, p-w, sc); *P. Hahnii* (c-h, w and y); *P. racemosa* (st, r); *Pelargonium ardens* (c-h; 1-1½); *P. comptum* (c-h, pi and p); *P. fragrans* (c-h, w and r; 2); *P. ignescens* (c-h, r; 1½); *P. varieties*; *Phænocoma prolifera* (c-h, r; 4); *Phylia plumosa squarrosa* (c-h, w; 2); *Phyllanthus Chantrieri* (st, r and y); *P. pallidifolius* (st, y and r); *Phyllocaustus Ackermanni* (st, pi); *Physidium cornigerum* (st, p; 1); *Pitcairnia aphelandraeflora* (st, r); *Plumbago capensis* (i-h, b; 2); *Podanthes geminata* (st, o-y and r-p); *Portlandia platantha* (st, w; 3); *Protea cynaroides glabrata* (c-h, g-w); *Quisqualis indica* (st, variable); *Rhododendron javanicum* (c-h, o and r; 4); *Rondeletia cordata* (st, pi; 4); *R. Purdiei* (st, y, sc; 4); *Ruellia macrophylla* (i-h, r; 3); *Salvia albo-cærulea* (c-h, w and b; 3); *S. confertiflora* (c-h, y and r; 3); *S. Goudotii* (c-h, r; 2); *S. Grahami* (c-h, p-b; 2); *S. Hoerii* (c-h, r; 2-3); *S. rutians* (c-h, r; 2-3); *Sarmentia repons* (c-h, r); *Satyrium aureum* (i-h, o and r); *1-1½*; *Seavola Koenigii* (c-h, r; 2); *Scutellaria Hartwegi* (st, r and r; 1); *S. Mociniana* (st, r and y; 1½); *Selago*

August (Tender Shrubs)—continued.

Gillii (c-h, pi; ½); *Sempervivum aureum* (c-h, y; 1); *Senecio argenteus* (c-h, y; 1-2); *S. macroglossus* (c-h, y); *Solanum atropurpureum* (c-h, p and y); *S. Capicastrum* (c-h, w; 1-2); *S. giganteum* (c-h, b; 10-25); *S. jasminoides* (c-h, b-w) and var.; *S. marginatum* (c-h, w and p; 3-4); *S. maroniense* (st, b-v; 6-14); *S. Pseudo-capicaum* (c-h, w; 4); *S. pyraeanthum* (c-h, b-v; 3-6); *S. Seaforthianum* (st, r or l); *Stachytarpheta mutabilis* (st, r; 3); *Statice profusa* (c-h, p and w; 2); *Tabernaemontana Barteri* (st, w; 6); *Taconia insignis* (i-h, r, v-r and w); *T. mollissima* (c-h, pi); *T. Van Volkemii* (i-h, r); *Talinum Arnotii* (c-h, y); *Tecoma jasminoides* (c-h, w, streaked r; 20); *Teucrium fruticosum* (c-h, b; 2-3); *Thyrsoanthus bracteolatus* (st, r; 2); *T. callistachyus* (st, r; 2); *Vaccinium leucobotrya* (c-h, w; 4-7); *Yucca Trecaleana* (c-h, w; 20-25).

SEPTEMBER. — Hardy. — ANNUALS. — *Anagallis grandiflora* (b and r; ½); *Androsace lanuginosa* (pi; ½-2); *Bellium bellidoides* (w; ½); *Brachycome iberidifolia* (b or w; 1); *Chrysanthemum coronarium* (y; 4); *Collomia coccinea* (r; 1-1½); *C. grandiflora* (r-y; 1½-2); *Convolvulus tricolor* (y, b, and w; 1); *Crepis rubra* (r; ½-1); *Fumaria capreolata* (w and p; 4); *Impatiens amphorata* (p and pi-r; 3-6); *Ionopsidium acaule* (l, or w and v; ½); *Ipomœa purpurea* (p; 10); *Limnathus Douglasii* (y and w, sc; ½); *Linaria spartea* (y); *Lopezia coronata* (pi-p; 1½); *Malcolmia maritima* (l, pi, r, or w; ½-1); *Malope trifida* (p or w; 1); *Mathiola annua* (variable; 1-2); *Nicoandra physaloides* (b; 2); *Oxalis stricta* (y; 1½); *Papaver Hookeri* (pi, blotched w or b-bk; 3-4); *Roseda odorata* (y-w, sc) and vars.; *Sohizanthus pinnatus* (variable; 2); *Tropæolum peregrinum* (y).

BIENNIALS. — *Eurothera biennis* (y, sc; 2-4); *Silybum Marianum* (pi-p; 1-4); *Stachys germanica* (pi and w; 1-3).

PERENNIALS. — *Acanthus spinosissimus* (pi; 3½); *Achillea asplenifolia* (pi; 1½); *A. aurea* (y; 1½); *A. Eupatoriæ* (y; 4-5); *Acis autumnalis* (w; ½-4); *Aconitum japonicum* (pi-w; 6); *A. paniculatum* (v; 2-3); *Actinomeris helianthoides* (y; 3); *A. proceræ* (y; 8); *Alströmneria aurantiaca* (o; 3-4); *A. psittacina* (r, spotted p; 6); *Amaryllis Belladonna* (variable; 2); *Anemone japonica* (pi; 2-3) and vars.; *Anomatheca eruenta* (r; ½-1); *Apios tuberosa* (br-p, sc; ½); *Aquilegia californica* (y and o-r; 2-4); *Armeria cephalotes* (pi or r; 1-1½); *Arnica Chamissonis* (y; 1-2); *Artemisia cœruleascens* (b; 2); *Asclepias tuberosa* (o; 1-2); *Aster acuminatus* (w; 2); *A. draunculoides* (w; 3); *A. ericoides* (w; 3); *A. floribundus* (p; 4); *A. hyssopifolius* (w; 1½-2); *A. levigatus* (pi-w; 3); *A. lævis* (b; 2); *A. multiflorus* (w; 3); *A. novæ-angliæ* (p; 6) and vars.; *A. paniculatus* (b; 4); *A. pendulus* (w, turning pi; 2); *Bellium minutum* (w and y; ½); *Bessera elegans* (r, or r and w; 2); *Boltonia glastifolia* (p; 1½); *Borago officinalis* (b; 1-2); *Cacalia suaveolens* (w; 3-5); *Calochortus luteus* (g, y, and p; 1); *Campanula Allionii* (b or w; ½); *C. garganica* (b; ½-½); *C. glomerata* (b-v or w; 1-2) and vars.; *C. lactiflora* (b-w or b; 2-6); *Cassia marylandica* (y; 2-3); *Centauræa aurea* (o-y; 2); *Chelone Lyoni* (p; 3-4); *Cimicifuga americana* (w; 2-3); *Cineraria maritima* (y; 2); *Colechicum autumnale* (p; ½) and vars.; *C. Bivonæ* (p and w); *C. byzantinum* (pi; ½); *C. Parkinsonii* (w and p); *Collinsonia anisata* (y; 2-3); *Coronilla varia* (pi and w, or w; 1); *Dianthus fragrans* (w and p, sc; ½-½); *Dioctra chrysantha* (y; 3-5); *D. thalictrifolia* (y; sc); *Doronicum plantagineum excoelum* (y; 5); *Erigeron glaucus* (p; ½-1); *E. speciosus* (v and y; 1½); *Foeniculum vulgare* (y); *Funkia grandiflora* (w, sc); *Gaillardia aristata* (y; 1½); *G. pulchella* (r and y; 2-3); *Galega orientalis* (b; 2-4); *Glycyrrhiza glabra* (b; 3-4); *Hablitia tamnoides* (g); *Helonium autumnale* (y; 4-6); *Helianthus orgyalis* (y; 6-10); *Hypericum perforatum* (y; 1-3); *Inula Hookeri* (y, sc; 1-2); *Kniphofia aloides* (r, fading to o and g-y; 3-4); **K.**

September (Hardy Perennials)—continued.

Burchelli (r, y, and g; 1½); *Lactuca macrorrhiza* (v-p; ½-3); *L. tuberosa* (b; 1-1½); *Lamium maculatum* (p); *Lathyrus magellanicus* (b-p); *Lilium monadelphum* (y and p-r; 3-5); *Linaria alpina* (b-v and y; ½); *L. Cymbalaria* (b or l); *L. purpurea* (b-p; 1-3); *L. triornithophora* (p and y); *Lobelia siphilitica* (b; 1-2); *Lotus corniculatus* (y, fading to o, and r); *Lupinus lepidus* (p-b; ½); *L. leucophyllus* (pi; 2-3); *L. ornatus* (b; 1-2); *L. polyphyllus* (b; 4); *Lychnis diurna* (p-pi; 1-3); *Lysimachia clethroides* (w; 3); *L. Nummularia* (y); *Malva Alosa fastigiata* (r; 2-3); *Merendera Bulboodium* (pi-l; ½); *Mimulus moschatus* (y); *Monarda didyma* (r; 1½); *Nymphaea pygmaea* (aq, b, sc); *Oenothera acaulis* (w, turning r; ½); *O. glauca* (y; 1-2); *O. G. Fraseri* (y; 1); *O. pallida* (w and y, turning r; 1½); *O. speciosa* (w, turning r; 2-3); *Ourisia coccinea* (r; ½-1); *Oxalis corniculata* (y); *Pentstemon breviflorus* (y or pi-w; 3-6); *P. diffusus* (p; 1½); *Phlomis herba-vontii* (p-v; 1-1½); *Polygonum affine* (pi-r; ½); *P. amplexicaule* (pi-r or w; 2-3); *P. compactum* (w; 2); *P. spharostachyum* (p-r); *P. vacuiniifolium* (pi); *Pratia repens* (w-w; ½); *Rudbeckia grandiflora* (y; 3½); *Saponaria officinalis* (l or w; 1-3); *Scorzonera hispanica* (y; 3); *Sedum erythrostium* (g; 1-1½); *S. Ewersii* (pi or v); *S. maximum* (w-r; 1-2) and vars.; *S. spectabile* (pi; 1½-2); *Sempervivum Moggridgei* (r; ½); *Senecio pulcher* (p and y; 1-2); *Sida Napaea* (w; 4-10); *Silene Schafta* (p; ½); *Solidago lanceolata* (y; 2-3); *Sternbergia lutea* (y) and var.; *Trifolium uniflorum* (b and p); *Viola tricolor* (p, w or o-y, &c.; ½-1); *Xanthoxepalum gymnospermoides* (o-y; 2-4).

SHRUBS.—*Abelia rapheris* (pi, sc; 5); *A. triflora* (pi-y; 8); *Abutilon striatum* (o-y; 10); *Artemisia Abrotanum* (y, sc; 2-4); *Asara integrifolia* (y; 18); *A. microphylla* (g; 12); *Benthama fragifera* (w; 10-15); *Calluna vulgaris* (variable; 1-3); *Calycanthus occidentalis* (r; 6-12); *Clematis Flammula* (w, sc; 20); *C. florida* (w; 10); *C. tubulosa* (b; 2-3); *C. Vitalba* (w, sc; 8); *C. Vitiella* (b, p, or pi; 20); *Clethra acuminata* (w, sc; 10-15); *C. alnifolia* (w; 3-4); *C. paniculata* (w, sc; 3-4); *C. tomentosa* (w; 8-4); *Cotyledon Sempervivum* (r; ½-3); *Dabocia polifolia* (w, pi, or p; 1-2); *Daphne Oenone* (pi, sc; 1); *Datisca cannabina* (y; 3-6); *Elmagnus macrophylla* (g-y; 6); *Erica ciliaris* (r; 1); *E. vagans* (p-r; 1); *Hydrangea hortensis* (variable; 2-3); *H. paniculata grandiflora* (w); *Jasminum officinale* (w, sc); *Kerria japonica* (o-y; 3-4); *Ligustrum lucidum* (w; 8-12); *Lonicera Perilymenum* (r); *Osmanthus Aquifolium* (w, sc); *Passeifera caerulea* (p, w, and b, sc); *Rosa indica* (r; 4-20); *R. varietalis* (sc); *Rubus fruticosus* (w or pi); *R. laciniatus* (w or pi); *Spartium junceum* (y, sc; 6-10); *Spiraea Lindleyana* (w; 4-9); *Symphoricarpos racemosus* (pi; 4-6); *Tamarix gallica* (w or pi; 5-10).

Half-hardy.—**ANNUALS.**—*Calandrinia Menziesii* (p-r; ½); *Ipomoea hederacea* (b; 10); *Mentzelia ornata* (w, sc; 2); *Nicotiana acutiflora* (w; 1-2); *Schizanthus Grahamsii* (l, y, and pi; 2).

BIENNIALS.—*Lobelia vars.*; *Mathiola incana* (p; 1-2).
PERENNIALS.—*Amaryllis Belladonna* (variable; 2); *Amicia Zygomeris* (y, splashed p; 8); *Amphicome Emodi* (pi and o; 1-1½); *Blumenbachia ohuquintensis* (r and y); *Calceolaria arachnoidea* (p; 1); *C. Burbidgei* (y; 2-4); *Caryopteris Mastacanthus* (w; 2); *Colestima ageratoides* (b; 1); *Crococoma aurea* (o-r; 2); *Erodium Reichardi* (w and pi; ½); *Lobelia fulgens* (r; 1-2); *L. splendens* (r; 1-2); *Neja gracilis* (y; 1); *Nierembergia calycina* (y and w); *Ophiopogon japonicus intermedius* (l; 1½); *Polianthes tuberosa* (w, sc; 3-4) and vars.; *Salvia patens* (b; 2½); *Tropaeolum tricolorum* (o-r, tipped bk and y); *Urginea maritima* (w and g-p).

SHRUBS.—*Calceolaria bicolor* (y and w; 2-3); *C. scabiosaefolia* (y); *Celsia Arcturus* (y and p; 4); *Cistus rotundifolius* (p, marked y; 1); *Cneorum pulvertulentum* (y; 1-3); *Coronilla glauca* (y, sc by day; 2-4); *Escallonia rubra* (r; 3-6); *Fuchsia macrostema gracilis* (p and r; 6-10); *Grin-*

September (Half-hardy Shrubs)—continued.

della glutinosa (y; 2); *Miomomeria Piperella*; *Olearia Gunniana* (w; 3-5); *Pentstemon baccharifolius* (r; 1½); *Photinia japonica* (w; 10-20); *Zauschneria californica* (r; 1).

Tender.—**ANNUALS.**—*Ipomoea Quamoclit* (i-h, r; 6); *Martynia fragrans* (c-h, r-p and y, sc; 2); *Porana racemosa* (i-h, w).

BIENNIALS.—*Convolvulus erubescens* (c-h, r-pi; 12); *Exacum zeylanicum* (st, v; 1-2); *Humea elegans* (c-h, br-r, pi, or r; 5-6).

PERENNIALS.—*Achimenes ocellata* (i-h, r-y; 1½); *Æchmea fulgens* (st); *Aerides quinquevnerum* (st, w, r, and p, sc; ½); *Agapanthus umbellatus* (c-h, b; 2-3); *Allamanda Schottii* (st, y); *Amicia Zygomeris* (c-h, y, splashed p; 8); *Amphicome Emodi* (c-h, pi and o; 1-1½); *Attilia rubra* (c-h, pi; 4-6); *Barkeria Lindleyana* (c-h, pi-p, w, and blotched p; 2); *Begonia octopetala* (i-h, g-w; 2); *B. picta* (i-h, pi; ½-1); *B. semperflora* (i-h, w or pi); *Billbergia amcena* (st, g-w, tipped b; 2); *Bromelia bracteata* (st, pi; 2); *Brunsvigia toxicaria* (c-h, pi; 1); *Canistrum aurantiacum* (st, o-y); *Catasetum maculatum* (st, g, spotted p; 3); *Cattleya bicolor* (i-h, br-g and pi-p; 1½-2); *C. Devoniana* (i-h, w, pi, and pi-p); *C. Dowiana* (i-h, y, p, and v-pi); *C. eldorado* (i-h, pi, p-r, and o); *C. granulosa* (i-h, y-g, w, br, &c.); *C. Harrisonia* (i-h, pi, tinged y; 2) and var.; *C. marginata* (i-h, pi-r, pi, and w, sc) and vars.; *C. Regnellii* (i-h, g, b, pi-p, w, &c.); *Cœlogyne ciliata* (i-h, y, w, and br); *C. speciosa* (i-h, w, br or g, y, and r; 1½); *Crinum Careyanum* (i-h); *C. Kirkii* (st, g and r); *C. Moorei* (c-h, g and r); *Curcuma petiolata* (st, y; 1½); *Cyclamen africanum* (c-h, w or r, and p; ½-1); *C. neapolitanum* (c-h, w or r; ½); *Cyrtocoma Egertonianum* (c-h, p; 2); *Dendrobium bigibulum* (i-h, pi); *D. chrysanthum* (c-h, y and r); *D. sanguinolentum* (st, y, pi, and p); *D. speciosum* (c-h, c or y-w, and bk, sc); *D. superbiens* (st, p); *Dichorisantra musaica* (st, b; 1½); *D. thyrsoiflora* (st, b; 4); *Disporum pullum* (c-h, br; 1½); *D. p. parviflorum* (c-h, br); *Drosera binata* (c-h, w; ½); *Fragaria indica* (c-h, y); *Galaxia ovata* (c-h, y); *Gesnera discolor* (st, r; 2); *Gladiolus orcutus* (c-h, r and w; 2-3); *G. psittacinus* (c-h, r, y, g, and p; 3); *G. Saundersii* (c-h, r and w; 2-3); *Gloxinia maculata* (st, p-b; 1); *Gymnostachyum venustum* (st, p; ½); *Impatiens Sultani* (st, r; 1); *Ipomoea Learii* (st, b); *I. Purga* (st, p-pi); *Lælia Dominicana* (i-h, p); *Limnorcharis Plumieri* (i-h, ag, y; 1½); *Lotus jacobus* (c-h, p and y; 1-3); *Lycoris aurea* (c-h, y; 1); *Manulea rubra* (c-h, y; 1-2); *Masdevallia ionocharis* (c-h, w-y and p; ½); *M. tovarensis* (c-h, w); *M. Veltchiana* (c-h, y, o-r, and p); *Maxillaria grandiflora* (i-h, w, y, and r); *Mitonia candida* (i-h, y, w, br, and pi; ½); *M. Clowesii* (i-h, y, p, and br); *M. Regnellii* (i-h, pi-w and l-pi; 1); *M. spectabilis* (i-h, w and pi-v; ½-1); *Nerine sarniensis* (c-h, pi; 2-2½); *Nymphaea Devonensis* (st, ag, pi-r); *N. Lotus dentata* (st, ag, w); *Odontoglossum crispum* (c-h, w, y, and r-br); *O. grande* (c-h, o-y, c-w, and br); *O. Rossii Ehrenbergii* (c-h, w and br); *O. E. Warnerianum* (c-h, w, br, y, &c.); *O. Uro-Skinneri* (c-h, g or g-y, w, r; &c.); *Oncidium cucullatum* (c-h, br-p, and pi-p); *O. incurvum* (c-h, w, l, and br, sc); *O. orthorhynchum* (c-h, pi-p, sc); *Pachystoma Thomsonianum* (st, w, p, g, and br; ½); *Peristeria elata* (st, w, spotted l; 4); *Phalænopsis amabilis* (st, w and y); *P. Aphrodite* (st, w, r, o, and y); *Phinea albolineata* (st, w; ½); *Pinguicula caudata* (c-h, pi); *Rivina humilis* (st, w-pi; 1-2); *R. lævis* (st, w-pi; 7-8); *Sinningia concinna* (st, p and y); *S. speciosa* (st, w) and vars.; *Stanhopea insignis* (st, y, spotted p; sc); *S. oculata* (st, y, spotted l); *S. tigrina* (st, o, blotched p-br, sc); *Stapelia Asterias* (c-h, y, and p; ½); *Stauroopsis Batemanni* (st, y, &c.); *Talauma pumila* (st, c, sc; 2-4); *Taucerium Chamædrys* (c-h, pi); *Thunbergia erecta* (st, b, o, and y; 6) and var.; *Trichopilia Galleotiana* (c-h, g, br, y, and pi-p); *Tropaeolum peregrinum* (c-h, y); *Turnera ulmifolia* (st, y; 2-4); *Vanda caerulea* (st, b; 2-3); *V. Hookeriana* (st, w, spotted w, and p); *V. Sanderiana* (st, y, p-r, and

September (Tender Perennials)—continued.

br); *Vinca rosea* (*i-h*, *pi* or *w*); *Wigandia Vigieri* (*i-h*, *l-b* or *p-r*; 6); *Zephyranthes candida* (*c-h*, *g-w*; 3-4).

SHRUBS.—*Abutilon megapotamicum* (*c-h*, *r*, *y*, and *br*; 3); *Acmea floribunda* (*c-h*, *w*; 4); *Adenocalymna comosum* (*st*, *y*; 10); *Alonsoa incisifolia* (*c-h*, *r*; 1-2); *Aphelandra cristata* (*st*, *o-r*; 3); *Aristolochia ciliosa* (*st*, *y*; 6); *Bauhinia natalensis* (*st*, *w*); *Begonia nitida* (*st*, *pi*; 4-5); *B. prestoniensis* (*st*, *o-r*; 2); *Bignonia Cherere* (*i-h*, *o*; 10); *Bossiaa linophylla* (*c-h*, *o* and *p*; 1-4); *Bouvardia angustifolia* (*c-h*, *r*; 2); *B. leiantha* (*c-h*, *r*; 2); *B. longiflora* (*c-h*, *w*; 2-3); *Brachylena nerifolia* (*c-h*, *y*; 2); *Bredia hirsuta* (*c-h*, *pi*); *Bursaria spinosa* (*c-h*, *w*; 10); *Cassia tomentosa* (*st*, *y*; 5-7); *Celastrus lucidus* (*c-h*, *w*; 1-3); *Cereus coccineus* (*c-h*, *r*); *Cheirostylis marmorata* (*st*, *w*, *r*, and *p*; 4); *Clavija ornata* (*st*, *o*; 10-12); *Clerodendron fragrans* (*c-h*, *w*; 6); *Cobaea scandens* (*c-h*, *p*; 20); *Coffea arabica* (*st*, *w*, *sc*; 5-15); *Colquhounia coccinea* (*c-h*, *r*); *Columnnea aureo-nitens* (*st*, *o-r*); *Crassula ericoides* (*c-h*, *w*; 4); *C. falcata* (*c-h*, *r* or *w*; 3-8); *Dipladenia amabilis* (*st*, *pi-r*; 10); *Echites nutans* (*st*, *y*); *E. stellaris* (*st*, *pi* and *y*; 6); *Enkianthus quinquefolius* (*c-h*, *r* and *pi-w*; 3-10); *Erica Atonia* (*c-h*, *r* or *w*; 2); *E. coerinthoides* (*c-h*, *r*; 3); *E. gracilis* (*c-h*, *p-r*; 1); *E. jasminiflora* (*c-h*, *r*; 1-2); *E. Massonii* (*c-h*, *r* and *g-y*; 3); *E. melanthera* (*c-h*, *pi*; 2); *E. ramentacea* (*c-h*, *p-r*; 14); *E. Savileana* (*c-h*, *r* or *p-r*; 1); *E. Shaannoniana* (*c-h*, *w* and *p*; 1-2); *Eupatorium atrorubens* (*c-h*, *r* and *l*); *E. Weinmannianum* (*c-h*, *w*, *sc*); *Fuchsia macrostema* (*c-h*, *r*; 6-12); *F. microphylla* (*c-h*, *r*; 2); *Goethea multiflora* (*st*, *pi* or *l*); *Gomphocarpus fruticosus* (*c-h*, *w*; 5-7); *Grewia occidentalis* (*c-h*, *p*; 10); *Gustavia gracillima* (*st*, *pi-r*); *Heliotropium corymbosum* (*c-h*, *l*; 4); *Hoya linearis* (*st*, *w*); *Hypericum baleareum* (*c-h*, *y*; 1-2); *Jasminum grandiflorum* (*i-h*, *w*); *J. Sambac* (*st*, *w*, *sc*); *Lapageria rosea* (*c-h*, *pi-r*); *Lippia citriodora* (*c-h*, *w*; 3); *Luculia gratissima* (*c-h*, *pi*, *sc*; 9-16); *L. Pinccana* (*c-h*, *w*; *sc*); *Mesembryanthemum coccineum* (*c-h*, *r*); *M. conspicuum* (*c-h*, *r*); *M. minutum* (*c-h*, *y*); *M. violaceum* (*c-h*, *pi-w* to *v*; 1-2); *Mimulus glutinosus* (*c-h*, *br* or *pi*; 5); *Mussaenda luteola* (*c-h*, *y* and *o*; 5-6); *Nerium Oleander* (*c-h*, *r*; 6-14); *Nicotiana glauca* (*c-h*, *y*; 10-20); *Opuntia Salmiana* (*c-h*, *y* and *r*; 2); *Oxylobium ellipticum* (*c-h*, *y*; 2-3); *Pachypodium succulentum* (*st*, *r* and *w*); *Passiflora caeruleo-rosea* (*c-h*, *p*); *P. coccinea* (*st*, *r* and *o*); *P. quadrangularis* (*st*, *w*, *r*, and *v*, *sc*); *P. racemosa* (*st*, *r*); *P. Raddiana* (*st*, *r*); *Pavonia multiflora* (*st*, *r* and *p*); *Pelargonium comptum* (*c-h*, *pi* and *p*); *P. crispum* (*c-h*, *p*); *Phylca plumosa squarrosa* (*c-h*, *w*; 2); *Pleroma Benthamianum* (*st*, *p* and *w*; 4); *Plumbago capensis* (*i-h*, *b*; 2); *Podanthes geminata* (*st*, *o-y* and *r-p*); *Protea mellifera* (*c-h*, *pi* or *w*; 6); *Psammithia Hookeriana* (*i-h*, *pi-r*; 14-2); *P. Jessice* (*i-h*, *r*); *Rhipsalis Cassytha* (*c-h*, *g-w*; 1); *Rhododendron javanicum* (*c-h*, *o* and *r*; 4); *Roezlia granadensis* (*st*, *pi-p*; 3); *Ruellia Herbstii* (*i-h*, *pi-p*; 3); *Salvia boliviana* (*c-h*, *r*; 4); *S. Greggii* (*c-h*, *pi*; 3); *Stachytarpheta mutabilis* (*st*, *r*; 3); *Stigmaphyllon littorale* (*st*, *y*); *Strobilanthes isophyllus* (*st*, *l*; 1-2); *Tacsonia insignis* (*i-h*, *r*, *v-r*, and *w*).

OCTOBER.—Hardy.—ANNUALS.—*Anagallis grandiflora* (*b* and *r*; 4); *Androsace lanuginosa* (*pi*; 4-4); *Brachycome iberidifolia* (*b* or *w*; 1); *Collomia coccinea* (*r*; 1-14); *C. grandiflora* (*r-y*; 14-2); *Crepis rubra* (*r*; 4-1); *Gaillardia amblyodon* (*r*; 2-3); *Ionopsisidium acule* (*l*, or *w* and *v*; 4); *Limnanthes Douglasii* (*y* and *w*, *sc*; 4); *Linaria spartea* (*y*); *Malcolmia maritima* (*l*, *pi*, *r*, or *w*; 4-1); *Mathiola annua* (variable; 1-2); *Oxalis stricta* (*y*; 14); *Papaver Hookeri* (*pi*, blotched *w*, or *b-bk*; 3-4); *Reseda odorata* (*g-r*, *sc*) and vars.; *Schizanthus pinnatus* (*v*, *p*, & *c*.; 2); *Tropaeolum peregrinum* (*y*).

BIENNIALS.—*Eriogonum biennis* (*y*, *sc*; 2-4); *Stachys germanica* (*pi* and *w*; 1-3).

PERENNIALS.—*Acanthus spinosissimus* (*pi*; 34); *Achillea aurea* (*y*; 14); *Acis autumnalis* (*y*; 4-4); *Alströmeria aurantiaca* (*o*; 3-4); *Amaryllis Belladonna* (variable; 2);

October (Hardy Perennials)—continued.

Anemone japonica (*pi*; 2-3) and vars.; *Anomatheca cruenta* (*r*; 4-1); *Apies tuberosa* (*br-p*, *sc*; 4); *Armeria cephalotes* (*pi* or *r*; 1-14); *Aster concinnus* (*p*; 2); *A. dracunculoides* (*w*; 3); *A. dumosus* (*w*; 2); *A. hyssopifolius* (*w*; 14-2); *A. longifolius* (*w*; 3) and vars.; *A. sikkimensis* (*p*; 3); *Cacalia suaveolens* (*w*; 3-5); *Cassia marylandica* (*y*; 2-3); *Colchicum autumnale* (*p*; 4); and vars.; *C. Bivona* (*p* and *w*); *C. byzantinum* (*pi*; 4); *C. Parkinsonii* (*w* and *p*); *Coronilla varia* (*pi* and *w*, or *w*; 1); *Dicentra chrysantha* (*y*; 3-5); *D. thalictrifolia* (*y*, *sc*); *Doronicum plantagineum excelsum* (*y*; 5); *Erigeron glaucus* (*p*; 4-1); *E. speciosus* (*v* and *y*; 14); *Foeniculum vulgare* (*y*); *Gaillardia aristata* (*y*; 14); *G. pulchella* (*r* and *y*; 2-3); *Galago orientalis* (*b*; 2-4); *Gentiana Kurroo* (*b* and *w*); *Glycyrrhiza glabra* (*b*; 3-4); *Hablitzia tamnoides* (*y*); *Helenium autumnale* (*y*; 4-6); *Helianthus orgyalis* (*y*; 6-10); *Hypericum perforatum* (*y*; 1-3); *Kniphofia aloides* (*r*, fading to *o*, and *g-y*; 3-4); *K. Burchelli* (*r*, *y*, and *g*; 14); *Lactuca macrorrhiza* (*v-p*; 4-3); *L. tuberosa* (*b*; 1-14); *Lilium monadelphum* (*y* and *p-r*; 3-5); *Linaria alpina* (*b-w* and *y*; 4); *L. Cymbalaria* (*b* or *l*); *Lobelia siphilitica* (*b*; 1-2); *Lotus corniculatus* (*y*, fading to *o*, and *r*); *Lupinus leucophyllus* (*pi*; 2-3); *L. ornatus* (*b*; 1-2); *L. polyphyllus* (*b*; 4); *Lychnis diurna* (*p-pi*; 1-3); *Lysimachia Nummularia* (*y*); *Malva Aloea fastigiata* (*r*; 2-3); *Morendra Bulbocodium* (*pi-l*; 4); *Oenothera glauca* (*y*; 1-2); *O. G. Fraseri* (*y*; 1); *Oxalis corniculata* (*y*); *O. lobata* (*y* and *r*; 4); *Plumbago Larpetana* (*v*; 1); *Polygonum affine* (*pi-r*; 4); *P. amplexicaule* (*pi-r* or *w*; 2-3); *P. sphaerostachyum* (*p-r*); *P. vacciniifolium* (*pi*); *Pratia repens* (*v-w*; 4); *Saxifraga crotusifolia* (*w*); *Sedum kamschaticum* (*y*); *Senecio pulcher* (*p* and *y*; 1-2); *Silene Schafta* (*p*; 4); *Solidago speciosa* (*y*; 3-6); *Steruborgia lutea* (*y*) and vars.

SHRUBS.—*Abutilon striatum* (*o-y*; 10); *Artemisia Abrotanum* (*y*, *sc*; 2-4); *Azara integrifolia* (*y*; 18); *A. microphylla* (*g*; 12); *Benthamia fragifera* (*w*; 10-15); *Calycanthus occidentalis* (*r*; 6-12); *Clematis Flammula* (*w*, *sc*; 20); *C. tubulosa* (*b*; 2-3); *Clethra acuminata* (*w*, *sc*; 10-15); *C. paniculata* (*w*, *sc*; 3-4); *C. tomentosa* (*r*; 3-4); *Elaeagnus macrophylla* (*g-y*; 6); *Hamamelis virginica* (*y*); *Hydrangea paniculata grandiflora* (*w*); *Kerria japonica* (*o-y*; 3-4); *Ligustrum lucidum* (*w*; 8-12); *Lonicera Perilymenum* (*r*); *Osmanthus Aquifolium* (*w*, *sc*); *Passiflora caerulea* (*p*, *w*, and *b*, *sc*); *Rosa indica* (*r*; 4-20).

Half-hardy.—**ANNUAL.**—*Schizanthus Grahami* (*l* or *pi* and *y*; 2).

BIENNIALS.—*Lobelia* vars.; *Mathiola incana* (*p*; 1-2).

PERENNIALS.—*Amaryllis Belladonna* (variable; 2); *Amicia Zygomeris* (*y*, splashed *p*; 8); *Amphicome Emodi* (*pi* and *o*; 1-14); *Boussingaultia basilloides* (*w*, turning *bk*, *sc*); *Calceolaria Burbridgei* (*y*; 2-4); *Caryopteris Mastacanthus* (*w*; 2); *Colestima ageratoides* (*b*; 1); *Crocasmia aurea* (*o-r*; 2); *Neja gracilis* (*y*; 1); *Ophiopogon japonicus intermedius* (*l*; 14); *Polygonum tuberosa* (*w*, *sc*; 3-4) and vars.; *Schizostylis coccinea* (*r*; 3); *Tropaeolum tricolorum* (*o-r*, tipped *bk*, and *y*); *Urginea maritima* (*w* and *g-p*).

SHRUBS.—*Calceolaria bicolor* (*y* and *w*; 2-3); *C. scabiosaefolia* (*y*); *Camellia japonica* (variable; 20); *Fuchsia macrostema gracilis* (*p* and *r*; 6-10); *Grindelia glutinosa* (*y*; 2); *Micromeria Piperella*; *Photinia japonica* (*w*; 10-20); *Zauschneria californica* (*r*; 1).

Tender.—**ANNUALS.**—*Martynia fragrans* (*c-h*, *r-p* and *y*, *sc*; 2); *Porana racemosa* (*i-h*, *w*).

BIENNIAL.—*Humea elegans* (*c-h*, *br-r*, *pi*, or *r*; 5-6).

PERENNIALS.—*Achimenes ocellata* (*i-h*, *r-y*; 14); *Achmea corulescens* (*st*, *b*; 1); *Agapanthus umbellatus* (*c-h*, *b*; 2-3); *Amicia Zygomeris* (*c-h*, *y*, splashed *p*; 8); *Amphicome Emodi* (*c-h*, *pi* and *o*; 1-14); *Angraecum bilobum* (*st*, *w* and *p*; 4); *Anthurium Lindenianum* (*st*, *w*; 3); *Astilbe rubra* (*c-h*, *pi*; 4-6); *Begonia octopetala* (*i-h*, *g-w*; 2); *B. picta* (*i-h*, *pi*; 4-1); *B. pruinata* (*i-h*, *w*); *B. semper-*

October (Tender Perennials)—continued.

Biffrania aurantiaca (st, o; †); *Bilbergia amœna* (st, g-w, tipped b; 2); *Brunsvigia toxicaria* (c-h, pi; 1); *Cattleya Dowiana* (i-h, y, p, and v-pi); *C. guttata* (i-h, g, w, p, y, &c.; 1‡-2) and vars.; *C. Harrisoniæ* (i-h, pi, tinged y; 2) and var.; *C. labiata* (i-h, pi and r; 1‡-2) and vars.; *C. marginata* (i-h, pi-r, pi, and w, sc) and vars.; *Cœlogyne ciliata* (i-h, y, w, and br); *C. maculata* (i-h, w and r); *C. speciosa* (i-h, w, br or g, y, and r; 1‡); *C. Wallichiana* (i-h, p and w, sc; 1); *Crinum Balfourii* (st, w, sc); *C. Careyanum* (i-h); *C. Moorei* (c-h, g and r); *Cyclamen africanum* (c-h, w or r, and p; †-‡); *C. cilicium* (c-h, w and p; †); *Cyanochees Egertonianum* (st, p; 2); *Dahlia imperialis* (c-h, w, l, and r; 10-12); *Dendrobium bigibbum* (i-h, pi); *D. sanguinolentum* (st, y, pi, and p); *D. speciosum* (c-h, c or y-w, and bk, sc); *D. superbiens* (st, p); *Dichorisantra muscica* (st, b; 1‡); *D. thyrsoflora* (st, b; 4); *Fragaria indica* (c-h, y); *Gladiolus psittacinus* (c-h, r, y, g, and p; 3); *G. Saundersii* (c-h, r and w; 2-3); *Gloxinia maculata* (st, p-b; 1); *Hymenocallis amœna* (st, w, sc; 1-2); *Impatiens Sultani* (st, r; 1); *Ipomœa Learii* (st, b); *I. Purga* (st, p-pi); *Lœlia Dominiana* (i-h, p); *L. Perrinii* (i-h, pi-p and r); *Limnœcharis Plumieri* (i-h, aq, y; 1‡); *Lotus jacobœus* (c-h, p and y; 1-3); *Masdevallia tovarensis* (c-h, w); *M. Veitohiana* (c-h, y, o-r, and p); *Maxillaria grandiflora* (i-h, w, y, and r); *Miltonia candida* (i-h, y, w, br, and pi; †); *M. Clowesi* (i-h, y, p, and br); *M. Regnelli* (i-h, pi-w and l-pi; 1); *M. spectabilis* (i-h, w and pi-v; †-‡); *Mormodes atropurpureum* (st, p-br; 1); *M. Ooanæ* (st, o-y and r-br); *Nerine sarniensis* (c-h, pi; 2-2‡); *Nymphœa Devonensis* (st aq, pi-r); *N. Lotus dentata* (st aq, w); *Odontoglossum crispum* (c-h, w, y, and r-br); *O. grande* (c-h, o-y, c-w, and br); *O. Rossi* Ehrenbergii (c-h, w and br); *O. R. Warnerianum* (c-h, w, br, y, &c.); *O. Uro-Skinneri* (c-h, g or g-y, w, r, &c.); *Oncidium occultatum* (c-h, br-p and pi-p); *O. incurvum* (c-h, w, l, and br, sc); *O. ornithorhynchum* (c-h, pi-p, sc); *Oxalis variabilis* (c-h, w or r; †); *Pachystoma Thomsonianum* (st, w, p, g, and br; †); *Phalœnopsis amabilis* (st, w and y); *P. Aphrodite* (st, w, r, o, and y); *Pinguicula caudata* (c-h, pi); *Rivina humilis* (st, w-pi; 1-2); *Scutellaria splendens* (st, r; 1); *Sinningia concinna* (st, p and y); *Stanhœpa oculata* (st, y, spotted l); *Stapelia Astorians* (c-h, v, y, and p; †); *Tachidiœnum carinatus* (st, w and v); *Talauma pumila* (st, c, sc; 2-4); *Thuibergia erecta* (st, b, o, and y; 6) and var.; *Trichocentrum orthoplectron* (st, b, y, w, and r); *Tropœolum azureum* (c-h, b and g-w); *T. perigrinum* (c-h, y); *Vanda œmulea* (st, b; 2-3); *V. Sandoriana* (st, y, p-r, and br); *Vinea rosea* (i-h, pi or w); *Wigandia Vigieri* (i-h, l-b or p-r; 6).

SHRUBS.—*Abutilon megapotamicum* (c-h, r, y, and br; 3); *Adhatoda cydoniœfolia* (st, w and p); *Æschynanthus fulgens* (st, r and o; 1); *Aganosma caryophyllata* (st, y); *A. Roxburghii* (st, w); *Alonsoa incisifolia* (c-h, r; 1-2); *Aphelandra acutifolia* (st, r); *A. cristata* (st, o-r; 3); *Ardisia villosa mollis* (st, w); *Aristolochia ornithocephala* (st, p; 20); *Begonia nitida* (st, pi; 4-5); *B. prestoniensis* (st, o-r; 2); *Bignonia Cherere* (i-h, o; 10); *Boocœnia frutescens* (c-h, g; 3-6); *B. leiantha* (c-h, r; 2); *Brachyleena nerifolia* (c-h, y; 2); *Bredia hirsuta* (c-h, pi); *Bursaria spinosa* (c-h, w; 10); *Clerodendron fragrans flore-pleno* (c-h, w, tinged pi, sc; 6); *Cobœa scandens* (c-h, p; 20); *Cotyledon coccinea* (c-h, r and y; 1-2); *C. grandiflora* (c-h, r-o; 1-2); *C. racemosa* (c-h, r; 2); *Crossandra guineensis* (st, l; †-‡); *Eriœa cerinthoides* (c-h, r; 3); *E. gracilis* (c-h, p-r; 1); *E. jœminiflora* (c-h, r; 1-2); *E. Massonii* (c-h, r and g-y; 3); *E. melanthera* (c-h, pi; 2); *E. ramentacea* (c-h, p-r; 1‡); *Eupatorium atrovirens* (c-h, r and l); *E. Weinmannianum* (c-h, w, sc); *Fuchsia macrostema* (c-h, r; 6-12); *F. microphylla* (c-h, r; 2); *F. simplicicaulis* (c-h, pi-r); *Gardenia nitida* (st, w; 3); *Hoya australis* (i-h, w and pi, sc); *H. linearis* (st, w); *Jœminium grandiflorum* (i-h, w); *J. Sambac* (st, sc); *Lapageria rosea* (c-h, pi-r); *Lippia citriodora* (c-h, w; 3); *Launlia gratissima* (c-h, pi,

October (Tender Shrubs)—continued.

sc; 9-16); *Mesembryanthemum conspicuum* (c-h, r; 1); *M. floribundum* (c-h, r and w; †); *M. minutum* (c-h, y); *M. violaceum* (c-h, pi-w to v; 1-2); *Mimulus glutinosus* (c-h, br or pi; 5); *Monochœstum Humboldtianum* (c-h, r-p); *Mussaenda luteola* (c-h, y, and o; 5-6); *Nerium Oleander* (c-h, r; 6-14); *Nicotiana glauca* (c-h, y; 10-20); *Pachypodium succulentum* (st, r and w); *Passiflora œruleracemosa* (c-h, p); *P. coccinea* (st, r and o); *P. racemosa* (st, r); *P. Raddiana* (st, r); *Pelargonium comptum* (c-h, pi and p); *Pentas carnea* (st, pi-w; 1‡); *Perezkia aculeata* (st, w; 5-7); *P. Bleo* (st, r; 8-10); *Phyllis plumosa squarrosa* (c-h, w; 2); *Phyllocactus anguliger* (st, w and y); *Pleroma Benthamicum* (st, p and w; 4); *P. Gayanum* (st, w; 1-2); *Plumbago capensis* (i-h, b; 2); *Podanthes geminata* (st, o-y and r-p); *Reinwardtia trigynum* (i-h, y; 2-3); *Rhododendron javanicum* (c-h, o and r; 4); *Rœzelia granadensis* (st, pi-p; 3); *Salvia boliviana* (c-h, r; 4); *S. Greggii* (c-h, pi; 3); *Satyrium coriifolium* (i-h, y; 1); *Stachytarpheta mutabilis* (st, r; 3); *Stigmaphyllon ciliatum* (st, y); *S. littorale* (st, y); *Strobilanthes isophyllus* (st, l; 1-2); *S. Wallichii* (st, b; †-2); *Taconia insignis* (i-h, r, v-r, and w); *Vaccinium erythrinum* (c-h, r; 1‡); *Whitfieldia lateritia* (st, r and o; 3).

NOVEMBER. — **Hardy.** — **ANNUALS.** — *Anagallis grandiflora* (b and r; †); *Brachycome iberidifolia* (b or w; 1); *Crepis rubra* (r; †-1); *Ionopsidium acaule* (l, or w and v; †); *Linaria spartea* (y); *Malcolmia maritima* (l, pi, r, or w; †-1); *Oxalis stricta* (y; 1‡); *Papaver Hookeri* (pi, blotched w or b-bk; 3-4).

BIENNIALS.—*Eriogonum biennis* (y, sc; 2-4); *Stachys germanica* (pi and w; 1-3).

PERENNIALS.—*Acanthus spinosissimus* (pi; 3‡); *Achillea aurea* (y; 1‡); *Acis autumnalis* (w; 1‡); *Alstrœmeria aurantiaca* (o; 3-4); *A. chilensis* (r or pi; 2-3) and vars.; *Anemone japonica* (pi; 2-3) and vars.; *Anomatheca oruenta* (r; †-1); *Armeria cephalotes* (pi or r; 1-1‡); *Aster grandiflorus* (p; 2); *Cacalia suaveolens* (w; 3-5); *Colchicum autumnale* (p; †) and vars.; *C. Bivonœ* (p and w); *C. byzantinum* (pi; †); *C. Parkinsoni* (w and p); *Coronilla varia* (pi and w, or w; 1); *Dicontra chrysantha* (y; 3-5); *D. thalictroides* (y; sc); *Erigeron glaucus* (p; †-1); *E. speciosus* (w and y; 1‡); *Gaillardia aristata* (y; 1‡); *G. pulchella* (r and y; 2-3); *Galega orientalis* (b; 2-4); *Glycyrrhiza glabra* (b; 3-4); *Helenium autumnale* (y; 4-6); *Helianthus orgyalis* (y; 6-10); *Hypericum perforatum* (y; 1-3); *Kniphofia aloides* (r, fading to o and g-y; 3-4); *K. Burchelli* (r, y, and g; 1‡); *K. Rooperi* (o-r, becoming y; 2); *Lactuca macrohiza* (v-p; †-3); *L. tuberosa* (b; 1-1‡); *Linaria alpina* (b-v and y; †); *L. Cymbalaria* (b or l); *Lobelia syphilitica* (b; 1-2); *Lotus corniculatus* (y, fading to o, and r); *Lupinus leucophyllus* (pi; 2-3); *L. ornatus* (b; 1-2); *L. polyphyllus* (b; 4); *Lychnis diurna* (p-pi; 1-3); *Merendera Bulbocodium* (pi-l; †); *Oxalis corniculata* (y); *O. lobata* (y and r; †); *Polygonum affine* (pi-r; †); *P. sphaerostachyum* (p-r); *P. vacinifolium* (pi); *Sedum kamtschaticum* (y); *Senecio pulcher* (p and y; 1-2); *Sternbergia lutea* (y) and var.

SHRUBS.—*Abutilon striatum* (o-y; 10); *Asara integrifolia* (y; 18); *A. microphylla* (g; 12); *Clematis tubulosa* (b; 2-3); *Elmagnus macrophylla* (g-y; 6); *Hamamelis virginica* (y); *Hydrangea paniculata grandiflora* (w); *Kerria japonica* (o-y; 3-4); *Ligustrum lucidum* (w; 8-12); *Osmanthus Aquifolium* (w, sc); *Rosa indica* (r; 4-20).

Half-hardy. — **PERENNIALS.** — *Amaryllis Belladonna* (variable; 2); *Amicia Zygomis* (y, splashed p; 8); *Boussingaultia baselloides* (w, turning bk, sc); *Calceolaria Burbridgei* (y; 2-4); *Caryopteris Mastacanthus* (v; 2); *Crocœsmia aurea* (o-r; 2); *Ophiopogon japonicus intermedium* (l; 1‡); *Polianthes tuberosa* (w, sc; 3-4) and vars.; *Schizostylis coccinea* (r; 3).

SHRUBS.—*Calceolaria bicolor* (y and w; 2-3); *Camellia*

November (Half-hardy Shrubs)—continued.

japonica (variable; 20); *C. oleifera* (w, sc; 6-8); *Fuchsia macrostema gracilis* (p and r; 6-10); *Grindelia glutinosa* (y; 2); *Photinia japonica* (w; 10-20); *Plagianthus Lampenii* (y; 6-8); *Zauschneria californica* (r; 1).

Tender.—ANNUALS.—*Martynia fragrans* (c-h, r-p and y, sc; 2); *Porana racemosa* (i-h, w).

PERENNIALS.—*Achimenes ocellata* (i-h, r-y; 1½); *Ægiphila grandiflora* (st, y; 3); *Agapanthus umbellatus* (c-h, b; 2-3); *Amicia Zygomeris* (c-h, y, splashed p; 8); *Angræcum bilobum* (st, w, pi, r, and sc; ½); *A. caudatum* (st, g-y, br, w, and g; 1½); *A. sesquipedale* (st, w; 1); *Astilbe rubra* (c-h, pi; 4-6); *Begonia octopetala* (i-h, g-w; 2); *B. picta* (i-h, pi; ½-1); *B. pruinata* (i-h, w); *B. semperflorans* (i-h, w or pi); *Billbergia amœna* (st, g-w, tipped b; 2); *Canna discolor* (st, r; 6); *Cattleya Dowiana* (i-h, y, p, and v-pi); *C. guttata* (i-h, g, w, p, y, &c.; 1½-2) and vars.; *C. labiata* (i-h, pi and r; 1½-2) and vars.; *Centropogon fastuosus* (c-h, pi; 2); *C. Lucyanus* (st, pi); *Coclogyne ciliata* (i-h, y, w, and br); *C. humilis* (i-h, w, pi, r, and br); *C. maculata* (i-h, w and r); *C. speciosa* (i-h, w, br or g, y, and r; 1½); *Compartmentia coccinea* (i-h, r; ½); *Crinum Careyianum* (i-h); *C. Macowani* (c-h, w, tinged p); *C. Moorei* (c-h, g and r); *Cycnocheus Egertonianum* (st, p; 2); *Dahlia imperialis* (c-h, w, l, and r; 10-12); *Dendrobium sanguinolentum* (st, y, pi, and p); *D. speciosum* (c-h, c or y-w, and bk, sc); *D. superbiens* (st, p); *Dichiorchandra musaica* (st, b; 1½); *D. thyrsoflora* (st, b; 4); *Didymocarpus primulaefolia* (st, l; ½-½); *Dorstenia Mannii* (st, g; 1); *Episcia chontalensis* (st, l, y, and w; ½-1); *Gladiolus psittacinus* (c-h, r, y, g, and p; 3); *G. Saundersii* (c-h, r and w; 2-3); *Impatiens Sultani* (st, r; 1); *Ipomœa Purga* (st, p-pi); *Lœlia Dominiana* (i-h, p); *L. Perrinii* (i-h, pi-p and r); *Limnorcharis Plumieri* (i-h ag, y; 1½); *Lotus jacobœus* (c-h, p and y; 1-3); *Lycaste Skinneri* (i-h, w, pi-l, and r); *Masdevallia tovaronsis* (c-h, w); *M. Veitchiana* (c-h, y, o-r, and p); *Maxillaria grandiflora* (i-h, w, y, and r); *M. luteo-grandiflora* (i-h, c-w, br-r, and o); *Miltonia candida* (i-h, y, w, br, and pi; ½); *M. Clowesii* (i-h, y, p, and br); *M. Regnelli* (i-h, pi-w and l-pi; 1); *M. spectabilis* (i-h, w and pi-w; ½-½); *Norine sarniensis* (c-h, pi; 2-2½); *Nymphœa Devonienensis* (st ag, pi-r); *N. Lotus dentata* (st ag, w); *Odontoglossum crispum* (c-h, w, y, and r-br); *O. grande* (c-h, o-y, c-w, and br); *O. Rossii Ehrenbergii* (c-h, w and br); *O. K. Warnerianum* (c-h, w, br, y, &c.); *O. Uro-Skinneri* (c-h, g or g-y, w, r, &c.); *Oncidium cucullatum* (c-h, br-p and pi-p); *O. Forbesii* (i-h, r-br, y, and w); *O. incurvum* (c-h, w, l, and br, sc); *O. ornithorhynchum* (c-h, pi-p, sc); *Oxalis variabilis* (c-h, w or r; ½); *Pachystoma Thomsonianum* (st, w, p, g, and br; ½); *Phalœnopsis amabilis* (st, w and y); *P. Aphrodite* (st, w, r, o, and y); *Pinguicula caudata* (c-h, pi); *Saccolabium bigibbum* (st, y and w); *Sinningia concinna* (st, p and y); *Sophranitis militaris* (c-h, r and y; ½); *Stanhopea oculata* (st, y, spotted l); *Stapelia Asterias* (c-h, w, y, and p; ½); *Talauma pumila* (st, c, sc; 2-4); *Thunbergia erecta* (st, b, o, and y; 6) and var.; *Tillandsia carinata* (st, y and r, tipped g); *Vanda cœrulea* (st, b; 2-3); *Wigandia Vigieri* (i-h, l-b or p-r; 6).

SHRUBS.—*Abutilon megapotamicum* (c-h, r, y, and br; 3); *A. varieties*; *Ægiphila grandiflora* (st, y; 3); *Aphelandra cristata* (st, o-r; 3); *Argyrea splendens* (st, r; 10); *Begonia nitida* (st, pi; 4-5); *B. prestoniensis* (st, o-r; 2); *Bobbera incana* (c-h, y; 1½); *B. leiantha* (c-h, r; 2); *Brachylaena nerifolia* (c-h, y; 2); *Brachyotum confertum* (c-h, p and c); *Bredia hirsuta* (c-h, pi); *Bursaria spinosa* (c-h, w; 10); *Chenostoma limifolia* (c-h, w or y; 1); *Columnæa erythrophœa* (st, r; 2); *Daphne odora Mazeli* (c-h, w and pi, sc); *Eriœa cerinthoides* (c-h, r; 3); *E. gracilis* (c-h, p-r; 1); *E. jasminiflora* (c-h, r; 1-2); *E. melanthera* (c-h, pi; 2); *E. ramentacea* (c-h, p-r; 1½); *Eupatorium atrorubens* (c-h, r and l); *E. Weinmannianum* (c-h, w, sc); *Fuchsia microphylla* (c-h, r; 2); *Gardenia nitida* (st, w; 3); *Hoya linearis* (st, w); *Jasminum Sambac* (st, w, sc); *Lapageria rosea* (c-h, pi-r); *Lippia citriodora*

November (Tender Shrubs)—continued.

(c-h, w; 3); *Luculia gratissima* (c-h, pi, sc; 9-10); *Mesembryanthemum conspicuum* (c-h, r; 1); *M. minutum* (c-h, y); *Mimulus glutinosus* (c-h, br or pi; 5); *Monochæstum Humboldtianum* (c-h, r-p); *Mussaenda luteola* (c-h, y and o; 5-6); *Pachypodium succulentum* (st, r and w); *Passiflora Actinia* (w); *P. coccinea* (st, r and o); *P. Raddiana* (st, r); *Pelargonium oœmptum* (c-h, pi and p); *Pentas carnea* (st, pi-w; 1½); *Pereskia Bloo* (st, r; 8-10); *Phlogacanthus curviflorus* (st, y; 3-6); *Phyllea plumosa squarrosa* (c-h, w; 2); *Pleroma Benthiana* (st, p and w; 4); *P. Gayanum* (st, w; 1-2); *Plumbago capensis* (i-h, b; 2); *Podanthes geminata* (st, o-y and r-p); *Proclesia acuminata* (st, r and g); *Rhododendron javanicum* (c-h, o and r; 4); *Roezlia granadensis* (st, pi-p; 3); *Rondeletia odorata* (st, r, sc; 4); *Salvia boliviana* (c-h, r; 4); *S. Greggii* (c-h, pi, r); *Stachytarpheta mutabilis* (st, r; 3); *Stigmaphyllon littorale* (st, y); *Strobilanthes glomeratus* (st, p; 2-6); *S. isophyllus* (st, l; 1-2); *Tacsonia insignis* (i-h, r, v-r, and w); *Whitfieldia lateritia* (st, r and o; 3).

DECEMBER.—Hardy.—ANNUAL.—*Oxalis striata* (y; 1½).

PERENNIAL.—*Helleborus niger* (w; ½-1½).

SHRUBS.—*Arctostaphylos tomentosa* (w; 4); *Chimonanthus fragrans* (w or y, and p, sc); *Hamamelis arborea* (y and p; 15-20); *H. virginica* (y); *Jasminum nudiflorum* (y); *Kerria japonica* (o-y; 3-4); *Viburnum Tinus* (w or pi; 8-10).

Half-hardy.—PERENNIALS.—*Calceolaria Burbidgei* (y; 2-4); *Caliphurria subdentata* (w; 1½).

SHRUBS.—*Dianthera ciliata* (st, v and w; 2); *Grindelia glutinosa* (y; 2); *Plagianthus Lampenii* (y; 6-8).

Tender.—ANNUALS.—*Acroclonium rosuum* (c-h, pi; 1-2) and vars.

BIENNIAL.—*Exacum macroranthum* (st, b-p; 1½).

PERENNIALS.—*Æchmea œolestis* (st, b); *Angrœcum bilobum* (st, w and pi; ½); *A. sesquipedale* (st, w; 1); *Arpophyllum spicatum* (c-h, r); *Barkeria elegans* (c-h, pi and r, spotted; 2); *Begonia Berkeleyi* (i-h, pi); *B. Frobeldi* (i-h, r); *B. manicata* (st, pi; 2); *B. megaphylla* (i-h, w); *B. natalensis* (c-h, pi; 1½); *B. nolumbiifolia* (i-h, w or pi; 1-2); *B. pruinata* (i-h, w); *B. riciniifolia* (i-h); *B. Schmidtiana* (i-h, w; 1); *B. semperflorans* (i-h, w or pi); *B. soocrana* (st, pi); *B. Verschaffeltiana* (i-h, pi); *Billbergia Liboniana* (st, r, w, and p; 1); *Bletia Shepherdii* (st, p and y; 2); *Brassavola Digbyana* (i-h, c-w, streaked p; ½); *Burlingtonia decora* (st, w or pi, spotted r); *Calantine Veitchii* (st, p and w; 3); *Cunna gigantea* (st, o-r and p-r; 6); *C. limbata* (st, y-r; 3); *Cattleya maxima* (i-h, pi, w, p-r, &c.; 1-1½); *C. Trianae* (i-h, pi-w, o, or y, and p) and vars.; *C. Warszewiczii* (i-h, p-w and r; 1); *Centropogon Lucyanus* (st, pi); *Cobœa penduliflora* (i-h, g); *Canogyne barbata* (st, w and br; ½); *C. cristata* (i-h, w and y, sc; ½); *C. flaccida* (i-h, w, y, and r, sc; 1); *C. Gardneriana* (st, w and g-y); *C. Gowerii* (i-h, w and g-y); *C. media* (i-h, c-w, y, and br; 1); *C. odoratissima* (i-h, w and y, sc); *C. speciosa* (i-h, w, br or g, y, and r; 1½); *Cyanotis Kewensis* (st, pi); *Cymbidium giganteum* (st, br, y, and p); *C. Mastersii* (i-h, w and pi, sc); *Cypripedium Haynaldianum* (st, g, pi, w, and br); *C. insignis* (i-h, y-g, w, y, and r-br) and vars.; *C. venustum* (c-h, g-w or pi, and y-g); *Cyrtorchilum maculatum* (st, g and p); *Dendrobium Linawianum* (c-h, pi-l and r); *D. Pierardii* (c-h, c-w or pi, y, and p); *D. secundum* (st, p and y); *Episcia chontalensis* (st, l, y, and w; ½-1); *Gentiana Fortunei* (c-h, b, spotted w); *Gesnera exoniensis* (st, o-r); *G. pyramidalis* (st, o-r and r); *Goodyera discolor* (c-h, w and g-y); *Grammatophyllum speciosum* (st, o-y, p, and r; 10); *Gymnostachyum ceylanicum* (st, w, g, and y); *Imantophyllum cyrtanthiflorum* (c-h, pi or y); *I. Gardeni* (c-h, r-o or y); *Impatiens Hookeriana* (st, w and r; 2½); *I. Sultani* (st, r; 1); *I. Walkeri* (st, r; 1-1½); *Ipomœa Horsfallii* (st, pi); *Icoloms hondense* (st, y); *Lœlia albida* (i-h, w, pi, and y, sc);

December (Tender Perennials)—*continued.*

L. anceps (c-h, pi-l, p, and l, sc); *L. autumnalis* (i-h, pi, pi-w, and y, sc); *L. superbiens* (i-h, pi, r, and y); *Lycaste aromatica* (i-h, y); *L. Deppel* (i-h, y, br, w, and r); *L. Skinneri* (i-h, w, pi-l, and r); *Masdevallia coccinea* (c-h, y, and r); *M. Lindenii* (c-h, w, pi, and m); *M. tovarensis* (c-h, w); *M. Veitchiana* (c-h, y, o-r, and p); *M. Wallisii* (c-h, y, r, and r-p); *Maxillaria luteo-grandiflora* (i-h, c-w, br-r, and o); *M. venusta* (i-h, w, y, and r); *Nymphæa Devonensis* (st ag, pi-r); *Odontoglossum crispum* (c-h, w, y, and r-br); *O. grande* (c-h, o-y, c-w, and br); *O. Inseayi* (i-h, y, br, &c.); *O. luteo-purpureum* (c-h, br or p, w, and y); *O. odoratum* (c-h, y, br, and p, sc); *O. Rossii* (c-h, w, br, and y); *O. R. Ehrenbergii* (c-h, w and br); *O. R. Warnerianum* (c-h, w, br, y, &c.); *Oncidium bicallosum* (i-h, br and y); *O. bifolium* (st, g-br and y); *O. Cavendishianum* (st, y); *O. crispum* (i-h, br and y); *O. cucullatum* (c-h, br-p and pi-p); *O. incurvum* (c-h, w, l, and br, sc); *O. leucocchilum* (i-h, g, br or r, and w or y); *O. ornithorhynchum* (c-h, pi-p, sc); *O. o. albiflorum* (c-h, w); *O. tigrinum* (i-h, br and y, sc); *O. varicosum Rogersii* (i-h, y); *Oxalis variabilis* (c-h, w or r; †); *Peristrophe speciosa* (st, p; 4); *Phalenopsis Aphrodite* (st, w, r, o, and y); *Pitcairnia muscosa* (st, r; 1); *Pterostylis Baptistii* (c-h, g, w, and br; 1); *Ruellia Portellæ* (i-h, pi; 1); *Saccolabium giganteum* (st, w and m-v, sc); *Selenipedium Schrödera* (st, p-r, &c.); *Sophronis grandiflora* (c-h, r); *S. militaris* (c-h, r and y; †); *S. violacea* (c-h, v; †); *Stelis Bruckmülleri* (st, y-p and p); *Talauma pumila* (st, c, sc; 2-4); *Thunbergia erecta* (st, b, o, and y; 6) and var.; *Tillandsia umbellata* (st, b, w, and g; 1); *Trihopilia fragrans* (c-h, y, g, w, spotted o, sc); *Zygotepetalum brachypetalum* (i-h, br, w, &c.); *Z. candidum* (i-h, w and pi-p; †); *Z. orinitum* (c-h, g, br, w, and y); *Z. Dayanum* (st, w,

December (Tender Perennials)—*continued.*

p-v, and r) and vars.; *Z. Gairianum* (st, v, p, and o); *Z. Gautieri* (c-h, g, br, and p-b); *Z. Klabochorum* (i-h, p, w, and y); *Z. Mackayi* (c-h, p, g, w, and b); *Z. m. intermedium* (c-h, p, g, w, and b); *Z. maxillare* (c-h, br, b-p, and g); *Z. rostratum* (st, w, g, br-p, &c.); *Z. Sedeni* (i-h, p-br, g, and b-p); *Z. triumphans* (i-h, w and b); *Z. Wallisii* (c-h, w and v).

SHRUBS.—*Abutilon insigne* (c-h, p-r; 6); *A. megapotamicum* (c-h, r, y, and br; 3); *A. striatum* (c-h, o-y; 10); *Aphelandra aurantiaca* (st, o-r; 3); *Begonia incarnata* (st, pi; 2); *B. Lindleyana* (st, w; 3); *B. Lynchiana* (st, r); *B. nitida*; (st, pi; 4-5); *B. prestoniensis* (st, o-r; 2); *Bouvardia jasminiflora* (c-h, w, sc; 2); *Bursaria spinosa* (c-h, w; 10); *Camellia japonica* (c-h; 20) and vars.; *Crassula lactea* (c-h, w; 1-2) and var.; *Daphne odora Mazeli* (c-h, w and pi, sc); *Erica gracilis* (c-h, p-r; 1); *E. hyemalis* (c-h, pi and w; 2); *D. melanthera* (c-h, pi; 2); *D. ramentacea* (c-h, p-r; 1‡); *Eupatorium atrorubens* (c-h, r and l); *E. ianthinum* (c-h, p; 3); *E. Weinmannianum* (c-h, w, sc); *Jasminum gracillimum* (st, w, sc); *J. Sambac* (st, w, sc); *Leonotis Leonurus* (c-h, r; 3-6); *Leucopogon australis* (c-h, w; 2-4); *L. Richei* (c-h, w; 3-4); *Libonia floribunda* (i-h, r and y); *L. Penrhosiensis* (i-h, r); *Mimulus glutinosus* (c-h, br or pi; 5); *Monochætum Hartwegianum* (c-h, pi); *M. Humboldtianum* (c-h, r-p); *Mussaenda luteola* (c-h, y and o; 5-6); *Pentas carnea* (st, pi-w; 1‡); *Pereskia Bleo* (st, r; 8-10); *Pleroma macranthum* (st, v-p); *Rhododendron javanicum* (c-h, o and r; 4); *Ruellia Baikiei* (i-h, r; 3); *Salvia splendens* (c-h, r; 3) and var.; *Senecio mikanioides* (c-h, y); *Stachytarpheta mutabilis* (st, r; 3); *Thyrsacanthus rutilans* (st, r; 2); *T. Schomburgkianus* (st, r; 2); *Whitfieldia lateritia* (st, r and o; 3).



AN INDEX TO HEIGHTS OF HARDY AND HALF-HARDY HERBACEOUS PLANTS.

IN the arrangement of herbaceous beds and borders, the heights which the plants are likely to attain are an important consideration. To facilitate selection, the best hardy and half-hardy herbaceous plants, *i.e.*, those which, in the body of the work, have been marked by an asterisk, are here classified according to their degrees of height, in two divisions—"Flowering Plants" and "Foliage Plants."

Each plant is included under that heading which most nearly represents its greatest height; and the asterisks indicate plants between whose maximum and minimum heights a wide range is observable. Subjects which, in the body of the work, have been briefly described as, *e.g.*, "2ft." or "3ft." high, are here classed respectively under the headings "1½ft. to 2ft." and "2ft. to 3ft."

Abbreviated information as to the colours of the flowers or foliage, as the case may be, is given after each name.

The following abbreviations are used:—

b, blue; bk, black; br, brown; c, cream; g, green; gl, glaucous; gy, grey; l, lilac; m, magenta; mv, mauve; o, orange; p, purple; pi, pink; r, red; si, silvery; v, violet; w, white; y, yellow.

FLOWERING PLANTS. — 1in. to 3in. —

ANNUALS.—*Loasa prostrata* (y); *Nolana paradoxa* (b); *N. tenella* (b); *Sedum cœruleum* (b); *Silene pendula compacta* (pi); *Wahlenbergia hederacea* (b).

PERENNIALS.—*Acis roseus* (pi); *Ajuga reptans* (b or pi); *Allium Bidwellii* (pi); *A. Cœpa* (w); *A. falcofolium* (pi); *Alyssum alpestre* (y); *Anemone ranunculoides* (y or p); *Anthemis Aizoon* (w and y); *Androsace argentea* (w); *A. carnea* (pi and y); *A. Laggeri* (pi); *A. villosa* (pi or pi-w); *A. Vitaliana* (y); *Arctotis acaulis* (y and r); *Arenaria balearica* (w); *Armeria juncea* (pi); *A. setacea* (pi); *Bellis perennis* (w) and vars.; *B. rotundifolia cœrulescens* (w or b); *Bellium minus* (w and y); *Campanula cœnisia* (b); *C. glomerata pusilla* (b or w); *C. Reineri* (b); *C. Zoysii* (b); *Claytonia virginica* (w); *Crocus aureus* (o); *C. biflorus* (w or gy-l, feathered p); *C. susianus* (o, or o striped br); *C. vernus* (l, v, w, or streaked w and v); *Cyclamen ibericum* (r, spotted p); *Draba aizoides* (y);

Flowering Plants (1in. to 3in.)—continued.

D. Aizoon (y); *D. alpina* (o); *D. glacialis* (o); *D. Mawii* (w, tipped r-br); *D. nivalis* (w); *Dracocephalum peregrinum* (b); *Eranthis sibiricus* (y); *Erodium Reichenhardi* (w, veined pi); *Erysimum ochroleucum* (y); *E. pumilum* (y); *Erythraea diffusa* (pi); *Gentiana bavarica* (b); *G. pyrenaica* (g and b); *G. verna* (b); *Geranium argenteum* (r); *Houstonia serpyllifolia* (w); *Leptinella dioica* (y); *Linaria hepaticæfolia* (l-p); *Lotus corniculatus* (y); *Lychnis Lagasœe* (pi and w); *Lysimachia Nummularia* (y); *Mazus pumilio* (v); *Mitchella repens* (p-w); *Myosotis alpestris* (b); *Oxalis Acetosella* (w, veined p or pi-p); *O. corniculata* (y); *O. lobata* (y, spotted r); *O. violacea* (pi); *Phlox reptans* (p or v); *Phyteuma humile* (b); *Pratia angulata* (w); *P. repens* (v-w); *Primula Auricula* (y) and vars.; *P. marginata* (v-pi); *P. minima* (pi or w); *P. sapphirina* (b); *P. scotica* (p, y eye); *P. Steirii* (p); *P. viscosa* (pi-p, w eye) and vars.; *P. vulgaris* (y); *Pyxidantha barbata* (w or pi);

Flowering Plants (Lin. to Sin.)—continued.

Saxifraga aizoides (o or o-y, spotted r); *S. aretioides* (o-y); *S. Bursleriana* (b-w); *S. Fortunei* (w); *S. moschata*; *S. oppositifolia* (p); *S. Rocheliana coriophylla* (w); *S. valdensis* (w); *Silene acaulis* (pi or w); *S. Hookeri* (pi); *Soldanella alpina* (v); *S. montana* (p); *Trifolium uniflorum* (w); *Viola Munbyana* (v or y); *V. odorata* (b, w, or r-p, sc); *V. pedunculata* (y); *V. varieties*; *Waldsteinia fragarioides* (y).

Sin. to Gin.—**ANNUALS.**—*Alyssum serpyllifolium* (y); *Bellium bellidioides* (w); *Bivonana lutea* (y); *Downingia elegans* (b, streaked w); *D. pulchella* (b and y); *Fedia Cornucopie* (r); *Nemophila Menziesii* (w or b, spotted); *Nolana lanceolata* (b, w, g); *Papaver alpinum* (y, pi or w); *Sedum sempervivoides* (r); *Tropaeolum peregrinum* (y).

BIENNIALS.—*Sedum sempervivoides* (r).

PERENNIALS.—*Achillea Herba-rotta* (w); *A. moschata* (w); *A. nana* (w); *A. umbellata* (w); *Acis autumnalis* (w and pi); *A. grandiflorum* (w); *A. trichophyllum* (w and r); *Aconitum biflorum* (b); *Ajuga pyramidalis* (b or p); *Alchemilla alpina* (g); *A. sericea* (g); *Ambrosinia Basaii* (g); *Androsace Chamejasme* (p-w and y, or pi and y); *A. lactea* (w and y); *A. sarmentosa* (pi and w); *Anemone alpina* (w, w and p, c, or y); *A. apennina* (b); *A. baldensis* (w and b-r); *A. blanda* (b); *A. Halleri* (p); *A. nemorosa* (w) and var.; *A. stellata* (w); *A. vernalis* (v and w); *Arabis alpina* (w); *A. arenosa* (pi); *A. blepharophylla* (pi-p); *A. lucida* (w) and var.; *A. petraea* (w); *Arenaria grandiflora* (w); *A. larioicifolia* (w); *A. purpurascens* (p); *A. rotundifolia* (w); *Armeria dianthoides* (pi); *A. juniperifolia* (pi); *Asperula longiflora* (w, y, and r); *A. montana* (pi); *Babiana disticha* (b); *B. plicata* (v-b, b, and y); *Biarum tenuifolium* (br-p); *Brodiaea gracilis* (y, nerved br); *Bupleurum graminifolium* (g-y); *Calceolaria Fothergillii* (y, spotted r); *Calochortus coruleus* (l, spotted b); *C. Nuttallii* (g, w, r, and y); *Campanula Allionii* (b or w); *C. caespitosa* (b or w); *C. Elatines* (b-p); *C. fragilis* (l-p); *C. garganica* (b); *C. nitida* (b or w); *C. pulla* (b); *C. pusilla* (b, varying to w); *C. Scheuchzeri* (b); *C. Waldsteiniana* (v-b); *Cardamine trifolia* (w); *Carpolyza spiralis* (w and r); *Cedronella cordata* (p); *Chrysogonum virginianum* (y); *Cineraria aurantiaca* (o); *Claytonia sibirica* (pi); *Clintonia uniflora* (w); *Conandron ramondioides* (w or p); *Coris mopseliensis* (l); *Cornus canadensis* (p-w); *C. suecica* (p and w); *Corydalis solida* (p); *Crocus Boryi* (c-w, o-y, and p); *C. Imperati* (l-p, striped p); *C. nudiflorus* (p or v); *C. speciosus* (l, striped p); *Cyclamen africanum* (w or pi, spotted p); *C. cilicium* (w, blotched p); *C. Coum* (r); *C. neapolitanum* (w or r, spotted p-v); *C. persicum* (w, blotched r-p); *C. varieties*; *Dianthus alpinus* (pi, spotted r); *D. caesus* (pi); *D. neglectus* (pi); *Dionaea muscipula* (w); *Dodecatheon integrifolium* (pi-r); *Drypis spinosa* (pi or w); *Erigeron grandiflorus* (p or w); *E. Roylei* (b-p and y); *Erinus alpinus* (p); *Erodium macradenum* (v); *Erysimum alpinum* (y); *Erythronium americanum* (y); *E. dens-canis* (p-pi or w); *Ferraria Ferrariola* (g-b); *F. undulata* (g-b); *Fritillaria armena* (y); *F. graeca* (br); *F. Hookeri* (l); *Funkia Sieboldiana* (w and l); *Galanthus nivalis* (w, streaked g) and vars.; *G. plicatus* (g-w); *Galar aphylla* (w); *Gentiana acaulis* (b and y) and vars.; *G. algida* (b and b-w, spotted and striped b); *G. cruciata* (b, dotted g); *Geranium cinereum* (r); *Herbertia cœrulea* (b and w); *Houstonia cœrulea* (b); *Iris alata* (l-p and y); *I. Chamaeiris* (y, veined br, and o-y); *I. cristata* (l and y); *I. iberica* (w, p, and p-br); *I. lutescens* (y, veined p-br); *I. persica* (y-l and y); *I. pumila* (l-p and w); *I. rubro-marginata* (g-p); *Ixia speciosa* (r); *Leontopodium alpinum* (w); *Leucocium vernum* (w, spotted g); *Linaria alpina* (b-v); *L. Cymbalaria* (b or l) and var.; *Linum alpinum* (b); *Lupinus lepidus* (p-b); *Lychnis alpina* (p); *L. pyrenaica* (w-pi); *Merandera Bulboodium* (pi-l); *Milla biflora* (g-w and w); *Mimulus moschatus* (y, sc); *Mitella pentandra* (y); *Mœhringia muscosa* (w); *Mnsoari Elweii* (b); *M. Szovitsianum* (b); *Nemastylis acuta* (b, y, bk); *Oenothera acaulis* (w, turning r); *O. bistorta*

Flowering Plants (Sin. to Gin.)—continued.

Veitchiana (y, spotted p-r); *CE. taraxacifolia* (w, turning r); *Omphalodes Lucilia* (l-b); *O. verna* (b); *Orchis purpurea* (pi, g, and p); *Ornithogalum umbellatum* (w and g striped); *Oxalis arenaria* (v-p); *O. enneaphylla* (w veined p, or p); *Petasites fragrans* (w); *P. frigida* (w); *Phlox subulata* (p); *Phyteuma comosum* (p or w); *Polemonium confertum* (b); *P. humile* (b or p); *P. reptans* (b or w); *Potentilla ambigua* (y); *P. Saxifraga* (w); *Primula altaica* (w or p-r); *P. auriculata* (p); *P. Boveana* (y); *P. calycina* (p); *P. glutinosa* (b-p); *P. rosea* (pi, y eye); *Pyrola rotundifolia* (w); *Ranunculus anemoneide* (pi-w); *R. parnasifolius* (w or p); *Romanzoffia sitchensis* (w); *Romulea Bulboodium* (v and y); *Sanguinaria canadensis* (r); *Saponaria ocyroides* (r and p, or pi and p); *Saxifraga Camposii* (w); *S. Maweana* (w); *S. purpurascens* (p); *Scabiosa Webbiana* (c-y); *Scilla amœna* (b or w); *S. bifolia* (b, r, or w); *S. sibirica* (b); *Silene alpestris* (w); *S. Saxifraga* (y and r-br); *S. Schafta* (p); *Sternbergia lutea* (y) and var.; *Tropaeolum polyphyllum* (y); *T. speciosum* (r); *T. tricolorum* (o-r, tipped bk); *Tussilago Farfara variegata* (y); *Uvularia grandiflora* (y); *Viola cornuta* (b); *V. hederacea* (b or w); *V. pedata* (b or w) and vars.; *V. Riviniana* (b-p or l); *V. rothomagensis* (b, striped bk); *V. tricolor* (variable); *V. varieties*; *Wahlenbergia Kitaibelii* (p-b); *W. tenuifolia* (b-v and w); *Zephyranthes Andersonii* (o-y or r-y).

Sin. to 12in.—**ANNUALS.**—*Adonis estivalis* (r); *A. autumnalis* (r and bk); *Æthionema Buxbaumii* (r); *Æ. saxatile* (p); *Alyssum gemonense* (y); *A. orientale* (y); *A. saxatile* (y); *Amarantus melanoholicus ruber* (r); *Argemone albiflora* (w); *Bartonia aurea* (o); *Blumenbachia insignis* (r-y and w); *Borago longifolia* (b); *Brachyocome iberidifolia* (b or w); *Calceolaria arachnoidea* (p); *C. plantaginea* (y); *Castilleja indivisa* (g-y); *Chlora perfoliata* (o-y); *Collinsia bicolor* (r-p and w); *C. grandiflora* (p and b); *C. verna* (b and w); *Crepis rubra* (r); *Erysimum Perofskianum* (r-o); *Gilia achillesfolia* (p-b or r); *G. androsacea* (l, p, or w); *G. Brandegei* (o-y); *G. liniflora* (w); *G. micrantha* (pi or o-y); *G. tricolor* (p, w, and o-y); *Glaucium phonicium* (r, spotted bk); *Iberis amara* (w); *I. coronaria* (w); *Lagurus ovatus* (g); *Lathraea squamaria* (pi-w or b-w, streaked p or w); *Linaria bipartita* (v-p and y); *L. spartea* (y); *Linum grandiflorum* (pi); *Lupinus nanus* (l and b); *Malope trifida* (p or w); *Mentzelia bartonioides* (y); *Mimulus luteus* (y) and vars.; *Nonnea rosea* (pi); *Papaver Rhœas* (r); *Phacelia campanularia* (b, spotted w); *P. viscosa* (b or p); *Phlox Drummondii* (r, varying to pi, p, or w); *Rosa odorata* (r, y, and g, sc); *Sabbatia campestris* (pi); *Saponaria calabrica* (pi); *Selenia aurea* (o-y); *Silene Atocion* (pi); *Urnaria pulchra* (o); *Vesicaria grandiflora* (y); *Zaluzianskia capensis* (w).

BIENNIALS.—*Chlora grandiflora* (o-y); *Dianthus chinensis* (variable).

PERENNIALS.—*Achillea ageratum* (w); *A. Clavenns* (w); *A. tomentosa* (y); *Actaea spicata* (w) and var.; *Actinella grandiflora* (y); *Adonis vernalis* (y); *Æthionema coridifolium* (pi-l); *Ainsliea Walkers* (w and r); *Ajuga genevensis* (b-p and w); *Alchemilla pubescens* (g); *Allium acuminatum* (pi); *A. coruleum* (b), *A. Macnabianum* (w); *A. Murrayanum* (pi-p); *A. paradoxum* (w); *Anchusa Agardhii* (p); *Androsace lanuginosa* (pi and y); *Andryala lanata* (y); *Anemone angulosa* (b); *A. multifida* (r, w-y, or y); *A. narcissiflora* (c, or c and p); *A. patens* (p or y); *A. pratensis* (p); *A. Pulsatilla* (v); *Aplectrum hyemale* (g-l); *Aquilegia alpina* (b, or b and w); *A. Bertoloni* (b-v); *A. glandulosa* (l-b); *A. pyrenaica* (l-b); *Arabis albida* (w) and var.; *A. rosea* (pi-p); *Arenaria graminifolia* (w); *Armeria plantaginea* (pi); *A. vulgaris* (pi, l, or w); *Arnebia echioides* (y, spotted p); *Arnica montana* (y); *A. scorpioides* (y); *Asarum canadense* (br); *Asperula odorata* (pi); *A. orientalis* (b); *Aster alpinus* (p); *A. altaicus* (b-p); *A. argenteus* (p); *A. caucasicus* (p); *A. peregrinus* (b-p);

Flowering Plants (Sin. to 12in.)—continued.

A. pulchellus (p); *Babiana ringens* (r); *B. stricta* (w, l-b, blotched b) and vars; *Bellevalia syriaca* (w); *Bellidiatrum Micheli* (w); *Biebersteinia odorata* (y); *Borago laxiflora* (b); *Brodiaea congesta* (b) and vars.; *Calochortus Benthami* (y); *C. elegans* (g-w, p); *C. lilacinus* (pi); *C. luteus* (y and p); *C. pulchellus* (y); *Camassia esculenta* (b); *C. Fraseri* (b); *Campanula alpina** (b); *C. carpathica* (b or w); *C. c. turbinata* (p); *C. collina* (b); *C. excisa* (b); *C. isophylla alba* (w); *C. Portenschlagiana* (b-p); *C. rotundifolia* (b or w); *C. r. soldanella* (b); *Cerintho major* (y and p); *Chelone nemorosa* (pi-p); *Chionographis japonica* (w); *Chrysanthemum argenteum* (w); *Cnicus undulatus* (p); *Coreopsis Drummondii* (y and r-br); *Corydalis lutea* (p); *C. Marshalliana* (y); *C. nobilis* (y, tipped g); *Cotyledon agavoides* (o); *Cypella Herberti* (y); *Cypripedium aristinum* (g-br, and r veined w); *C. guttatum* (w, blotched pi-p); *C. macranthum* (p); *Dentaria diphylla* (p and w); *D. polyphylla* (c); *Dianthus alpestris* (r); *D. atrorubens* (r); *D. fimbriatus* (pi); *D. fragrans* (w, suffused p); *D. plumarius* (w, p, &c.); *D. Seguerii* (pi-p); *D. varieties*; *Doronicum altaicum* (y); *D. caucasicum* (y); *Draba violacea* (v-p); *Dracocephalum altaicense* (b); *Epidemium alpinum* (r, gy, and y); *E. Muschianum* (w); *E. rubrum* (r); *Eranthis hymalis* (y); *Erigeron aurantiacus* (o); *E. glaucus* (p); *Erythraea Muhlenbergii* (pi and g-w); *E-chscholtzia californica crocea* (o, w, or r); *Eucornis nana* (br); *Eritillaria delphinensis* (p, spotted y); *F. lutea* (y and p); *F. Melesagris* (p, chequered); *F. pallidiflora* (y, chequered); *F. pudica* (y); *F. tenella* (y, chequered p-br); *F. tulipifolia* (b); *Galanthus Elwesii* (w, spotted g); *Gazania uniflora* (y); *Gentiana affinis* (b); *G. Pneumnanthe* (b); *Geranium Endressii* (pi); *G. ibericum* (b); *G. Lambertii* (b); *G. macrorhizon* (r or p); *G. striatum* (pi); *G. Wallichianum* (p); *Geum montanum* (y); *G. triflorum* (w, edged p-r and p); *Gladiolus floribundus* (w, p, r, &c.); *Helichrysum arenarium* (y); *Hemerocallis minor* (y); *Heteranthera limosa* (v-b); *Heteropappus hispidus* (w); *Hyacinthus orientalis* (variable); *H. varieties* (sc); *Iris balkana* l-p); *I. Douglasiana* (l-p); *I. graminica* (l-p); *Ixia hybrida* (w); *I. maculata* (o, spotted); *I. patens* (pi); *I. viridiflora* (y, spotted); *Koenigia spinosa* (w); *Lilium elegans atrorubens* (r, dark blotched); *L. tenuifolium* (r); *Limonanthes Douglasii* (y, turning w); *Linaria triornithophora* (p and y); *Linum angustifolium* (p); *L. Macraei* (o); *Lithospermum purpureo-oreum* (r, turning p); *Lupinus subcarneus* (b, blotched y); *Lychnis fulgens* (r) and vars.; *L. Viscaria* (pi); *Lysimachia punctata* (y); *Marshallia cespitosa* (b-w); *Miconopsis cambrica* (y); *Mimulus Lewisii* (pi); *M. luteus* (y) and vars.; *Moltkia petraea* (pi-b, turning v-b); *Moraea tricuspis* (g-w, spotted p); *M. unguiculata* (w, spotted p-r); *Muscari botryoides* (b); *M. moschatum* (p); *M. neglectum* (b); *M. paradoxum* (b-bk and g); *M. racemosum* (b); *Mysotis azorica* (p, turning b); *M. dissitiflora* (b); *M. palustris* (b); *Narcissus Broussonetii* (g-w); *N. Bulbocodium* (y) and vars.; *N. calathinus* (w or y); *N. incomparabilis* (y) and vars.; *N. Jonquilla* (y); *N. Macleai* (y and w); *N. poeticus* (w); *N. Pseudo-Narcissus* (y) and vars.; *N. Tazetta* (y and w) and vars.; *N. triandrus* (w); *Neja gracilis* (y); *Nierembergia filicaulis* (l and y); *Oenothera eximia* (w); *O. glauca Fraseri* (y); *Oncocoma stellatum tauricum* (y); *Ophrys apifera* (pi and g); *O. Speculum* (g, b, edged y, margined r-p); *Opuntia Rafinesquii* (y and r); *Orochis latifolia* (p or r); *O. maculata* (p or w, spotted p-b); *Orobanchis pannonicus* (variable); *O. vernus* (p and b, veined r, turning b); *Ourisia coccinea* (r); *O. Pearcei* (r, striped r-p); *Pediicularis verticillata* (pi or w); *Pentstemon azureus* (b); *P. deustus* (y); *P. glaber* (p, v, or b); *P. gracilis* (l-p or w); *P. Menziesii Douglasii* (l-p and pi-r); *P. pubescens* (v or p); *Petalostemon candidus* (w); *P. violaceus* (pi-p); *Plumbago Larperus* (v); *Podophyllum Emodi* (w); *Polygonum affine* (pi-r); *Potentilla unguiculata* (w); *Primula capitata* (v-b); *P. cortusoides* (pi); *P. denticulata* (l) and vars.; *P. farinosa** (p, y eye); *P. involucrata* (c-w)

Flowering Plants (Sin. to 12in.)—continued.

and vars.; *P. nivalis* (w); *P. obovata* (l or p); *P. sinensis* (w or l); *Pulmonaria angustifolia* (pi, turning b); *P. saccharata* (pi); *Puschkinia scilloides* (w, striped b); *Pyrothrum corymbosum* (w); *Ranunculus amplexicaulis** (w); *R. asiaticus* vars.; *R. gramineus* (y); *Rhexia virginica* (p); *Sarracenia peltata* (p); *S. purpurea* (p); *Saxifraga Hirouulus* (y, dotted r); *S. Hostii* (w, dotted p); *S. ligulata* (w, dotted pi); *S. longifolia* (w, dotted r); *S. umbrosa* (w, sprinkled r); *S. virginiana* (w); *Scabiosa caucasica* (b); *Scilla chinensis* (pi-p); *S. hispanica* (b, turning pi-p); *S. peruviana* (l, r, or w); *S. pratensis* (b); *Scopolia carniolica* (p or g, veined); *Sempervivum arenarium* (y); *Soncheto Doronicum* (y); *Serapias cordigera* (br and l); *Silene Elizabethae* (pi); *S. pennsylvanica* (pi); *Sisyrinchium filifolium* (w, lined p-r); *S. grandiflorum* (p); *S. iridifolium* (y-w); *Stachys grandiflora* (v and p); *Statice callicoma* (p); *S. latifolia* (b); *S. sinuata* (p and y); *S. Suworowi* (l); *S. tatarica* (r); *Stylophorum diphyllum* (y); *Tanacetum leucophyllum* (o-y); *Thalictrum anemonoides* (v or pi); *T. tuberosum* (w); *Trifolium alpestre* (p); *Trillium erectum* (p); *T. erythrocarpum* (w, striped p); *Triteleia porrifolia* (w-w); *T. uniflora* (l); *Tritonia miniata* (r); *Tulipa Grogii* (r, blotched bk); *Uvularia sessilifolia* (y); *Vesicaria utriculata* (y); *Vicia argentea* (pi); *Viola cucullata* (v-b or p); *Zephyranthes Atamasco* (w); *Z. carinata* (g and p); *Z. rosea* (pi).

1ft. to 1ft.—ANNUALS.—*Alyssum Wiersbeckii* (y); *Chrysanthemum sogetum* (y); *Collomia coccinea* (r); *Gomphrena globosa* (variable); *Holipterum Munglesi* (y or p); *Lupinus luteus* (y); *Madia elegans* (y); *Nemophila usignis* (b and y); (*Eriothera Whitneyi* (pi-r, blotched r); *Sabbatia calycosa** (w); *Streptanthus maculatus* (p); *Tagetes patula* (o-y).

BIENNIALS.—*Anchusa capensis* (b); *Blumenbachia coronata* (w); *Campanula sibirica divergens* (w); *C. thyrsoidea* (b); *Sorophularia chrysantha* (o-y); *Tragopogon glaber* (p).

PERENNIALS.—*Abronia arenaria* (y); *Achillea asplenifolia* (pi); *A. aurea* (o-y); *Actaea alba* (w); *Adenophora denticulata* (b); *A. Fischeri* (b or v-b); *A. pereskiiensis* (b); *A. stylosa* (b); *Adonis pyrenaica* (y); *Achionema grandiflorum* (pi); *Ajuga orientalis* (b); *Allium Moly* (y); *A. neapolitanum* (w and g); *A. roseum* (l-pi); *Anemone decapetala* (c or y-w); *A. dichotoma* (w, tinged r); *A. rivularis** (w and p); *A. sylvestris* (w); *Anthericum Liliago* (w); *Antirrhinum tortuosum* (p); *Aquilogia caerulea* (b, w, and l); *A. olympica* (mv-b and w); *Arctotis speciosa* (y); *Armeria cephalotes* (pi or r); *Aster pyrenaeus* (l-b and y); *A. saluginosus* (v-p); *Boltonia glastifolia* (pi); *Brodiaea grandiflora* (b-p); *B. multiflora* (b-p); *Bupthalmum grandiflorum* (w); *B. salicifolium* (y); *Calceolaria amplexicaulis* (y); *C. corymbosa* (y, spotted p); *C. varieties*; *Calochortus albus* (w, blotched); *C. splendens* (b); *Campanula barbata** (b or w); *C. bononiensis* (b-v); *C. carpathica pelviformis* (l); *C. speciosa* (b, p, or w); *C. Tommasiniana* (b); *Cardamine asarifolia* (w); *C. pratensis* (p or w); *Centaurea dealbata* (pi); *C. suaveolens* (y); *Cerintho maculata* (y, spotted p); *C. minor* (y, spotted br); *C. rotorta* (y); *Cheiranthus Marshalli* (o); *Comarum palustrum* (p-br); *Commelina caelestis* (b or w); *Coreopsis auriculata* (y and p-br); *Cynanchum roseum* (pi-r); *Darlingtonia californica* (w or g, and y-g, veined r-br); *Delphinium Ajacis* (b, r, or w); *D. cashmirianum* (b); *D. nudicaule* (p); *Dentaria digitata* (p); *Dianthus superbus** (pi); *Dicentra formosa* (r); *Diotamnus albus* (w or p); *Dodecatheon Meadia* (p-r, w, or l) and vars.; *Doronicum austriacum* (y); *Dracocephalum austriacum* (b); *Epidemium macranthum* (w or v); *E. pinnatum* (y); *Erigeron speciosus* (v and y); *Fritillaria pyrenaica* (p); *Funkia ovata* (b-l or w); *Gaillardia aristata* (y and r); *Gazania Pavonia* (y, spotted br or w); *G. splendens* (o, spotted bk and w); *Gentiana quinqueflora* (l); *G. septemfida** (b); *Geranium atlanticum* (p, veined r); *G. daluricum* (p); *G. maculatum*

Flowering Plants (1ft. to 1½ft.)—continued.

(b); *G. phaeum* (br, spotted w); *Geum coccineum* * (r); *G. pyrenaicum* (y); *Gillenia trifoliata* (w to r); *Gladiolus Colvillei* (r and p); *G. varieties*; *Helicodiscus crinitus* (p-br); *Helleborus niger* * (w); *Hemerocallis Dumortieri* (o, tinged br); *Heuchera americana* (r); *Hieracium aurantiacum* (o); *Hyacinthus varieties* (sc); *Iris biflora* (v-p and y); *Laetia tuberosa* (b); *Leucoium aestivum* (w); *Lilium elegans sanguineum* (p-r and o-y); *L. oxypetalum* (l-p, spotted p); *L. roseum* (l); *Linaria macroura* (y); *Linum flavum* (o-y); *Lithospermum Gastoni* (b); *Lupinus nootkatensis* (b, mixed p, w, or y); *Lychnis chalcedonica* (r); *Monarda didyma* (r); *Morina Coulteriana* (y); *Muscari comosum monstrosum* (b-v); *Nierembergia frutescens* (b, edged w); *Nigella orientalis* (y, spotted r); *Oenothera linearis* (y); *Ornithogalum narbonense* (w, striped p); *O. thyrsoides* (y); *Orobus aurantius* (y); *Paeonia tenuifolia* (r); *Papaver nudicaule* (o, y, or w); *Pedicularis dolichorhiza* (o-y); *Pelargonium ardens* (r); *Pentstemon antirrhinoides* (y); *P. baccharifolius* (r); *P. campanulatus* (pi, p, or v); *P. confertus* * (y); *P. diffusus* (p); *P. Eatoni* (r); *P. heterophyllum* (pi or pi-p); *Phlomis herba-venti* (p-v); *Phlox amœna* * (p, pi, or w); *P. divaricata* (l or b); *P. ovata* (r-p); *Physochlaina physaloides* (p-v); *Potentilla Hopwoodiana* (pi and y); *Primula japonica* (variable); *P. Parryi* * (p, y eye); *P. Stuartii* (o-y); *P. verticillata simensis* (y); *Rhexia ciliosa* (p); *Ruscus Hypophyllum* (r); *Sagittaria sagittifolia* * (w and p); *Salvia carduacea* (l); *Saxifraga diversifolia* (y); *S. granulata* (w); *Scilla hyacinthoides* (b-l); *S. nutans* (b, p, w, or pi); *Scorzonera undulata* (p-pi); *Spigelia marilandica* (y and r); *Stachys lanata* (striped); *S. Maweana* (y, blotched p); *Streptopus roseus* (pi-p); *Teucrium Chamædrys* (pi); *Thermopsis barbata* (p); *Trifolium Lupinaster* (r); *Trillium grandiflorum* (w, turning pi); *Triteleia laxa* (l); *Tulipa Clusiana* (w, r, and bk); *T. Oculus-solis* (r, blotched bk and y); *T. proœox* (r, bk, and y); *T. varieties*; *Wulfenia carinthiaca* (b).

1½ft. to 2ft.—**ANNUALS.**—*Acroclinium roseum* (pi); *Argemone hirsuta* (w); *Borago officinalis* (b, p, or w); *Callistephus chinensis* (p); *Centranthus macrocephalus* (pi-r or w); *Clarkia elegans* (pi) and vars.; *C. pulchella* (p); *Collomia grandiflora* (r-y); *Coreopsis tinctoria* (y, blotched p-br); *Datura Metel* (w); *Gilia capitata* (b); *Heliotropium convolvulaceum* (w); *Helipterum Humboldtianum* (w); *Impatiens Balsamina* (r); *Loasa vulcanica* (w); *Mathiola annua* (variable); *Mentzelia ornata* (w); *Mirabilis Jalapa* (variable); *M. multiflora* (p); *Moricandia sonchifolia* (v-b); *Nicotiana suaveolens* (w, sc); *Nigella damascena* (w or b); *N. hispanica* (b); *Oenothera amœna* (pi, spotted r) and vars.; *Panicum capillare* (g); *P. miliaecum* (g); *Papaver Rhœas umbrosus* (r, blotched bk); *Phacelia Whitlavia* (b); *Salpiglossis sinuata* (p, y, &c., striped); *Salvia coccinea* (r); *Schizanthus candidus* (w); *S. Grahami* (l or pi, and y, tipped l); *S. pinnatus* (v or l); *Schizopetalon Walkeri* (w); *Scutellaria Hartwegi* (r and y); *Senecio elegans* (p and y); *Tagetes erecta* (y); *T. tenuifolia* (y); *Vicia onobrychioides* (p); *Xeranthemum annuum* (p); *Zinnia elegans* (r, pi, buff, or w).

BIENNIALS.—*Ageratum mexicanum* (l-b); *Anarrhinum bellidifolium* (w or b-w); *Colsia betonicifolia* (y, spotted p); *Glaucium flavum* (r).

PERENNIALS.—*Abronia fragrans* (w, sc); *A. umbellata* (pi); *Achillea ægyptiaca* (y); *A. Ptarmica flore-pleno* (w); *A. serrata* (w); *Aconitum delphinifolium* (b-p); *A. Gmelini* (c); *A. gracile* (b or v); *A. rostratum* (w); *A. Anthora* (y); *A. pyrenaicum* (y); *Adenophora coronopifolia* (b); *A. Lamarekii* (b); *Allium aznreum* (b); *A. sphaerocephalum* (r-p and g); *Amaryllis Belladonna* (w, r, or p); *Anemone virginiana* (p-g or p); *Anthierium Liliastrum* (v and g); *A. ramosum* (w); *Antirrhinum majus* (variable); *Aquilegia canadensis* (r and y); *A. fragrans* (w or p, sc); *Arototis arborescens* (w and pi); *Arnica Chamissonis* (y); *A. foliosa* (y); *Aselepias acuminata* (r and w); *A. tuberosa* (w); *Asphodelus albus* (w); *A. creticus* (y); *Aster acris*

Flowering Plants (1½ft. to 2ft.)—continued.

(b); *A. acuminatus* (v); *A. æstivus* (b); *A. Amellus* (p) and vars.; *A. conoideus* (p); *A. dumosus* (w) and vars.; *A. elegans* (b); *A. grandiflorus* (p); *A. hyssopifolius* (w or p-w); *A. lævis* (b); *A. linifolius* (w); *A. formosus* (pi); *A. pendulus* (w, turning pi-w); *Astilbe japonica* (w) and vars.; *Baptisia alba* (w); *Bessera elegans* (r, or r and w); *Boltonia asteroides* (w-pi); *Bravoa geminiflora* (o-r); *Brodiaea capitata* (v-b); *E. Howellii* (p-b); *E. lactea* (v and g); *Bupththalmum speciosissimum* (y); *Camassia Leichtlini* (c-w); *Campanula glomerata* (b-v or w); *C. grandis* (v-b or r); *C. latifolia macrantha* (p-b); *C. nobilis* (r-v, w, or c, spotted); *C. peregrina* (v); *C. sarmatica* (b); *C. Van Houttei* (b); *Caryopteris Mastacanthus* (r); *Centaurea aurea* (o-y); *C. montana* (b); *C. ragusina* (y); *Cheiranthus Cheiri* (variable, sc); *Chlorogalum pomeridianum* (w, veined p); *Chrysanthemum carinatum* (w or p); *Cineraria maritima* (y); *Clintonia Andrewsiana* (pi); *Cnicus acialis* (p); *Coreopsis verticillata* (o); *Criatum cespense* (g, flushed r); *Cyripodium parviflorum* (br-p and y); *Delphinium grandiflorum* * (b to w); *Dicentra spectabilis* * (pi-r or w); *Dracocephalum japonicum* (w and b); *Eromurus himalaicus* (p); *E. spectabilis* (y); *Erigeron multiradiatus* (p and y); *Erodium Manescavi* (p-r); *Eryngium alpinum* (b); *E. amethystinum* (b); *E. Bourgati* (b); *Eucomis punctata* (g and br); *Francoa appendiculata* (r); *F. sonchifolia* (pi); *Fritillaria recurva* (r); *Funkia grandiflora* (w); *F. subcordata* (w); *Gentiana Andrewsii* * (b); *G. Burseri* (y); *G. punctata* (y, spotted p); *Geranium sanguineum* (p); *G. sylvaticum* (p or b, veined r); *Gladiolus blandus* (w and r); *G. brachyandrus* (r); *G. varieties**; *Gypsophila Stevenii* (w); *Hesperis tristis* (w, w-pi, br-r, or p); *Hottonia palustris* (l and y); *Inula glandulosa* (y); *I. Hookeri* (y); *Iris filifolia* (p, keeled y); *I. Guldenstadiana* (w and y); *I. lævigata* (p, blotched y); *I. neglecta* (l, w, and y); *I. sambucina* (r-p and y); *I. vulgare* * (p); *I. xiphioides* * (p and y); *Kniphofia Rooperi* (o-r, turning y); *Lilium Catesbii* (o-r, spotted p); *L. japonicum* (w and p-w); *L. longiflorum* (w); *Linum narbonense* (b or w); *Lobelia cardinalis* (r); *L. fulgens* (r); *L. splendens* (r); *L. sylvatica* (b); *Lupinus ornatus* (b); *L. perennis* (b); *Lysimachia atropurpurea* (p); *Meum athamanticum* (w); *Morina longifolia* (w); *Myosotis sylvatica* (b); *Nicotiana acutiflora* (w); *Nothoscordium fragrans* (w, barred l, sc); *Oenothera californica* (w and y, turning pi and y); *O. glauca* (y); *Ononis Natrix* (y, veined r); *Ornithogalum arabicum* (w); *O. pyramidale* (w, striped p); *Paeonia Wittmanniana* (y-w); *Papaver pilosum* * (r or o); *Pentstemon Hartwegi* (r or p-r); *P. vonustus* (y); *Phlomis cashmeriana* (l); *Phlox glaberrima* (r or pi); *P. maculata* (p) and vars.; *P. pilosa* (pi, p, or w); *Polemonium œruleum* (b); *Polygonum compactum* (w); *Potentilla congesta* (p); *Primula leucola* (y); *P. sikkimensis* (y); *Psoralea melilotoides* (y); *Pyrethrum achillesefolium* (o-y); *P. roseum* (pi and y); *P. Tchihatchewii* (w and y); *Ranunculus acontifolius* * (w); *R. cortusifolius* (y); *Salvia asperata* (w); *S. coccinea* (r); *S. hians* (b); *S. Rœmeriana* (r); *Sarracenia Drummondii* (p); *S. flava* (y); *Saxifraga Cotyledon* (w); *S. peltata* (w or pi); *Sedum maximum* * (g or p-g); *S. spectabile* (pi); *Senecio pulcher* (p and y); *Silene virginica* (pi); *Smilacina stollata* (w); *Spiraea palmata* (r); *Sprekelia formosissima* (r or w); *Statice elata* (b); *S. floribunda* (v-b); *Teuchoclis virginiana* (y-w); *Thermopsis montana* (y); *Tradescantia virginica* (v, p, or w); *Tritonia crocata* (y); *Trollius europæus* * (y); *Tulipa Eichleri* (r, blotched bk, and bordered y); *T. Geanericana* (r) and vars.; *T. sylvestris* (y); *Verbena venosa* (l or b); *Veronica inoana* (b); *Xerophyllum asphodeloides* (w).

2ft. to 3ft.—**ANNUALS.**—*Amarantus caudatus* (r-p); *Centaurea americana* (r); *C. Cyanus* (p); *Datura fastuosa* (v and w); *Gaillardia amblyodon* (r); *Lamarckia aurea* (g); *Lunaria annua* (v-l); *Nicotiana affinis* (w, sc); *N. longiflora* (w, turning p or y-g); *Perilla ocimoides crispata* (w); *Scabiosa atropurpurea* (r).

Flowering Plants (2ft. to 3ft.)—continued.

BIENNIALS.—*Aster Bigelovii* (l and y); *Grindelia grandiflora* (y or o); *Meconopsis simplicifolia* (v-p); *Salvia bicolor* (b-v, dotted y and w); *Verbascum Chaixii* (y); *V. phoeniceum* (v or r).

PERENNIALS.—*Acanthus montanus* (pi); *Achillea macrophylla* (w); *A. millefolium roseum* (pi); *Aconitum angustifolium* (b); *A. paniculatum* (v); *A. vulpina* (y); *A. Willdenovii* (b-p); *Acorus Calamus* (y); *Actinomeris alata* (y); *A. helianthoides* (y); *A. squarrosa* (y); *Adenophora verticillata* (b); *Agrimonia odorata* (y); *Allium nigrum* (v, or w and g); *Althaea caribaea* (pi, y); *A. floxosa* (r); *Amonia salicifolia* (b); *A. Tabernamontana* (b); *Anemone japonica* (pi-r); *A. j. alba* (w); *A. j. olegans* (pi) and vars.; *Anemonopsis macrophylla* (p and l); *Aquilegia atropurpurea* (p or b-v); *Asclepias amœna* (p and r); *Aster dracunculoides* (w); *A. ericoides* (w); *A. longifolius* (w); *A. multiflorus* (w); *A. sikkimensis* (p); *A. Tradescanti* (w); *A. versicolor* (w, turning p); *Antible rivularis* (y-w or r); *Baptisia perfoliata* (y); *Brodiaea coccinea* (r and y-g); *Bupleurum longifolium* (g-y); *Calochortus purpureus* (g, p, and y); *Campanula parisiensis* (b, varying to w); *C. Rapunculus* (b or w); *C. Trachelium* (b, varying to w); *Cedronella mexicana* (p); *Centaurea atropurpurea* (p); *C. alpina* (y); *Centranthus ruber* (r or w); *Cheiranthus mutabilis* (c, turning to p, or striped); *Chelone obliqua* (p or w); *Chrysanthemum sinense* (variable); *Chrysobactron Hookeri* (y); *C. Kossii* (y); *Cimicifuga americana* (w); *C. japonica* (w); *Clematis recta* (w); *C. tubulosa* (b); *Cypripedium spectabile* (w and pi); *Delphinium azureum* (b); *D. formosum* (b); *Digitalis ambigua* (y and br); *Doronicum Pardalianches* (y); *Echinops Ritro* (b); *Eulalia japonica* (p) and vars.; *Francoa ramosa* (w); *Fritillaria imperialis* (variable); *F. macrophylla* (pi); *F. persica* (v-b); *Gaillardia pulchella* (r, tipped y); *Geranium pratense* (b); *Geum rivale* (r); *Gladiolus orcuttus* (r and y-w); *G. cuspidatus* (p and r); *G. Papilio* (p and y); *G. psittacinus* (r, g, p, spotted y); *G. Saundersii* (r, spotted w); *Gypsophila paniculata* (w); *Helianthus rigidus* (y); *Hemerocallis flava* (o, sc); *H. Middendorfi* (y); *Hesperis matronalis* (variable, sc); *Hypericum perforatum* (y, dotted bk); *Iris flavescens* (y); *I. florontina* (l, g, br, and y); *I. foetidissima* (b-l); *I. fulva* (y-br); *I. germanica* (p, y, and w); *I. Pseudo-acorus* (o-y, veined br); *I. sibirica* (l-b, veined w); *Lactuca alpina* (p-b); *Leucothoe axillaris* (w); *Lilium canadense* (y to r, spotted); *L. candidum* (w); *L. chalcedoniense* (r or y); *L. concolor* Buschianum (r, spotted bk); *L. davuricum* (r); *L. Leichtlinii* (y, spotted p-r, p, and r); *L. Martagon* (p-r, spotted p); *L. non-adelphum* (y and p-r); *L. philadelphicum* (o-r, spotted p); *L. pomponium* (r, or r and o); *L. speciosum* (w, spotted p-r) and vars.; *Linaria purpurea* (b-p, striped p); *Lophanthus anisatus* (b); *Lychnis coronaria* (r); *L. diurna* (p-pi); *L. vespertina* (w); *Lysimachia ciliata* (y); *L. clethroides* (w); *L. vulgaris* (y); *Lythrum Graefferi* (pi); *Malva Alcea fastigiata* (r); *M. moschata* (pi or w); *Mimulus cardinalis* (r); *Nolina georgiana* (w); *Oenothera speciosa* (w, turning pi); *Orchis foliosa* (p); *O. militaris* (p); *Pœonia albiflora* (w); *P. Emodi* (w); *P. Montan* (variable); *P. officinalis* (r); *Papaver orientale* (r, spotted p); *Pentstemon barbatus* (pi-r); *P. Murrayanus* (r); *Polygonatum biflorum* (g); *P. multiflorum* (w); *Polygonum amplexicaule* (pi-r or w); *Potentilla argrophylla* (y); *Rudbeckia pinnata* (y); *R. speciosa* (y and bk-p); *Sagittaria heterophylla* (w); *Salvia discolor* (p and v-b); *S. patens* (b); *S. Sclarea* (w-b); *Saponaria officinalis* (l or w); *Scabiosa amœna* (l or p); *Scolymus grandiflorus* (y); *Silene maritima* (w); *Solidago Drummondii* (y); *S. lanceolata* (y); *Spiraea Filipendula* (w or pi); *Symphytum caucasicum* (b); *S. officinalis* (r or r-p) and vars.; *Triocrytis hirta* (w, dotted p); *T. macropoda* (w-p, dotted p); *T. m. striata* (w-p, dotted p); *T. pilosa* (w, spotted p); *Veratrum nigrum* (bk-p); *Zygadenus glaberrimus* (w).

Flowering Plants—continued.

3ft. to 4ft.—ANNUALS.—*Bartonia albaecons* (y); *Chrysanthemum coronarium* (y); *Delphinium cardinale* (r); *Helichrysum bracteatum* (variable); *Linaria reticulata* (p and y); *Loasa Pentlandii* (o); *Nicandra physaloides* (b); *Nicotiana Tabacum* (pi-w); *Papaver Hookeri* (pi or r, blotched w, or b-bk); *P. somniferum* (variable); *Ranunculus Lyalli* (w); *Solanum Fontanesianum* (y).

BIENNIALS.—*Bartonia albaecons* (y); *Campanula Medium* (b, w, and w); *Centaurea macrocephala* (y); *Oenothera-biennis* (y); *Silphium Marianum* (pi-p).

PERENNIALS.—*Acanthus longifolius* (p-pi); *A. mollis* (v and p); *A. spinosissimus* (pi); *A. spinosus* (p); *Aconitum autumnale* (b-p); *A. emincens* (b); *A. Napellus* (b); *A. oehroleucum* (c); *A. Ottonianum* (b and w); *A. septentrionale* (b); *A. tauricum* (b); *Aquilegia chrysantha* (g-y) and var.; *A. formosa* (r and g); *Aster Douglasii* (p); *A. floribundus* (p); *A. nove-belgii* (b); *A. paniculatus* (b); *Baptisia exaltata* (b); *Calceolaria lobata* (y); *C. Pavonii* (y and br); *Campanula rapunculoides* (b-w); *Chelone Lyoni* (p); *Coreopsis grandiflora* (y); *Echinacea angustifolia* (l or pi); *E. purpurea* (r-p and y-y); *Eryngium giganteum* (b); *Galega officinalis* (b or w); *G. orientalis* (b); *Galettia candidans* (w); *Gaura Liridheimeri* (pi-w); *Gladiolus cardinalis* (r, spotted w); *G. purpureo-aureatus* (o-y, blotched p); *Glycyrrhiza glabra* (b); *Gypsophila cerastoides* (w, veined r); *Hedysarum coronarium* (r); *Homeroacallis fulva* (y); *Incarvillea Olga* (pi); *Iris aurea* (y); *I. Monnierii* (r); *Kerria japonica* (o-y); *Kniphofia aloides* (pi-r, turning o and then g-y); *Lilium auratum* (w and y, spotted p); *L. bulbiferum* (r); *L. cordifolium* (w, y, p); *L. Hansoni* (r-l, dotted p); *L. Kramerii* (r-w); *L. pseudo-tigrinum* (r, spotted bk); *L. pyrenaicum* (y); *L. tigrinum* (o-r, spotted p-bk); *Lupinus polyphyllus* (b); *Moraea edulis* (w); *Papaver bracteatum* (r); *Pedicularis Scoptrum-Carolinum* (o-y); *Phlox paniculata* (pi-p, varying to w); *Prenanthes purpurea* (p); *Romneya Coulteri* (w); *Rudbeckia grandiflora* (y and p); *R. purpurea* (p); *Salvia indica* (y, spotted p); *S. interrupta* (v-p and w); *Senecio Doria* (y); *Silphium trifolium* (r-p); *Smilacina oleracea* (w, tinged pi); *Spiraea Ulmaria* (w); *Trillium nivale* (w); *Tritonia Pottsi* (r and y); *Urginea maritima* (g-w); *Veratrum album* (g-w).

4ft. to 5ft.—ANNUALS.—*Amaranthus hypochondriacus* (r) and var.; *A. speciosus* (r-p).

BIENNIALS.—*Digitalis purpurea* (p, edged w); *Meconopsis nepalensis* (o-y).

PERENNIALS.—*Achillea Eupatorium* (y); *Aconitum album* (w); *Baptisia australis* (b); *Cimicifuga racemosa* (w); *Dicentra chrysantha* (o); *Doronicum plantagineum* (w); *Epilobium hirsutum* (w-pi or w); *Leucothoe Davisia* (w); *Lilium Washingtonianum* (p-w); *Lophanthus scopularisifolius* (p); *Iythrum Salicaria* (r-p); *Monarda fistulosa* (p); *Onopordon Acanthium* (p); *Panicum virgatum* (g); *Phalaris arundinacea* (p-y); *Pyrethrum uliginosum* (w and y); *Yucca angustifolia* (g-w); *Y. flexilis ensifolia* (r-w).

5ft. to 6ft.—ANNUALS.—*Helianthus annuus* (variable); *Impatiens amphorata* (p, speckled r).

BIENNIAL.—*Celsia cretica* (y, spotted r-br).

PERENNIALS.—*Aconitum barbatum* (c); *A. chinense* (b); *A. Halleri* (v); *A. japonicum* (p-w); *A. lycocotum* (v); *A. variegatum* (b); *Althaea cannabina* (pi); *A. narbonensis* (pi); *Aster novæ-angliæ* (p) and vars.; *Campanula lactiflora* (c-b or b); *Clematis aethusifolia* (w); *C. aromatica* (v-b); *C. Viorna coccinea* (r, y inside); *Datisca cannabina* (y); *Delphinium dasycarpum* (b); *D. exaltatum* (b or w); *Desmodium canadense* (r-p); *Echinops commutatus* (w); *Epilobium angustifolium* (r); *Gentiana lutea* (y); *Helenium autumnale* (y); *Lilium croceum* (r-y); *L. Parryi* (y, spotted b-r); *L. superbum* (o-r, spotted r); *Orobis flaccidus* (p); *Pentstemon breviflorus* (y, or w-pi, striped); *Silphium laciniatum* (y); *Solidago speciosa* (y); *Yucca glauca* (w).

Flowering Plants—continued.

6ft. to 8ft.—ANNUAL.—*Althea rosea* (p).

PERENNIALS.—*Aconitum uncinatum** (l); *Actinomeris proera* (y); *Amicia Zygomeris* (y, splashed p); *Clematis cœrulea* (v); *Lilium pardalinum** (o-r, o, spotted p); *L. tigrinum Fortunei* (o-r, spotted p-bk); *Polygonum cuspidatum** (c-w); *Yucca filamentosa glaucescens* (g-w).

8ft. to 10ft.—ANNUALS.—*Impatiens Roylei* (g); *Ipomœa hederacea* (b); *I. purpurea* (p); *Polygonum orientale* (pi-p or w).

PERENNIALS.—*Aciphylla Colensoi* (w); *A. squarrosa* (w); *Centaurea babylonica* (y); *Cnicus altissimus** (p); *Eremurus robustus* (peach); *Gynierium argenteum** (si); *Helianthus orgyalis** (y); *Leucothoë racemosa** (w); *Lilium giganteum** (g-w and p); *Rudbeckia maxima** (y); *Sida Napea** (w).

10ft. to 14ft.—ANNUAL.—*Solanum crispum* (b-y).

BIENNIAL.—*Micahuxia lævigata* (w).

PERENNIALS.—*Arundo conspicua** (si-w); *A. Donax* (r-w, turning w); *Polygonum sachalinense* (g-y).

FOLIAGE PLANTS.—1in. to 3in.—ANNUAL.—*Sedum cœruleum* (g).

BIENNIAL.—*Sedum cœruleum* (g).

PERENNIALS.—*Ajuga reptans* (g); *Androsace argentea* (si-gy); *A. carnea* (g); *A. helvetica* (g); *A. Vitaliana* (y); *Diapensia lapponica* (g); *Lomaria pumila* (g); *Nertera depressa* (g); *Pyxidantha barbulate* (g); *Saxifraga Burseriana* (gl-g); *S. cœsia* (g, dotted); *S. cœspitosa* (g); *S. cœrtæfolia* (g, fading to r-b, or r); *S. Maweana* (g); *S. moschata* (g); *S. pygmaea* (g); *S. retusa* (g, dotted); *Sedum acre aureum* (o-y); *S. anglicum* (g); *S. brevifolium* (g); *S. glaucum* (g-gy, turning g-r); *S. kamtschaticum* (g or p).

3in. to 6in.—ANNUALS.—*Androsace coronopifolia* (g); *Sedum glandulosum* (g); *S. sempervivoides* (g and g-r).

BIENNIAL.—*Sedum sempervivoides* (g and g-r).

PERENNIALS.—*Androsace Chamajasma* (g); *A. lactea* (g); *A. sarmentosa* (si-g); *Artemisia Mutellina* (g-w); *Asplenium Rota-muraria* (g); *A. septentrionale* (g); *Botrychium Lunaria* (g); *Cerastium alpinum* (si); *Corydalis bracteata* (g); *C. cava* (g); *Cryptogramme crispa* (g) and var.; *Hymenophyllum tunbridgense* (g); *Linaria Cymbalaria* (g) and var.; *Poa trivialis albo-vittata* (g, margined w); *Pyrola secunda* (g); *Sarracenia Courtii* (r-p, veined p); *S. formosa* (r, spotted w, veined p); *S. psittacina* (g, spotted w, veined p); *S. purpurea* (g, veined p); *Saxifraga longifolia* (g); *Sempervivum arachnoideum* (g and r-b); *S. montanum* (g); *S. Pittoni* (g, tipped r-p); *Tussilago Farfara variegata* (g, blotched c-w).

6in. to 12in.—ANNUALS.—*Agrostis pulchella* (g); *Amarantus melancholicus ruber* (r-g); *Gymnogramme leptophylla* (g); *Lagurus ovatus* (g, downy); *Mandragora vernalis* (g).

PERENNIALS.—*Aira flexuosa* (g); *Androsace lanuginosa* (g); *Artemisia alpina* (w-g); *Asplenium Ceterach* (g); *A. fontanum* (g); *A. Trichomanes* (g) and vars.; *A. viride* (g); *Astrantia carnioleca* (w and g, tipped r); *Briza media* (g); *B. minor* (g); *Chenopodium Bonus-Henriens* (g); *Disporum lanuginosa* (g); *Hypericum elegans* (g, dotted bk); *Kœnigia spinosa* (si); *Lomaria alpina* (g); *L. Spicant* (g); *Lycopodium dendroideum* (g); *Nephradium*

Foliage Plants (6in. to 12in.)—continued.

fragrans (g); *Sarracenia cheloni* (r, veined p); *Saxifraga sarmentosa tricolor* (g, w, and r); *Sedum Aizoon* (g); *S. Rhodiola* (gl); *Sempervivum arenarium* (g and r-b); *S. atlanticum* (g and r-b); *S. Boissieri* (g); *S. Braunii* (g, tipped p); *S. calcareum* (g, tipped r-br); *S. ambriatum* (g, turning r); *S. Funckii* (g); *S. Henfellii* (g); *S. Lamottei* (g, tipped r-br); *S. Pomelii* (g); *S. soboliferum* (g, tinged r-br); *S. Wulfeni* (gl-g, tipped r-br).

1ft. to 1½ft.—ANNUALS.—*Agrostis nebulosa* (g); *Amarantus tricolor* (p-r, g, and y); *Chenopodium ambro-*

PERENNIALS.—*Artemisia argentea* (si-g); *A. tanacetifolia* (w-g); *Asplenium marinum* (g) and vars.; *Briza maxima* (g); *Corydalis Semenowii* (gl-g); *Disporum pullum* (g); *Heuchera americana* (g); *H. sanguinea* (g); *Nephradium decursivopinnatum* (g); *Polypodium Dryopteris* (g); *P. Phegopteris* (g); *Sarracenia rubra* (g, veined p); *Scorzonera undulata* (g); *Sedum erythrodictum* (g) and vars.; *Sempervivum calcareatum* (g, tipped r-br); *Yucca glauca* (gl-g).

1½ft. to 2ft.—ANNUALS.—*Amarantus bicolor* (g, streaked y); *A. b. ruber* (r, v-r, g); *Hordeum jubatum* (g).

PERENNIALS.—*Aletris alchemilla* (g); *A. farinosa* (g); *Artemisia Dracunculus* (g); *Asplenium Michauxii** (g); *Astrantia major* (g); *Carlina acanthifolia* (g); *Ligularia Kämpferi aureo-maculata* (g, blotched y, w, or p); *Meum athamanticum* (g); *Nephradium erythrosorum* (g); *N. rigidum* (g); *Onychium japonicum* (g); *Sarracenia Drummondii* (w, veined p) and vars.; *S. flava* (y, r, veined p); *Spirœa palmata* (g and r); *Stipa pennata* (si); *Xerophyllum asphodeloides* (g); *Yucca angustifolia* (g); *Y. filamentosa glaucescens* (gl).

2ft. to 3ft.—ANNUALS.—*Amarantus salicifolius* (o, pi, and bronze); *Perilla ocimoides crispa* (bronzyp); *Zea Mays* (g) and vars.

PERENNIALS.—*Adiantum pedatum* (g); *Artemisia cana* (si); *Arundo Donax versicolor* (g and w); *Adiantum nigrum* (g) and vars.; *Eulalia japonica foliis striatis* (g, striped c); *E. j. zebrina* (g, striped y); *Juncus læteviridis* (g); *Nephradium œmulum* (g); *N. Filix-mas* (g); *N. floridanum* (g); *N. molle cristata* (g); *Osmunda Claytoniana* (g); *Rheum nobile* (g, nerved r); *Scorzonera hispanica* (g); *Sedum maximum hematodes* (g-p); *Yucca flexilis ensifolia* (gl-g).

3ft. to 4ft.—PERENNIALS.—*Artemisia Abrotannum* (g); *A. vulgaris* (g and w, or g and o); *Asplenium Filix-fœmina** (g) and vars.; *Gunnera scabra* (g); *Heuchera hispida* (g); *Nephradium Goldieanum* (g); *Osmunda cinnamomea* (g).

4ft. to 5ft.—ANNUALS.—*Amarantus speciosus* (r-g); *Ricinus communis* (g) and var.

PERENNIAL.—*Ferula asparagifolia* (g).

5ft. to 6ft.—PERENNIALS.—*Arundinaria falcata** (g); *Gunnera manicata* (g); *Gynierium argenteum*

6ft. to 8ft.—PERENNIALS.—*Ferula glauca* (gl-g); *F. tingitana* (g); *Osmunda regalis** (g).

9ft. to 15ft.—BIENNIAL.—*Adlumia cirrhosa* (g).

PERENNIALS.—*Arundo conspicua** (g); *A. Donax* (gl-g); *Cornus mas* (g) and var.; *Eryngium pandanifolium* (g); *Ferula communis* (g); *Rheum officinale** (g); *Smilax aspera* (g, spotted w).



AN INDEX TO FERNS AND LYCOPODS.

THE object of this section of the Supplement is to present to the gardener, at a glance, a list of the most desirable Ferns and Lycopods for culture either in or out of doors. The combined lengths of the stipes and fronds are shown in feet and fractions of a foot. It is impossible to give accurately the heights of some of the Tree-ferns, the length of the caudex so much depending on the age of the plant, and the circumstances under which it is grown.

HARDY.—*Adiantum pedatum* (1½-3); *Aspidium acrostichoides* (1½-2½) and vars.; *A. aculeatum* (1½-4); *A. Lonchitis* (1-2½); *A. munitum* (1½-2¾); *Asplenium Ceterach* (½-2) and vars.; *A. crenatum* (1½-2¼); *A. Filix-foemina* (1½-4) and vars.; *A. fontanum* (½-2); *A. germanicum* (½-2); *A. Goringianum pictum* (½-1½); *A. lanceolatum* (¾-1) and vars.; *A. marinum* (¾-2) and vars.; *A. Rutamuraria* (½-1); *A. septentrionale* (½-1); *A. Trichomanes* (½-1½) and vars.; *A. viride* (½-2); *Botrychium Lunaria* (½-1); *B. virginianum* (½-2½); *Cheilanthes Clevelandi* (½-1); *C. lanuginosa* (½-1); *Cryptogramme crispa* and vars.; *Gymnogramme leptophylla* (½-2); *Hymenophyllum tunbridgeense* (½ to 1); *Lomaria Spicant* (¾-1); *Lycopodium dendroideum* (½-2); *Nephrodium æmulum* (2-3½); *N. decursivo-pinnatum* (1½-1¾); *N. erythrorum* (1½-1¾); *N. Filix-mas* (2½-3½) and vars.; *N. floridanum* (2-2¾); *N. fragrans* (½-2); *N. Goldieanum* (3-4); *N. rigidum* (1½-2); *N. spinosum* (2-2½) and vars.; *Onoclea germanica*; *O. sensibilis*; *Osmunda cinnamomea* (2-3); *O. Claytoniana* (2-3); *O. regalis* (3-7½) and vars.; *Polypodium Dryopteris* (1-2); *P. Phegopteris* (1-1½); *P. vulgare* (¾-1½) and vars.; *Pteris aquilina* (3-5); *Trichomanes radicans* (½-1½).

HALF-HARDY.—*Adiantum venustum* (1-1½); *Cheilanthes fragrans* (½-1); *C. vestita* (½-1); *Lomaria alpina* (½-2); *L. pumila* (½-2); *Onychium japonicum* (1½-2½); *Ophioglossum bulbosum* (½-1).

COOL-HOUSE.—*Acrostichum Blumeanum* (1½-3); *A. muscosum* (¾-1½); *A. squamosum* (½-1½); *A. subdiaphanum* (½-1); *Adiantum affine* (¾-1½); *A. bellum* (½-1); *A. Capillus-Veneris* (½-2) and vars.; *A. colpodis* (1-2); *A. cuneatum* (1½-2½) and vars.; *A. decorum* (1-1½); *A. diaphanum* (¾-1½); *A. formosum* (2½-3½); *A. fulvum* (1½-2½); *A. glaucophyllum* (1½-2½); *A. gracillimum* (1½-2½); *A. hispidulum*; *A. Luddemannianum* (½-2); *A. monochlamys* (1-1½); *A. reniforme* (½-2); *A. rubellum* (½-1); *A. venustum* (1-1½); *A. Williamsii* (1½-2); *Allantodia Brunonianana* (1-2); *Anemia Phyllitidis* (½-1½); *A. tomentosa* (1-2); *Aspidium aristatum* (1½-2½) and vars.; *A. capense* (2-5); *A. falcinellum* (1-2); *A. foniculaceum*

Cool-house—continued.

(1½-3); *A. laserpitifolium* (1-2); *A. varium* (1½-2½); *Asplenium acuminatum* (1½-2¾); *A. angustifolium* (2½-3); *A. dentatum* (½-2); *A. ebenum* (1½-2); *A. falcatum* (1-2½); *A. fissum* (½-1); *A. flabellifolium* (½-2); *A. furcatum* (¾-2); *A. Goringianum pictum* (½-1½); *A. Hemionitis* (¾-1½) and vars.; *A. laserpitifolium* (1½-5); *A. monanthemum* (1½-2); *A. montanum* (½-1); *A. nitidum* (3-4); *A. novæ-caledoniæ* (1½-2); *A. obtusatum lucidum* (¾-2½); *A. oxyphyllum* (1½-3); *A. Petrarchum* (½-1); *A. planicaule* (¾-1½); *A. rosectum* (¾-2); *A. rhizophyllum* (¾-1½) and vars.; *A. rutæfolium* (¾-2); *A. Sandersoni* (½-1); *A. Selosii* (½-1); *A. spinulosum* (1½-2); *A. Viellardii* (¾-1½); *Botrychium ternatum* (½-1); *Cheilanthes argentea* (½-2); *C. capensis* (¾-1); *C. Eatoni* (½-1½); *C. Fendleri* (½-2); *C. gracillima* (½-2); *C. Lindheimeri* (½-1); *C. Sieberi* (½-1); *C. tomentosa* (¾-1½); *C. Wrightii* (½-1); *Davallia affinis* (1½-2½); *D. canariensis* (1½-2); *D. dissecta* (1½-2); *D. elegans* (1½-2½); *D. filjonis* (1½-2½); *D. hirta* (4-8); *D. pallida* (3-4½); *D. pentaphylla* (½-2); *D. platyphylla* (3-7); *D. pyxidata* (1-2); *D. repens* (¾-1½); *D. solida* (1½-2½); *D. tenuifolia* (1½-2½); *D. Tyermannii* (½-2); *Doodia aspera* (¾-1½); *D. media* (1½-2); *Fadyenia prolifera* (½-2); *Gleichenia rupestris* (2-6); *Hymenophyllum demissum* (½-1½); *H. pulcherrimum* (¾-1½); *Hypolepis distans* (1½-1½); *Lomaria Banksii* (¾-1); *L. blechnoides* (½-1); *L. Boreana* (1-1½); *L. discolor* (1-3); *L. Fraseri* (1-2); *L. nigra* (½-2); *L. proceræ* (1½-4); *Lygodium japonicum*; *Mohria caffrorum* (¾-1½); *Nephrodium octopterum* (7-10); *N. cyatheoides* (3-5); *N. decompositum* (2-3½); *N. hispidum* (2-3); *N. insquale* (2-3); *N. Richardi* (1½-1½); *N. Sieboldii* (1-2); *Nephrolepis pluma* (4-5); *Nothochloana Eckloniana* (¾-1½); *N. hypoleuca* (½-2); *N. lanuginosa* (½-2); *N. Marantæ* (½-1½); *N. nivea* (½-1); *Onychium japonicum* (1½-2½); *Osmunda javanica* (1½-4); *Pellaea andromedæifolia* (1-1½); *P. atropurpurea* (½-1½); *P. brachyptera* (¾-1); *P. Bridgesii* (½-2); *P. falcata* (¾-2); *P. hastata* (1-3); *P. ornithopus* (½-1); *P. rotundifolia* (1-2); *Platycoerium alciocorne* (2-3); *Polypodium drepanum* (2½-4½); *P. pustulatum* (½-1); *Pteris arguta* (2-4); *P. cretica* (1-2); *P. scaberula* (1½-2½); *P. serrulata* (1½-2½); *P. tremula* (¾-5); *P. umbrosa*

Cool-house—continued.

(2-3); *Schizæa bifida* (½-1½); *S. rupestris* (½-1); *Selaginella albo-nitens*; *S. apus*; *S. denticulata*; *S. Kraussiana*; *S. lepidophylla*; *S. Martensii*; *S. Poulteri*; *S. uncinata*; *Todea hymenophylloides* (1½-3); *Trichomanes alatum* (½-1½); *T. Bancroftii* (½-1); *T. Kraussii* (1); *T. maximum* (1½-2); *T. pyxidiferum* (½-1); *T. rigidum* (½-1½); *T. trichoides* (½-1); *Woodсия mollis*; *W. obtusa* (½-1½); *W. polystichoides* (1-1½); *Woodwardia areolata* (½-1); *W. Harlandii* (½-1½); *W. radicans* (3-6) and vars.

STOVE.—*Acrostichum acuminatum* (1½-2½); *A. apifolium* (½-1); *A. apodum* (1); *A. appendiculatum* (½-2); *A. aureum* (3-8); *A. auritum* (1-1½); *A. canaliculatum* (3-4); *A. cervinum* (3-5); *A. conforme* (½-1); *A. crinitum* (1-2½); *A. fœniculaceum* (½-1); *A. Harminieri* (1½-3); *A. latifolium* (1½-2½); *A. lepidotum* (½-1); *A. nicotianafolium* (2½-5); *A. osmundaceum* (2-3½); *A. peltatum* (½-1); *A. quercifolium* (½-1); *A. scolopendrifolium* (1½-2); *A. scandens* (1½-3½); *A. sorbifolium* (1½-2½); *A. squamosum* (½-1½); *A. subrepandum* (1-2); *A. taccæfolium* (1-2½); *A. tenuifolium* (3½-5½); *A. villosum* (½-1); *A. viscosum* (½-1½); *Actiniopteris radiata* (½-1); *Adiantum œmulum* (1); *A. œthiopicum* (1½-2½); *A. aeneitense* (1½-2); *A. Bausesi* (1½-2); *A. caudatum* (½-1½); *A. concinnum* (1½-2½); *A. crenatum* (1-1½); *A. cubense* (½-1½); *A. curvatum* (1-2); *A. digitatum* (2-4½); *A. Edgworthii* (½-1½); *A. exoicium* (½-1½); *A. Feei* (2-3½); *A. flabellulatum* (½-1); *A. Ghiesbreghtii* (1½-2½); *A. Henslovianum* (1½-2½); *A. Lathomii* (1½-2); *A. Lindeni*; *A. lucidum* (1½-2); *A. lunulatum* (½-1½); *A. macrophyllum* (1½-2½); *A. Moorei* (1-2); *A. neoguineense* (½-1); *A. palmatum* (3-5½); *A. peruvianum* (½-1½); *A. polyphyllum* (3-4½); *A. princeps* (2½-3); *A. pulverulentum* (½-1½); *A. Seemanni* (1½-1½); *A. tenerum* (2-4) and vars.; *A. tetraphyllum* (1-1½); *A. tinetum* (1-1½); *A. trapeziforme* (1½-3) and vars.; *A. Veitchianum* (1½-2½); *A. velutinum* (3-4); *A. villosum* (1½-2); *Anemia adiantifolia* (1½-2½); *A. Dregeana* (1½-2); *A. mandiocana* (1½-2); *Antrophyum laroelatum* (1-1½); *Aspidium auriculatum* (1½-2) and vars.; *A. falcatum* (1½-3); *A. mucronatum* (1-2); *A. triangulum* (1-1½); *Asplenium alatum* (1½-2); *A. auriculatum* (1½-2); *A. Baptistii* (1½-1½); *A. Belangeri* (1½-2); *A. bisectum* (1½-2); *A. cicutarium* (½-1½); *A. cultrifolium* (½-1½); *A. dimidiatum* (1-2½); *A. dimorphum* (2½-4); *A. esculentum* (5-8); *A. fejeense* (2-2½); *A. fragrans* (½-1½); *A. Francoisi* (2-3); *A. heterocarpum* (½-1½); *A. longissimum* (2½-9); *A. lunulatum* (½-1½); *A. melanocaulon* (3-5); *A. Nidus* (2-4) and vars.; *A. obtusifolium* (1½-2½); *A. obtusilobum* (½-1); *A. paleaceum* (½-1); *A. pulchellum* (½-1); *A. rhizophorum* (1½-2½); *A. Shepherdi* (2-2½); *A. Thwaitesii* (1½-1½); *A. trilobum* (½-1); *A. vittiforme* (1-1½); *A. viviparum* (1½-2½); *A. zeylanicum* (½-1½); *Ceratopteris thalictroides*; *Cheilanthes farinosa* (½-1½); *C. lendigera* (½-1); *C. microphylla*; *C. mysorensis* (½-1); *C. radiata* (1-1½); *C. rufa* (½-1); *C. viscosa* (½-1); *Deparia con-*

Stove—continued.

cinna (1-1½); *D. prolifera* (½-1); *Gleichenia circoinata* (1½-2) and vars.; *G. dicarpa* (1½-2); *G. dichotoma* (½-1); *G. flagellaris* (½-1); *G. longissima* (½-2); *G. pectinata* (2½-3); *G. pubescens* (2½-3); *Gymnogramme calomelanos* (1½-4); *G. decomposita* (2-2½); *G. javanica* (2-8); *G. lanceolata* (½-1); *G. Lathamie* (2-2½); *G. macrophylla* (1-1½); *G. Pearcei* (1½-1½); *G. schizophylla* (1½-2); *G. sulphurea* (½-1½); *G. tartarea* (1½-3); *G. triangularis* (½-1½); *Hymenophyllum œruginosum* (½-1); *H. ciliatum* (½-1); *H. hirsutum* (½-1); *H. polyanthos* (½-1); *Hypolepis Bergiana* (3-4½); *Lindsaya adiantoides* (½-1); *L. cultrata* (½-1); *L. guianensis* (1½-3); *L. reniformis* (½-1); *L. stricta* (2-4); *L. trapeziformis* (1-2½); *Lomaria attenuata* (1½-3); *Lycopodium Phlegmaria* (2-2½); *L. taxifolium* (½-1); *Lygodium dichotomum* (½-1½); *L. palmatum*; *L. reticulatum*; *L. scandens*; *L. verustum*; *L. volubile*; *Nephrodium Arbuscula* (1½-2½); *N. circutarium* (2-3); *N. cuspidatum* (3-4); *N. detoideum* (1½-2½); *N. glandulosum* (2-3); *N. Leuzeanum* (6-9); *N. molle* (2-3) and vars.; *N. patens* (3-4); *N. pteroides* (3-6); *N. venustum* (3-3½); *N. vestitum* (1½-3); *N. villosum* (6-9); *Nephrolepis cordifolia* (1-2); *N. davallioides* (3-4); *N. Duffii* (2½-3); *Oleandra articulata* (½-1½); *O. neriiiformis* (½-1½); *O. nodosa* (½-1½); *Onychium auratum* (1½-2½); *Platycerium grande* (4-6); *P. Hillii* (1½-1½); *P. Wallichii*; *P. Willinkii*; *Polypodium albo-squamatum* (1½-3); *P. aureum* (4-7); *P. crassifolium* (1½-3½); *P. fraterum* (1½-2); *P. Heraacleum* (3-6); *P. juglandifolium* (2½-3½); *P. Lingua* (½-1½); *P. pectinatum* (1½-3½); *P. piloselloides* (1); *P. plesiosorum* (½-1½); *P. quercifolium* (2½-4); *P. rupestre* (½-1½); *P. trichomanoides* (½-1); *P. vaciniifolium* (1); *P. verrucosum* (4½-6); *Pteris aspericaulis* (1½-1½); *P. elegans* (1½-2); *P. flabellata* (2-4); *P. heterophylla* (½-1); *P. leptophylla* (1½-1½); *P. longifolia* (1½-3); *P. palmata* (1½-1½); *P. patens* (4-5); *P. podata* (½-1); *P. quadriaurita* (1½-5); *P. sagittifolia* (½-1); *Selaginella atroviridis*; *S. canaliculata*; *S. caulescens*; *S. cuspidata*; *S. erythropus*; *S. grandis*; *S. hamatodes*; *S. laevigata*; *S. Wallichii*; *S. Willdenovii*.

TREE FERNS.

COOL-HOUSE.—*Alsophila australis*; *A. Cooperi*; *A. excelsa* (30-40); *A. Leichardtiana* (16-30); *A. Rebecca* (8-16); *A. Scottiana*; *Cyathea Cunninghamii* (13-17); *C. dealbata*; *C. excelsa*; *Dicksonia antarctica* (35-45); *D. Bertoana* (7-16); *D. regalis* (1½-2); *D. squarrosa* (1½-2½); *Hemitelia Smithii*; *Todea barbara* (4-5); *T. superba* (3-6).

STOVE.—*Alsophila aculeata*; *A. armata*; *A. aspera* (10-30); *A. contaminans* (20-50); *A. paleolata* (11-22); *A. pruinata*; *A. sagittifolia*; *A. Tanitii*; *A. villosa* (13-21); *Asplenium radicans*; *Cyathea arborea*; *C. insignis*; *C. integra*; *C. medullaris*; *C. Sorra*; *Dicksonia chrysotricha* (1-1½); *D. fibrosa* (3-4); *D. Meziesii* (3-4); *D. Sellowiana* (6-8); *Didymochlæna lunulata*; *Hemitelia grandifolia*; *H. speciosa*; *Lomaria ciliata*; *L. gibba*.



AN INDEX TO BULBOUS PLANTS.

term "Bulb" has a very wide horticultural significance, and is by no means restricted to the description of Bulbous Plants properly so-called. Colchicums, Crocuses, and Gladioli are corms, most of the Irises are rhizomatous, and the roots of the garden Ranunculus are tuberous: yet all are familiarly known and purchased as "Bulbs."

Most of the plants named in nurserymen's Bulb catalogues are here classified according to hardiness, or the protection required for their successful culture. Orchids are not included, but are treated separately further on in the Supplement.

After each name is given abbreviated information as to the colours of the flowers, and the height of the plant in feet and the fractions of a foot. Where plants are grown for their foliage, e.g., Caladiums and other Aroids, the contractions following *fol* refer to the colours and markings of the leaves.

For information as to selection and general treatment, the reader is referred to the article on "Bulbs," in Vol. I.

The following abbreviations are used:

b, blue; *bk*, black; *c*, cream; *fol*, foliage; *g*, green; *gy*, grey; *l*, lilac; *m*, magenta; *o*, orange; *p*, purple; *pi*, pink; *r*, red; *s-aq*, semi-aquatic; *si*, silvery; *v*, violet; *w*, white; *y*, yellow.

HARDY.—*Aconitum album* (*w*; 4-5); *A. angustifolium* (*b*; 2-3); *A. biflorum* (*b*; $\frac{1}{2}$); *A. delphinifolium* (*b-p*; $\frac{1}{2}$ -2); *A. emiens* (*b*; 2-4); *A. gracile* (*b* or *v*; 2); *A. Halleri* (*v*; 4-6); *A. H. bicolor* (*w*, variegated *b*; 4-6); *A. japonicum* (*w-pi*; 6); *A. lycoctonum* (*v*; 4-6); *A. Napellus* (*b*; 3-4) and vars.; *A. Ottonianum* (*b*, variegated *w*; 2-4); *A. paniculatum* (*v*; 2-3); *A. rostratum* (*v*; 1-2); *A. tauricum* (*b*; 3-4); *A. uncinatum* (*l*; 4-8); *A. variegatum* (*b*; 1-6) and vars.; *A. Willdenovii* (*b-p*; 1-3); *Allium acuminatum* (*pi*; $\frac{1}{2}$ - $\frac{1}{2}$); *A. azureum* (*b*; 1-2); *A. Bidwelliæ* (*pi*; $\frac{1}{2}$); *A. Breweri* (*pi*; $\frac{1}{2}$); *A. cœruleum* (*b*; $\frac{1}{2}$); *A. falcifolium* (*pi*; $\frac{1}{2}$); *A. Macnabianum* (*m*; 1); *A. Moly* (*y*; $\frac{1}{2}$ -1 $\frac{1}{2}$); *A. Neapolitanum* (*w*; 1 $\frac{1}{2}$ -1 $\frac{1}{2}$); *A. nigrum* (*v* or *w*; 2 $\frac{1}{2}$ -3 $\frac{1}{2}$); *A. pedemontanum* (*pi-p*); *A. reticulatum attenuifolium* (*w*; $\frac{1}{2}$ -1 $\frac{1}{2}$); *A. roseum* (*l-pi*; 1-1 $\frac{1}{2}$); *A. sphaerocephalum* (1 $\frac{1}{2}$ -2 $\frac{1}{2}$); *Alstrœmeria aurantiaca* (*o*, streaked *r*; 3-4); *A. chilensis* (*pi-w*, varying to *o* or *r*; 2-3); *A. psittacina* (*r*, *g*, and *p*; 6); *Ampelopsis napiformis* (*g*); *A. serjaniifolia*; *Anemone apennina* (*b*; $\frac{1}{2}$); *A. baldensis* (*w*; $\frac{1}{2}$); *A. coronaria* (variable; $\frac{1}{2}$); *A. nemorosa* (*w*; $\frac{1}{2}$) and

Hardy—continued.

vars.; *A. palmata* (*y*; $\frac{1}{2}$) and vars.; *A. ranunculoides* (*y* or *p*; $\frac{1}{2}$); *A. stellata* (*p* or *pi-r*; $\frac{1}{2}$); *Arcthericum Liliago* (*w*); *A. Liliastrum* (*w*, *sc*; 1-2); *A. ramosum* (*w*; 2); *Arisœma Griffithi* (*br-v*; 1-1 $\frac{1}{2}$); *A. ringens* (*g*, *w*, and *p*); *A. triphylla* (*p-br* and *g*; $\frac{1}{2}$ -1); *Arum italicum* (*g-y* or *w*; $\frac{1}{2}$ -2) and var.; *A. proboscideum* (*g-p*; $\frac{1}{2}$); *A. tenuifolium* (*w*; 1); *Asclepias tuberosa* (*o*; 1-2); *Asphodelus albus* (*w*; 2); *A. creticus* (*y*; 2); *Bellevalia syriaca* (*w*; 1); *Biarum tenuifolium* (*br-p*; $\frac{1}{2}$); *Brodiaea capitata* (*v-b*; 1-2); *B. congesta* (*b*; 1); *B. c. alba* (*w*; 1); *B. grandiflora* (*b-p*; 1 $\frac{1}{2}$); *B. Howellii* (*p-b*; 1 $\frac{1}{2}$ -2); *B. lactea* (*w*, midribs *g*; 1-2); *B. multiflora* (*b-p*; 1-1 $\frac{1}{2}$); *Bulbocodium vernum* (*v-p*, spotted *w*; $\frac{1}{2}$); *Calliprora lutea* (*p-br*; $\frac{1}{2}$); *Camassia esculenta* (*b*; 1 $\frac{1}{2}$); *C. c. Leichtlini* (*c*; 2); *C. Fraseri* (*b*; 1); *Chionodoxa Lucilii* (*b*, *w* centre; $\frac{1}{2}$); *C. nana* (*w* and *l*; $\frac{1}{2}$); *Chlorogalum pomeridianum* (*w*, veined *p*; 2); *Chrysobaetron Hookeri* (*y*; 1 $\frac{1}{2}$ -3); *Claytonia virginica* (*w*; $\frac{1}{2}$); *Colchicum autumnale* (*p*; $\frac{1}{2}$) and vars.; *C. Bivonæ* (*w* and *p*); *C. luteum* (*y*; $\frac{1}{2}$); *C. Parkinsoni* (*w* and *p*);

Hardy—continued.

C. speciosum (r-p and w); *Convallaria majalis* (w, sc; 1-1) and vars.; *Crinum capense* (flushed r; 1); *Crocus aureus* (o) and vars.; *C. biflorus* (w, varying to lavender); *C. Boryi* (c, throats o-y; 1); *C. Imperati* (l-p and p, sc; 1-1); *C. iridiflorus* (p and l); *C. nudiflorus* (p or v); *C. speciosus* (l, striped p); *C. susianus* (o, or br and o; 1); *C. vernus* (l, v, w, or w and v); *C. versicolor* (p, varying to w); *C. varieties*; *Dicentra spectabilis* (pi-r; 2-2) and var.; *Dioscorea Batatas* (w; 6-9); *Dracunculus vulgaris* (b; 3); *Eranthis hyemalis* (y; 1-2); *E. sibiricus* (y; 1); *Eremurus himalaicus* (w; 11-2); *E. robustus* (peach; 8-9); *E. spectabilis* (y; 2); *Erythronium americanum* (y; 1-1); *E. dens-canis* (p-pi or w; 1) and vars.; *Fritillaria armena* (y; 1); *F. delphinensis* (p, spotted y; 1-1); *F. græca* (br, spotted, &c.; 1); *F. Hookeri* (l; 1); *F. imperialis* (y, varying to r; 3); *F. lutea* (y, suffused p; 1-1); *F. macrophylla* (pi; 3); *F. Meleagris* (chequered p; 1); *F. pallidiflora* (y; 1); *F. persica* (v-b; 3); *F. pudica* (y; 1-1); *F. pyrenaica* (p; 1-1); *F. recurva* (r; 2); *F. Sewerzovi* (p, g-y within; 1-1); *F. tonella* (y, chequered p-br); *F. tulipifolia* (b, streaked p-br, p-br within); *F. verticillata Thunbergii* (y, mottled p); *Funkia grandiflora* (w, sc; 2); *F. ovata* (b-l or w; 1-1); *F. marginata* (b-l or w, fol. margined w; 1-1); *F. Sieboldiana* (w, tinged l; 1); *F. subcordata* (w; 1-2); *Gagea lutea* (y, y at back; 1); *Galanthus Elwesii* (w, spotted g; 1-1); *G. nivalis* (w, marked g; 1-1) and vars.; *G. plicatus* (g-w; 1); *G. (Galtonia) candicans* (w, sc; 4); *Gladiolus byzantinus* (r; 2); *G. segetum* (pi; 2); *Helicodiceros crinitus* (p-br; 1-1); *Hemerocallis Dumortieri* (o-y, tinged br; 1-1); *H. fulva* (fulvous; 2-4) and vars.; *Iris alata* (l-p; 1); *I. aurea* (y; 3-4); *I. balkana* (l-p; 1); *I. biflora* (v-p; 1-1); *I. Chamæiris* (y, veined br; 1); *I. cretensis* (l); *I. cristata* (l; 1); *I. Douglasiana* (l-p; 1-1); *I. filifolia* (p, keeled y; 1-2); *I. flavescens* (y; 2-3); *I. florontina* (w, l, g, and br; 2-3); *I. fustidissima* (b-l; 2-3); *I. fulva* (br; 2-3); *I. germanica* (variable, sc; 2-3); *I. graminea* (l-p, w, y, and b-p, sc; 1); *I. Guldenstadtiana* (w, o, and y; 2); *I. Hiastri* (l, l-p, and y; 1); *I. hybrida* (variable); *I. iberica* (p-b, blotched p); *I. i. insignis* (w and l-w, blotched and veined r-br); *I. luvigata* (p, blotched y, &c.; 1-1-2); *I. Intescens* (y, marked p-br); *I. Monnieri* (y, sc; 3-4); *I. neglecta* (l, w, and y; 1-1-2); *I. ochroleuca* (w and v-p; 3); *I. persica* (y-l, keeled y, sc; 1); *I. Pseudo-acorus* (s-aq, y; 2-3); *I. pumila* (l-p; 1); *I. reticulata* (v-p, lined y; 1); *I. rubro-marginata* (y, tinged p; 1); *I. ruthenica* (l-p, sc); *I. sambucina* (p and y, sc; 2); *I. sibirica* (l-b and v; 1-2); *I. squaleus* (l-p, y, and br-y; 2-3); *I. tectorum* (l and w; 1); *I. tingitana* (l-p; 2-3); *I. tuberosa* (g-y; 1); *I. unguicularis* (l, y, and w, sc); *I. variegata* (br and y; 1-1); *I. versicolor* (p; 1-2); *I. vulgare* (p; 1-2); *I. xiphioides* (l-p, y, and p; 1-2); *Kniphofia aloides* (r, fading to g-y; 3-4); *K. a. maxima*; *K. Burchelli* (r and y, tipped g; 1-1); *K. Leichtlinii* (r and y); *K. Rooperi* (o-r, turning y; 2); *Leucocium æstivum* (w; 1-1); *L. Hernandezii* (w; 1-1); *L. vernum* (w, spotted g, sc; 1); *Lilium auratum* (w, banded y, spotted p; 2-4) and vars.; *L. bulbiferum* (r; 2-4); *L. canadense* (y, varying to r, spotted r-p; 1-3); *L. candidum* (w, rarely tinged p; 2-3); *L. Catesbæi* (o-r, spotted p; 1-2); *L. chalconicum* (r, rarely y; 2-3); *L. concolor Buschianum* (r, spotted bk below); *L. croceum* (y, tinted r; 3-8); *L. davuricum* (r; 2-3) and vars.; *L. elegans* (r, rarely spotted; 3); *L. e. armenicum* (r, spotted y; 1); *L. e. atrosanguineum* (blotched r; 2); *L. e. sanguineum* (r and y; 1-1); *L. Hansonii* (r-o, dotted p; 3-4); *L. Kramerii* (w, tinged r, sc; 3-4); *L. Leichtlinii* (y, marked p and r; 2-3); *L. longiflorum* (w, sc; 1-2); *L. l. eximium* (w; 1-2); *L. Martagon* (p-r, spotted p; 2-3); *L. monadelphum* (y, tinged r at base; 3-5) and var.; *L. oxypetalum* (l-p, dotted p within; 1-1); *L. pardalinum* (variable; 3-7); *L. Parryi* (y, spotted br-r, sc; 2-6); *L. philadelphicum* (o-r, spotted p below; 1-3); *L. pomponium* (r; 1-1-3); *L. pseudo-tigrinum* (r, spotted bk within; 3-4); *L. pyrenaicum*

Hardy—continued.

(y; 2-4); *L. roseum* (l; 1-1); *L. sp. ciosum* (w, or spotted r; 1-3); *L. s. albiflorum* (w); *L. s. punctatum* (w, spotted r); *L. s. roseum* (w, tinted pi); *L. superbum* (o r, spotted; 4-6); *L. tenuifolium* (r; 1-1); *L. tigrinum* (o-r, spotted p-bk; 2-4) and vars.; *L. Washingtonianum* (w, tinged p or l; 3-5); *Merendera Bulboodium* (pi-l; 1); *Milla biflora* (w, g outside; 1); *Muscari botryoides* (b, w teeth; 1-1) and vars.; *M. comosum monstrosum* (b-v; 1-1); *M. Elwesii* (b; 1-1); *M. Heldreichii* (b; 1); *M. moschatum* (p, changing to g-y, tinged v, sc; 1); *M. neglectum* (b, sc; 1-1); *M. paradoxum* (b-bk, g inside; sc; 1); *M. racemosum* (b, changing to r-p, sometimes tipped w, sc; 1-1); *M. Szovitsianum* (b, sc; 1); *Narcissus biflorus* (w, crown y; 1); *N. Bulboodium* (y; 1-1) and vars.; *N. calathinus* (y; 1-1); *N. incomparabilis* (y; 1) and vars.; *N. Jonquilla* (y, sc; 1-1); *N. Macleai* (w and y; 1); *N. poeticus* (w, crown edged r, sc; 1) and vars.; *N. Pseudo-Narcissus* (y; 1) and vars.; *N. Tazetta* (w and y, &c., sc; 1) and vars.; *N. triandrus* (w or y, &c.; 1-1) and vars.; *Nothoscordum fragrans* (w, barred l, sc; 1-2); *Ornithogalum narboneum* (w, striped g; 1-1); *O. nutans* (w and g; 1-1); *O. pyramidale* (w, striped g; 1-1-2); *O. umbellatum* (w and g; 1-1); *Oxalis tetraphylla* (r or p-w); *Pæonia albiflora* (w, pi, &c.; 2-3) and vars.; *P. Emodi* (w; 2-3); *P. officinalis* (r; 2-3); *P. tenuifolia* (r; 1-1); *P. Wittmanniana* (y-w; 2); *P. varieties*; *Panocratium illyricum* (w, sc; 1-1); *Puschkinia scilloides* (w, striped b; 1); *Ranunculus asiaticus* vars.; *Sanguinaria canadensis* (w; 1); *Saxifraga peltata* (w or w-pi); *Scilla amœna* (b or w; 1); *S. bifolia* (b, r, or w; 1-1); *S. hispanica* (b, w, &c.; 1-1) and vars.; *S. hyacinthoides* (b-l; 1-2); *S. nutans* (b, p, w, or pi; 1); *S. peruviana* (l, r, or w; 1-1); *S. pratensis* (b; 1-1); *S. sibirica* (b; 1-1); *Spiraea astilboides* (w); *S. Filipendula* (w or pi; 2-3); *S. palmata* (r; 1-2); *S. p. alba* (w; 1-2); *Sternbergia lutea* (y; 1-1) and vars.; *Thalictrum tuberosum* (w; 1); *Trillium erectum* (p; 1); *T. erythrocarpum* (w, striped p; 1); *T. grandiflorum* (w, turning pi; 1-1); *T. nivale* (w; 2-4); *Triteleia laxa* (b; 1-1); *T. uniflora* (l; 1-1); *Tritonia Pottsii* (y, flushed r; 3-4); *Tropæolum polyphyllum* (y); *Tulipa australis* (flushed r); *T. Clusiana* (w, r, and bk; 1-1); *T. Eichleri* (r, marked y and bk); *T. elegans* (r, y eye); *T. Gesneriana* (r, y, &c.; 2) and vars.; *T. Greigi* (r, blotched bk; 1); *T. macrosepeila* (r, blotched bk and y; 2); *T. Oculus-solis* (r, blotched bk; 1-1); *T. præcox* (r, blotched bk; 1); *T. pubescens* (r, &c., sc.) and vars.; *T. retroflexa* (y); *T. suaveolens* (r and y, sc; 1); *T. sylvestris* (y, sc; 1-2); *T. varieties*; *Uvularia grandiflora* (y; 1); *U. sessilifolia* (y; 1); *Xerophyllum asphodeloides* (w; 1-2); *Zephyranthes Atamasco* (w; 1).

HALF-HARDY.—*Amaryllis Belladonna* (variable); *A. B. pallida* (2); *Apios tuberosa* (br-p, sc); *Babiana disticha* (b, sc; 1); *B. plicata* (v-b, sc; 1); *B. ringens* (r; 1); *B. stricta* (w and l-b; 1); *B. s. rubro-cyanea* (b and r; 1-1); *B. s. sulphurea* (c or y; 1); *B. s. villosa* (r; 1); *Bessera elegans* (r, or r and w); *Boussingaultia baselloides* (w, turning bk, sc); *Bravoa geminiflora* (o-r; 2); *Brodiaea coccinea* (r; 1); *B. gracilis* (y; 1); *Caloscorium nerinaeflorum* (pi; 1); *Chlidanthus fragrans* (y, sc); *Crocossia aurea* (o-r; 2); *Cypella Herberti* (y; 1); *Dahlia varieties* (w, y, r, &c.); *Eucomis bicolor* (g, edged p); *E. nana* (br; 1); *Ferraria Ferrariola* (g-br; 1); *F. undulata* (g-br; 1); *Gladiolus blandus* (w and y, marked r; 1-2); *G. brachyandrus* (r; 2); *G. cardinalis* (r, spotted w; 3-4); *G. Colvillei* (r, marked p; 1-1); *G. C. alba* (w; 1-1); *G. cruentus* (r and y-w; 2-8); *G. cuspidatus* (p and r, &c.; 2-3); *G. floribundus* (w, p, r, &c.; 1); *G. Papilio* (p and y; 2-3); *G. peittacinus* (r, p, y, and g; 3); *G. purpureo-aureus* (y, blotched p; 3-4); *G. varieties*; *Herbertia cærulea* (b and w; 1); *Hyacinthus varieties* (sc); *Ixiolirion tataricum* (b; 1-1); *Lilium cordifolium* (y, v, p; 3-4); *L. japonicum* (w, tinged p; 1-2); *Morsia edulis* (sc, spotted y; 4); *M. tricuspis* (g-w, spotted p; 1); *M. unguiculata* (w, spotted p-r;

Half-hardy—continued.

1); *Nemastylis acuta* (b, y, and bk); *Pancreatum montanum* (w, sc; 2); *Schizostylis coccinea* (r; 3); *Scilla chinensis* (pi-p; 1); *Tigridia pavonia* (o-y; 1-2); *Tricyrtis hirta* (w, dotted p; 1-3); *T. macropoda* (w-p, dotted p; 2-3); *Triteleia porrifolia* (w-w; 1-3); *Tropaeolum tricolorum* (o-r, o, and bk); *Urginea maritima* (w, keeled g-p; 1-3); *Wachendorfia thyrifera* (y; 2); *Zephyranthes carinata* (g and pi; 1); *Z. rosea* (pi; 1).

TENDER.

—*Achimenes grandiflora* (i-h, v-p; 1½); *A. Kleei* (i-h, l, throat y; 1); *A. multiflora* (i-h, l; 1); *A. ocellata* (i-h, y, spotted; 1½); *A. pedunculata* (i-h, r, y eye; 2); *A. picta* (i-h, r, y eye; 1½); *A. varieties* (i-h); *Agapanthus umbellatus* (c-h, b; 2-3); *A. u. varieties* (c-h, b or w; 2-3); *Albuca aurea* (c-h, y; 2); *A. fastigiata* (c-h, w; 1½); *A. Nelsoni* (c-h, w, striped r; 4-5); *Alocasia cheloni* (st, fol g, p beneath); *A. cuprea* (st, p-r; 2); *A. hybrida* (st); *A. Jenningsii* (st, fol g and br); *A. Johnstoni* (st, fol g and pi-r); *A. scabrisculata* (st, w; 4-4½); *A. Sedeni* (st, fol veined w); *A. Thibantiana* (st, fol gy-g, p beneath); *A. zebrina* (st; 4); *Alströméria caryophyllæa* (st, r, sc; 1-1); *A. densiflora* (c-h, r, dotted bk); *A. Pelogrina* (c-h, w or y, striped pi; 1); *A. P. alba* (c-h, w); *A. pulchra* (c-h, p, y, and r; 1); *A. Simsii* (c-h, y, streaked r; 3); *A. versicolor* (c-h, y and p; 2-4); *Amorphophallus campanulatus* (st, br, r, and bk; 2); *A. Lacourii* (c-h); *A. Rivieri* (st, g, pi, and r); *A. Titanum* (st, bk-p); *Anchomanes Hookeri* (st, p); *Anomatheca cruenta* (c-h, r; 1-1); *Antholyza aethiopica* (c-h, r and g; 3); *A. caffra* (c-h, r; 2); *A. Cunonia* (c-h, r and bk; 2); *Arisæma concinna* (c-h, w, g, and b-p; 1-2); *A. curvatum* (c-h, g and w; 4); *A. galeata* (c-h, g and p; 1); *A. nepenthioides* (c-h, y, br, and g; 2); *A. speciosa* (c-h, p, g, and w; 2); *Arthropodium neo-caledonicum* (c-h, w; 1½); *A. paniculatum* (c-h, w; 3); *A. pendulum* (c-h, w; 1½); *Arum palæstinum* (c-h, p, bk, and y-w); *Antilbe japonica* (c-h, w; 1-2); *Barbaecenia purpurea* (c-h, p; 1½); *B. Rogieri* (c-h, p; 1½); *Batatas bigonioides* (st, p); *B. Cavanillesii* (st, w-r); *B. adulis* (st, w and p); *B. paniculata* (st, p); *Begonia acutiloba* (i-h, w); *B. albo-coccinea* (st, pi and w; 1-2); *B. amabilis* (i-h, pi or w; 2); *B. amona* (i-h, pi; 1); *B. Berkeleyi* (i-h, pi); *B. bolivienis* (i-h, r; 2); *B. Bruantii* (i-h, w or pi); *B. Cheloni* (i-h, o-r; 2); *B. Clarkii* (i-h, r); *B. coriacea* (i-h, pi; 2); *B. dædalæa* (i-h, w and pi; fol g and br); *B. Davisii* (i-h, r; fol g, r beneath; 1-1½); *B. Dregii* (i-h, w; 1); *B. echinosepala* (i-h; 1½); *B. Evansiana* (c-h, pi; 2); *B. eximia* (i-h, fol p and r); *B. Fræubeli* (i-h, r); *B. geraniifolia* (i-h, r and w; 1); *B. geranioides* (i-h, w); *B. glandulosa* (i-h, g-w); *B. gogoensis* (st, pi; fol bronzy, r beneath); *B. gracilis* (c-h, pi) and vars.; *B. heracleifolia* (st, pi) and vars.; *B. herbacea* (i-h, w); *B. hydrocotylifolia* (i-h, pi; 1); *B. imperialis* (i-h, w; fol olive-g, banded gy-g); *B. laciniata* (i-h, w, tinted pi; fol g); *B. manicata* (st, pi); *B. maxima* (i-h, w); *B. megaphylla* (i-h, w); *B. monoptera* (i-h, w; 1-2); *B. natalensis* (c-h, pi; fol g, spotted w; 1½); *B. Pearcei* (i-h, y; fol g, r beneath; 1); *B. picta* (i-h, pi; fol sometimes variegated; 1-1); *B. prismatocarpa* (st, o and y; fol g); *B. pruriata* (i-h, w); *B. Rex* (st, fol variegated) and vars.; *B. Richardsiana* (i-h, w; 1); *B. E. diadema* (i-h, w); *B. roseiflora* (i-h, pi-r); *B. rubro-venia* (i-h, w, veined pi-r; 1-1½); *B. scandens* (i-h, w); *B. Schmidiana* (i-h, w; 1); *B. semploiflora* (i-h, w or pi) and vars.; *B. socotrana* (st, pi); *B. stigmosea* (i-h, w; fol g, blotched br-p); *B. strigilloea* (i-h, pi; fol g, margined r); *B. Sutherlandii* (i-h, o-r; fol g, nerved r); *B. Thwaitesii* (st, fol g, r-p, w, and r); *B. Veitchii* (i-h, r); *B. V. Verschaffeltiana* (i-h, pi); *B. xanthina* (i-h, y; fol g, p beneath; 1); *B. varieties* (i-h); *Bignonia Roezii* (st); *Blandfordia aurea* (c-h, y; 1-2); *B. Cunninghamii* (c-h, r and y; 3); *B. flammæa* (c-h, y; 2); *B. f. elegans* (c-h, r, tipped y; 2); *B. f. princeps* (c-h, o-r, y within); *B. grandiflora* (c-h, r; 2); *B. nobilis* (c-h, o, margined y; 2); *Bomarea Caldasiana* (c-h, o-y, spotted r);

Tender—continued.

B. Carderi (c-h, pi and p-br); *B. oligantha* (c-h, r, y within); *B. patococcensis* (c-h, r); *B. Shuttleworthii* (c-h, o-r, y, &c.); *B. Williamsii* (c-h, pi); *Brachypsetta variabilis* (st, g-p and w; 3); *Brunsvigia Cooperi* (c-h, y; 1½); *B. falcata* (c-h, r; 1); *B. Josephinæ* (c-h, r; 1½); *B. multiflora* (c-h, r; 1); *B. toxicaria* (c-h, pi; 1); *Balbina aloides* (c-h, y; 1); *Caladium argyrites* (st, fol g, &c.); *C. bicolor* (st; 2); *C. Chantini* (st, fol r, w, and g); *C. Devosianum* (st, fol g, blotched w and p); *C. Kochii* (st, fol g, spotted w); *C. Lemaireanum* (st, fol g, veined w); *C. Leopoldi* (st, fol g, r, and p); *C. macrophyllum* (st, fol g, blotched g-w); *C. maculatum* (st, fol g, spotted w); *C. marmoratum* (st, fol g, and gy or st); *C. rubrovenium* (st, g-gy, veined r); *C. sanguinolentum* (st, fol g, w, and r); *C. Schomburgkii* (st, fol g, veined w); *C. Verschaffeltii* (st, fol g, spotted r); *C. varieties* (st); *Caliphuria Hartwegiana* (c-h, g-w; 1); *C. subodontata* (c-h, w; 1½); *Callipsyche aurantiaca* (c-h, y; 2); *C. euerosioides* (c-h, r and g; 2); *C. mirabilis* (c-h, g-w; 3); *Calochortus albus* (c-h, w, blotched); *C. Benthamii* (c-h, y; 1-1½); *C. cæruleus* (c-h, l, dotted b; 1-1½); *C. elegans* (c-h, g-w and p; 1); *C. Gunnisonii* (c-h, l, y-g, and p); *C. lilacinus* (c-h, pi; 1-1½); *C. luteus* (c-h, g and y; 1); *C. Nuttallii* (c-h, g and w, marked r and p; 1); *C. pulchellus* (c-h, y; 1); *C. purpureus* (c-h, g, p, and y; 3); *C. splendens* (c-h, l; 1½); *C. venustus* (c-h, w and r; 1½) and vars.; *Canarina Campanula* (c-h, y-p or o, nerved r; 3-4); *Canna Achiras variegata* (i-h, r; fol g, striped w and y); *C. Annaei* (i-h, pi; 6) and vars.; *C. Anguste Forrier* (i-h, o-r; fol g, margined p-r; 10); *C. Bihorolli* (i-h, r; fol bronzy; 6-7); *C. Député Henon* (i-h, y; 4); *C. discolor* (i-h, r; fol g and r; 6); *C. expansa-rubra* (i-h, p; fol r; 4-6); *C. gigantea* (i-h, o-r and p; 6); *C. indica* (i-h, r and y; 3-6); *C. iridiflora* (st, pi, spotted y; 6-8); *C. limbatia* (i-h, y-r; 3); *C. nigricans* (i-h; fol r; 4½); *C. Rendatleri* (i-h, pi-r; fol g, tinged r; 6-8); *C. speciosa* (i-h, r; 3); *C. Van Houttei* (i-h, r; fol g, margined p-r); *C. Warszewiczii* (i-h, r and p; fol g, tinged p; 3); *C. zebrina* (i-h, o; fol g and r; 6-8); *Carpolya spiralis* (c-h, w, r outside); *Cienkowskia Kirkii* (st, pi-p, sc; 1); *Clivia nobilis* (c-h, r and y; 1½); *Colocasia esculenta* (c-h, w; 2); *C. odorata* (st, w, sc); *Commelinia colestis* (c-h, b; 1½); *C. o. alba* (c-h, w; 1½); *Corynophallus Afzelii* vars. (st, p and w); *Costus igneus* (st, o-r; 1-3); *C. Malorticeanus* (st, y, banded o-r; 1-3); *Crinum amabile* (st, r, sc; 2-3); *C. asiaticum* (c-h, w; 1½-2); *C. Balfourii* (st, w, sc; 1½); *C. Careyana* (i-h, w, tinged r; 1); *C. eruentum* (st, r; 3); *C. giganteum* (st, w, sc; 2-3); *C. Kirkii* (st, w, striped r; 1-1½); *C. Macowanii* (c-h, w, tinged p; 2-3); *C. Moorii* (c-h, w, flushed r; 1½-2); *C. purpurascens* (st, w, tinted r; 1); *C. zeylanicum* (st, w, banded r; 2-3); *Cureuma albiflora* (st, w and y; 2); *C. australasica* (st, y, bracts pi); *C. cordata* (st, r-y; 1); *C. petiolata* (st, y, bracts pi-p; 1); *C. Roseoana* (st, r, bracts o; 1); *C. rubricaulis* (st, r; 3); *Cyanella odoratissima* (c-h, pi, sc; 1); *Cyclamen africanum* (c-h, w or tinted r, spotted p; 1-1½); *C. cilicium* (c-h, w, blotched p; 1); *C. Coum* (c-h, r; 1) and vars.; *C. ibericum* (c-h, r, spotted p; 1) and vars.; *C. neapolitanum* (c-h, w or r, spotted v-p); *C. persicum* (c-h, w, blotched p) and vars.; *Cyrtanthus sanguineus* (c-h, y and r, o-r inside); *Dahlia imperialis* (c-h, w, l, and r; 10-12); *D. Juarezii* (c-h, r; 3); *Dioscorea multicolor* (st, fol variegated) and vars.; *Dracontium asperum* (st, p-br; 5-6); *D. Carderi* (st; 3); *Drimidiopsis Kirkii* (c-h, w; 2); *Drosera binata* (c-h, w; 1); *Elisena longipetala* (c-h, w; 3); *Eucharis candida* (st, w; 2); *E. grandiflora* (st, w; 2); *E. Sanderiana* (st, w; 1½); *Eurycyles Cunninghamii* (i-h, w; 1); *Freesia Leichtlinii* (c-h, y or c; 1); *F. refracta* (c-h, sometimes marked v and o); *F. r. alba* (c-h, w); *Galaxia ovata* (c-h, y); *Geissorhiza grandis* (c-h, y, ribbed r); *G. inflexa* (c-h, y, spotted p; 1½); *G. Roehensis* (c-h, b, spotted r; 2); *Gesnera Cooperi* (st, r, throat spotted; 2); *G. discolor* (l, r; 2); *G. Donkelaariana* (st, r; 1); *G. exoniensis*

Tender—continued.

(*st*, *c-r*, throat *y*); *G. nageioides* (*st*, *pi*, *r*, and *y*); *G. pyramidalis* (*st*, *c-r* and *o*, spotted); *G. varieties* (*st*); *Gloriosa superba* (*st*, *o* and *y*; 4); *Gloxinia diversifolia* (*st*); *G. generoides* (*st*, *r*); *G. glabra* (*st*, *w* and *y*, spotted *p*; $\frac{1}{2}$); *G. maculata* (*st*, *p-b*; 1); *G. pallidiflora* (*st*, *b*; 1); *G. varieties* (*st*); *Griffinia Blumenavia* (*i-h*, *w*, streaked *pi*; $\frac{1}{2}$); *G. dryades* (*i-h*, *p-l* and *w*; $1\frac{1}{2}$); *G. hyacinthina* (*i-h*, *b* and *w*; $\frac{1}{2}$); *G. ornata* (*i-h*, *b-l* and *w*; $1\frac{1}{2}$); *Hæmnanthus abyssinicus* (*st*, *r*; $\frac{1}{2}$); *H. cinnabarinus* (*st*, *r*; 1); *H. Kalbreyeri* (*st*, *r*; $\frac{1}{2}$); *H. Katherina* (*st*, *r*); *H. puniceus* (*st*, *c-r*, stamens *y* or *o*; 1); *Hedyochium angustifolium* (*st*, *r*; 8-6); *H. coronarium* (*st*, *w*, *sc*; 5); *H. flavosum* (*st*, *y*, *sc*; 2-3); *H. flavum* (*c-h*, *o*, *sc*; 3); *H. Gardnerianum* (*c-h*, *g-y*, *sc*; 3-5); *Hesaea crispata* (*c-h*, *pi*; $\frac{1}{2}$); *Hippeastrum Ackermanni* (*st*, *r*) and var.; *H. allicum* (*c-h*, *r*, *g*, and *r-p*; $1\frac{1}{2}$); *H. equestre* (*st*, *o-g*) and vars.; *H. pardinum* (*c-h*, *g*, spotted *r*); *H. reticulatum* (*st*, *pi* and *w*); *H. vittata* (*c-h*, *w*, striped *r*); *Homalomena Roezlii* (*st*, *o-br*, *c* within; $\frac{1}{2}$); *H. Wallisii* (*st*, *r*); *Hyacinthus amethystinus* (*c-h*, *b*; $\frac{1}{2}$ -1); *H. corymbosus* (*c-h*, *l-pi*; $\frac{1}{2}$); *H. orientalis* (*c-h*, variable, *sc*; $\frac{1}{2}$ -1); *H. o. albulus* (*c-h*, *w*); *H. varieties* (*c-h*, *sc*); *Hymenocallis amœna* (*c-h*, *w*, *sc*; 1-2); *H. calathinum* (*c-h*, *w*, *sc*); *H. macrostephana* (*st*, *w*, *sc*; 2); *H. speciosa* (*st*, *w*, *sc*; 1-1 $\frac{1}{2}$); *Hypoxis stellata* (*c-h*, *w* and *b*; $\frac{1}{2}$); *Imantophyllum Gardeni* (*c-h*, *r-o* or *y*; 1-2); *I. miniatum* (*st*, *o* and buff; 1-2); *I. hybrids* (*c-h*); *Isoloma hondense* (*st*, *y*; 1); *I. molle* (*st*, *r*; $1\frac{1}{2}$); *Ixia capillaris* (*c-h*, *pi* or *l*; $1\frac{1}{2}$); *I. hybrida* (*c-h*, *w*; 1); *I. maculata* (*c-h*, *o*; 1); *I. odorata* (*c-h*, *y*, *sc*; 1); *I. patens* (*c-h*, *pi*; 1); *I. speciosa* (*c-h*, *r*; $\frac{1}{2}$); *I. viridiflora* (*c-h*, *g*, spotted; 1) and vars.; *Kæmpferia Gilbertii* (*st*, *fol g*, margined *w*); *K. ornata* (*st*, *y*; *fol g*, banded *st*, *p* beneath); *Lachenalia fragrans* (*c-h*, *y*, *sc*; $\frac{1}{2}$); *L. lilacina* (*c-h*, *l* and *b*; $\frac{1}{2}$); *L. Nelsoni* (*c-h*, *y*); *L. pendula* (*c-h*, *p*, *r*, and *y*; $\frac{1}{2}$ - $\frac{3}{4}$); *L. purpureo-cœrulea* (*c-h*, *p-b*; $\frac{1}{2}$ - $\frac{3}{4}$); *L. tricolor* (*c-h*, *g*, *r*, and *y*; 1); *L. t. lutea* (*c-h*, *y*; 1); *Lilium giganteum* (*c-h*, *w*, tinged *g* and *p*; 4-10); *L. neilgherrense* (*c-h*, *w*, *sc*; 2-3); *Littonia modesta* (*i-h*, *o*; 2-6); *Lycoris aurea* (*c-h*, *y*; 1) and *L. Sewerzowi* (*c-h*, *br-r*, *sc*; 1); *Marica lutea* (*i-h*, *y*, *r*, *w*, and *g*; $\frac{1}{2}$); *M. Northiana* (*st*, *w*, *y*, *r*, and *b*; 4); *Mirabilis Jalapa* (*c-h*, variable; 2); *Nægelia cinnabarina* (*st*, *r*; 2); *N. fulgida* (*st*, *r*; 2); *N. f. bicolor* (*st*, *r* and *w*; 2); *N. Geroltiana* (*st*, *c-r*; 1 $\frac{1}{2}$ -2); *N. multiflora* (*st*, *w* or *c*); *N.*

Tender—continued.

zebrina (*st*, *c-r*; 2); *Nerine curvifolia* (*c-h*, *r*; 1); *N. flexuosa* (*c-h*, *r*, tinged *o*; 1) and vars.; *N. sarniensis* (*c-h*, *pi*; 2-2 $\frac{1}{2}$) and vars.; *N. undulata* (*c-h*, *w-pi*; 1); *Ornithogalum arabicum* (*c-h*, *w*, *bk* centre, *sc*; 1-2); *O. thyrsoides* (*c-h*, *y*; $\frac{1}{2}$ -1 $\frac{1}{2}$) and vars.; *Oxalis Bowiei* (*c-h*, *pi*, *y* at base; $\frac{1}{2}$ - $\frac{3}{4}$); *O. elegans* (*c-h*, *p*; $\frac{1}{2}$); *O. hirta* (*c-h*, *v* or *r*; $\frac{1}{2}$) and vars.; *O. lasiandra* (*c-h*, *r*; *fol g*, spotted *p*; $\frac{1}{2}$ -1 $\frac{1}{2}$); *O. Martiana* (*c-h*, *pi*; $\frac{1}{2}$); *O. rosea* (*c-h*, *pi*; $\frac{1}{2}$ -1); *O. variabilis* (*c-h*, *w* or *r*; $\frac{1}{2}$) and vars.; *O. versicolor* (*c-h*, *w*, *y* outside; $\frac{1}{2}$); *Phædranassa Carmioli* (*i-h*, *r*, tipped *g*; 2); *P. chloracea* (*c-h*, *p-pi*, tipped *g*; $1\frac{1}{2}$); *P. eucrosioides* (*i-h*, *g* and *r*; 1-1 $\frac{1}{2}$); *P. Lehmanni* (*i-h*, *r*); *P. rubro-viridis* (*c-h*, *r* and *g*); *Phormium Cookianum* (*c-h*, *y*, or *y* and *g*; *fol g*; 3-6); *P. C. variegatum* (*c-h*, *fol g* and *c-w*); *P. tenax* (*c-h*, *y* or *r*; *fol g*, margined *r-br*; 6) and vars.; *Plagiolirion Horsmanni* (*st*, *w*); *Polianthes tuberosa* (*c-h*, *w*, *sc*; 3-4) and vars.; *Richardia africana* (*c-h* *s-ag*, *w*, *spadix y*; 2); *R. albo-maculata* (*c-h* *s-ag*, *g-w*; 2); *R. melanoleuca* (*c-h* *s-ag*, *y* and *bk-p*, *spadix w*; $1\frac{1}{2}$); *Sandersonia aurantiaca* (*c-h*, *o*; $1\frac{1}{2}$); *Sauromatum venosum* (*st*, *p*, *y*, and *v*; 1); *Sinningia barbata* (*st*, *w*, marked *r*; *fol g*, *r* beneath); *S. concinna* (*st*, *p* and *y*; *fol g*, *nerved r*) and var.; *S. conspiciua* (*st*, *y*, marked *p*); *S. speciosa* (*st*, *v*, &c.; *fol g*, &c.) and vars.; *S. Youngiana* (*st*, *v* or *p*, and *y-w*; *fol g*, *g-w* below); *Sparaxis grandiflora* (*c-h*, *p*, *w*, or variegated; 1-2); *S. pendula* (*c-h*, *l*; 4); *S. tricolor* (*c-h*, *o*, *y*, and *bk*; 1-2); *S. varieties*; *Sprekelia formosissima* (*c-h*, *r* or *w*; 2); *Stenomeson coccineum* (*c-h*, *r*; 1); *S. incarnata* (*c-h*, *r*; 2) and vars.; *S. vitellinum* (*i-h*, *y*; 1); *Streptanthera elegans* (*c-h*, *w*, *w-pi*, *p*, and *y*; $\frac{1}{2}$); *Synnotia variegata* (*c-h*, *y* and *v*; $1\frac{1}{2}$); *Tacca pinnatifida* (*st*, *p*); *Taccarum Warmingianum* (*st*, *br*; *fol g*, lined *w*; 3); *Thysanotus tuberosus* (*c-h*, *p*; $\frac{1}{2}$ -1); *Tigridia atrata* (*c-h*, *p*, *g*, and *br*; 2); *T. Meleagris* (*c-h*, *p*, banded *r*; $1\frac{1}{2}$); *T. Van Houttei* (*c-h*, *y*, *l*, and *p*; 1); *Tritonia crocata* (*c-h*, *y*; 2); *T. crocosmiflora* (*c-h*, *c-r*); *T. miniata* (*c-h*, *r*; $\frac{1}{2}$ -1); *Tropæolum azureum* (*c-h*, *b*); *Tydaea amabilis* (*st*, *pi*, dotted *p*; 1-2); *Vallota purpurea* (*c-h*, *r*; 2-3) and vars.; *Wahlenbergia tuberosa* (*c-h*, *w*, banded *pi-r*; $\frac{1}{2}$ -2); *Watsonia densiflora* (*c-h*, *pi-r*; $1\frac{1}{2}$ -2); *W. Meriana* (*c-h*, *p* or *r*; $\frac{1}{2}$ -2); *W. rosea* (*c-h*, *pi*; 2); *Xanthosoma Lindenii* (*c-h*, *fol g*, veined *w*); *Zephyranthes Andersoni* (*c-h*, *y* or *y-b*; $\frac{1}{2}$); *Z. candida* (*c-h*; $\frac{1}{2}$); *Z. citrina* (*i-h*, *y*; $\frac{1}{2}$ -1).



AN INDEX TO ORCHIDS.

IN the subjoined lists of Orchids, the plants have been arranged according to the degree of heat necessary to bring them to perfection—thus, the “stove” species require to be grown in the East Indian house, those classified as “intermediate” thrive in the Brazilian house, while the “cool-house” species are best suited by the low temperature of the Peruvian house. The few “hardy” species here enumerated are almost all natives of Britain or of North America, and, being all terrestrial, are well adapted for culture in outside borders.

The habit of each plant is stated immediately after the name, the epiphytal species being marked *eph*, and the terrestrial ones *ter*; while *s-ter* indicates subjects of a sub-terrestrial habit of growth.

The colours are generally arranged according to their importance, the prevailing hue being stated first in each instance. In many species, however, the markings are often very variable, so that the colours here mentioned may perhaps be found to differ slightly from those actually seen in a particular specimen. In such cases the markings most frequently found have been given.

The species of *Anactochilus* and *Physurus* stand in strong contrast to the other members of the Order, being grown only for their handsome foliage, and not for the beauty of their flowers, which are small and unattractive. The descriptive colours in these cases, therefore, apply only to the foliage, as indicated by the abbreviation *fol*, preceding the colours.

For much interesting information relative to the structural peculiarities of these plants, see “Orchideæ” and “Orchid Fertilisation,” in Vol. II. Full instructions as to general culture are given in the article on “Orchid House,” and the special requirements of the more important genera will be found under their respective headings.

The following abbreviations are used:—

b, blue; bk, black; br, brown; c, cream; *eph*, epiphytal; *fol*, foliage, *g*, green; *l*, lilac; *m*, magenta; *mv*, mauve; *o*, orange; *p*, purple; *pi*, pink; *r*, red; *sc*, scented; *si*, silver; *s-ter*, sub-terrestrial; *ter*, terrestrial; *v*, violet; *w*, white; *y*, yellow.

HARDY.—*Aplectrum byemale* (ter, g-br); *Arethusa bulbosa* (ter, pi-p, sc); *Bletia hyacinthina* (ter, p); *Calopogon pulchellus* (ter, p, bearded y); *Calypso borealis* (ter, pi and br, crested y); *Cephalanthera grandiflora* (ter, w and y); *Cypripedium acule* (ter, g, pi and p) and var.; *C. aristatum* (ter, g-br, r and w); *C. Calceolus* (ter, r-br or p, and y); *C. candidum* (ter, g-br, lip w); *C. guttatum* (ter, w, blotched pi-p); *C. macranthum* (ter, p); *C. parviflorum* (ter, br-p and y, sc); *C. pubescens* (ter, y-br and y); *C. spectabile* (ter, w and pi); *Habenaria blephariglottis* (ter, w); *H. cristata* (ter, y); *H. fimbriata* (ter, l-p); *H. psychodes* (ter, pi to r, sc); *Liparis lilifolia* (ter, br-p); *Ophrys apifera* (ter, g and pi); *O. lutea* (ter, g, y, and p); *O. Speculum* (ter, g, b, y, and y); *Orochis foliosa* (ter, p); *O. latifolia* (ter, p or r); *O. maculata* (ter, p or w, spotted p-br); *O. purpurea* (ter, g, p, and pi); *Serapias cordigera* (ter, br and lavender).

COOL-HOUSE.—*Acineta Barkeri* (s-ter, y and r, sc); *A. Humboldtii* (s-ter, y, dotted br); *Aerides japonicum* (eph, w and p); *Angraecum falcatum* (eph, y and br, sc); *Barkeria elegans* (eph, pi and r); *B. Lindleyana* (eph, pi-p and w); *B. L. Centeri* (eph, pi-l); *B. melanocaulon* (eph, pi-l and r-p); *B. Skinneri* (eph, pi-p); *B. S. superbum* (eph, pi, streaked y); *B. spectabilis* (eph, pi-l, w and r); *Calochilus paludosus* (ter, g and br); *Cecologyne corrugata* (eph, w, y, and o); *C. Gowerii* (eph, w, blotched y); *Corysanthos picta* (ter, p and y); *Cypripedium Fairieanum* (ter, w, g, p, and br); *C. venustum* (ter, g-w or pi, and y-g); *Disa grandiflora* (ter, pi, r, and y); *D. g. Barrellii* (ter, o-r, veined r); *D. mogaceras* (ter, w, blotched p); *Epidendrum alatum majus* (eph, y, striped p); *E. atropurpureum* (eph, pi or p, blotched r-p); *E. cnemidophorum* (eph, y, br, w, and pi); *E. dichromum* (eph, pi and r) and var.; *E. paniculatum* (eph, p or l-I, and y); *E. prismatocarpum* (eph, y-g, l-p, w, and p or bk, sc); *Goodyera discolor* (ter, w, blotched y); *G. macrantha* (ter, pi); *G. pubescens* (ter, w); *G. velutina* (ter, w, shaded pi); *Habenaria rhodochila* (eph, g and r); *Laelia majalis* (eph, si-l, r-p, &c.); *Masdevallia amabilis* (eph, o-r); *M. Baekhouiana* (eph, y and bk); *M. bella* (eph, p-br and y); *M. chelonii* (eph, w, marked w); *M. Chimera* (eph, y and bk); *M. coccinea* (eph, y and r); *M. Davisii* (eph, o-y); *M. ephippium* (eph, p-br and y); *M. erythrochate* (eph, w, y, and r-p); *M. Estradum* (eph, p-nv and y); *M. floribunda* (eph, w, y, and br-p); *M. Gaskolliana* (eph, mv-p and y); *M. gommata* (eph, ochre, o, and p); *M. ignea* (eph, r); *M. ionocharis* (eph, w-y, blotched p); *M. Lindeni* (eph, v, pi, or m, w eye) and vars.; *M. melanopus* (eph, w, p, and y); *M. polysticta* (eph, w, spotted r); *M. Reichenbachiana* (eph, w-y and r); *M. Roozlii* (eph, bk-p and mv); *M. Schlimii* (eph, y, spotted br-r); *M. Shuttleworthii* (eph, p, g, and y); *M. splendida* (eph, r-v and w); *M. tovarensis* (eph, w); *M. triaristella* (eph, br and y); *M. triglochium* (eph, r and y); *M. Veitchiana* (eph, y, v-r, and y); *M. Wallisii* (eph, y, r, and r-p); *Nanodos Medusae* (eph, g, br, and p); *Odontoglossum blandum* (eph, y-w, spotted p-r); *O. constrictum Sanderianum* (eph, y, br, w, &c.); *O. coronarium* (eph, r-br and y); *O. crispum* (eph, w, y, and r-b) and vars.; *O. cristatum* (eph, c-y, w, and br or p); *O. Dormanianum* (eph, w and y, spotted); *O. elegans* (eph, y and w, blotched br and r); *O. grande* (eph, o-y and c-w, blotched br); *O. Hallii* (eph, y, br, w, and y); *O. hastilabium* (eph, c-w, w-br, w, and pi, sc); *O. laeve* (eph, br, y, w, and w, sc); *O. Lindeni* (eph, y); *O. Londeaboroghianum* (eph, y); *O. luteo-purpureum* (eph, br or p, w, and y) and vars.; *O. maculatum* (eph, y, spotted br and br-r); *O. odoratum* (eph, y, br, w, and p, sc); *O. o. Lecanum* (eph, y, spotted br); *O. Pescatorei* (eph, w, blotched p-r and y); *O. pulchellum majus* (eph, w, y, and p); *O. Rossii* (eph, w, br, and y); *O. R. Warnerianum* (eph, w, br, pi, and y); *O. Schillerianum* (eph, y, br, and p); *O. tripudians* (eph, br, y-g, w, and p-v); *O. triumphans* (eph, y, br-r, pi, and w); *O. Uro-Skinneri* (eph, g, w, r-br, &c.); *O. Wilkeanum* (eph, w, y, and y); *Oncidium semulum* (eph, br, p-v, and y); *O. Carderi*

Cool-house—continued.

(eph, br, w, y, and pi); *O. ocolor* (eph, y); *O. oornigerum* (eph, y, spotted r); *O. cucullatum* (eph, p-br, pi-l or pi-p, and p); *O. o. macrochilum* (eph, p, r, mv, and v); *O. diadema* (eph, br, lip y); *O. incurrum* (eph, w, marked l and br, sc); *O. ornithorhynchum* (eph, pi-p, sc) and var.; *O. Phalænopsis* (eph, c, r, v, c-w, and y); *O. Warscewiczii* (eph, y, w, and br); *O. Wentworthianum* (eph, g-y, barred br); *Pterostylis Baptistii* (ter, g, marked w and br); *Sarcochilus Fitzgeraldii* (eph, w, spotted r); *Satyrium aureum* (ter, o, shaded r); *S. coriifolium* (ter, y); *S. nepalense* (ter, pi, sc); *Shoderis grandiflora* (eph, r); *S. militaris* (eph, r and y); *Spathoglottis Fortunei* (ter, y, blotched r); *Zygophyllum caeleste* (eph, b, w, v, y, &c.); *Z. crinitum* (eph, g, br, and w or c); *Z. Gautieri* (eph, g, br, p-b, &c.); *Z. Mackayi* (eph, y-g, br-p, w, b, &c.); *Z. maxillare* (eph, g, br, and b-p); *Z. Sedeni* (eph, p-br, b-p, and g); *Z. Wallisii* (eph, c-w and w).

INTERMEDIATE HOUSE.—*Anguloa Clowesii* (eph, y and w, sc); *A. eburnea* (eph, w, spotted pi); *A. Ruckeri* (eph, y and r) and var.; *A. uniflora* (eph, w, br, ar, l pi); *Arpophyllum giganteum* (eph, p and pi); *A. spicatum* (eph, r); *Batemannia grandiflora* (eph, g, r-br, w, &c.); *B. Wallisii* (eph, g, br, &c.); *Bletia florida* (ter, pi); *B. Shepherdii* (ter, p and y); *B. Sherrattiana* (ter, pi-p, marked w and y); *Brassavola Digbyana* (eph, c-w, streaked p); *B. Gibbiana* (eph, w, spotted br); *B. glauca* (eph, y, o, and w, sc); *B. lineata* (eph, c and w, sc); *B. venosa* (eph, c and w); *Brassia antherotes* (eph, y, br, and bk); *B. caudata* (eph, y and br); *B. Lanceana* (eph, y, and br or r, sc) and vars.; *B. Lawrenceana* (eph, y, br, and g, sc) and var.; *B. maculata* (eph, y-g, blotched br) and var.; *B. verrucosa* (eph, g, blotched bk-p, and w) and var.; *Bulbophyllum barbigerum* (eph, g-br); *B. Lobbi* (eph, y, spotted p); *B. reticulatum* (eph, w, striped p); *B. siamense* (eph, y, striped p); *Calanthe Masuca* (ter, v); *C. Sieboldii* (ter, y); *C. veratrifolia* (ter, w); *Cattleya amethystoglossa* (eph, pi-l, p, &c.); *C. bicolor* (eph, br-g and pi-p); *C. choocensis* (eph, w, y, and p); *C. crispa* (eph, w or w-l, and r); *C. Dawsoni* (eph, pi-p, y, and pi); *C. Devoniana* (eph, w, pi, and pi-p); *C. dolosa* (eph, pi and y); *C. Dominicana* (eph, w, pi-p, pi, and o) and vars.; *C. Dowiana* (eph, y, p, and v-pi); *C. eldorado* (eph, pi, p-r, and o); *C. o. splendens* (eph, pi, o, w, and v-p); *C. exoniensis* (eph, pi-l, p, and y); *C. gigas* (eph, pi, p or r-v, and y) and var.; *C. granulosa* (eph, y-g, w, br, and r); *C. guatemalensis* (eph, pi-p, buff, r-p, o, &c.); *C. guttata* (eph, g, w, p, y, and r) and vars.; *C. Harrisonis* (eph, pi, tinged y) and var.; *C. intermedia* (eph, pi or pi-p and v-pi) and vars.; *C. labiata* (eph, pi and r) and vars.; *C. marginata* (eph, pi-r, pi, and w, sc) and vars.; *C. maxima* (eph, pi, w, p-r, and o); *C. Mendelli* (eph, w to pi and m); *C. Mossii* (eph, pi, &c.) and vars.; *C. Regnellii* (eph, g, b, pi-p, w, &c.); *C. Sedeniana* (eph, pi, g, w, and p); *C. Skinneri* (eph, pi-p and w); *C. speciosissima* (eph, pi-w, b, w, and y); *C. Trianae* (eph, pi-w, o or y, and p) and vars.; *C. Wageri* (eph, w and y); *C. Walkeriana* (eph, pi and y, sc); *C. Warneri* (eph, pi and r) and vars.; *C. Warscewiczii* (eph, p-w and r); *Colia Baueriana* (eph, w, sc); *C. macrostachya* (eph, r); *Coeliopsis hyacinthosma* (eph, w, &c.); *Cecologyne odoratissima* (eph, w, stained y, sc); *C. ciliata* (eph, w and p, marked br); *C. cristata* (eph, w and y, sc); *C. Cumingii* (eph, y and w); *C. flacida* (eph, w, marked y and r, sc); *C. Hookeriana* (eph, pi-p, w, br, and y); *C. humilis* (eph, w, pi, r, and br); *C. maculata* (eph, w, marked r); *C. media* (eph, c-w, y, and br); *C. ocellata* (eph, w, y, br, and o) and var.; *C. plantaginea* (eph, g-y, w, and br); *C. Schilleriana* (eph, y, blotched p); *C. speciosa* (eph, br or g, r, and w); *C. sulphurea* (eph, y-g, w, and y); *C. viscosa* (eph, w, streaked br); *C. Wallichiana* (eph, pi, striped w, sc); *Comparattia coccinea* (eph, r, tinged w); *C. falcata* (eph, pi-p); *C. macroplectron* (eph, pi, marked r); *C. rosea* (eph, pi); *Cymbidium eburneum* (eph, w and y, sc); *C. Mastersii* (eph, w, stained pi, sc); *C. sinense* (eph, br, p, and y-g, sc); *Cypripedium insignis* (ter, y-g, y, r-br, and w) and vars.; *Dendrobium aurum* (eph, y, marked br and p,

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ac); *Epidendrum evectum* (eph, pi-p); *Gongora maculata* (eph, y, spotted pi-r); *Grobya Amherstiae* (eph, ochre-spotted); *Laelia albida* (eph, w, pi, and y, sc); *L. ancoeps* (eph, pi-l, pi, and l, sc) and vars.; *L. autumnalis* (eph, pi and y, sc) and var.; *L. caloglossa* (eph, p and w); *L. cinnabarina* (eph, o-r); *L. Dayana* (eph, pi-p, p, l, and w); *L. Dominiana* (eph, p); *L. Dormaniana* (eph); *L. elegans* (eph, w, pi, or r, and p) and vars.; *L. flammea* (eph, o-r and p-r); *L. harpophylla* (eph, o-r and w); *L. Jongheana* (eph, b-p, y, and w); *L. Lindleyana* (eph, w or pi, y, &c.); *L. monophylla* (eph, o-r); *L. Perrinii* (eph, pi-p and r); *L. Philbrickiana* (eph, br, p, and w); *L. praestans* (eph, pi and r-p); *L. purpurata* (eph, w and p-r) and vars.; *L. superbiens* (eph, pi, r, and y); *L. Veitchiana* (eph, l, p, and y); *L. Wallisii* (eph, pi and y); *L. xanthina* (eph, y, w, and o); *Lycaete aromatica* (eph, y); *L. cristata* (eph, w and y); *L. Deppei* (eph, y, w, br, and r); *L. jugosa* (eph, c, w, and p); *L. lasioglossa* (eph, br, y, and p); *L. Skinneri* (eph, w, pi-l, and r) and vars.; *Maxillaria grandiflora* (ter, w, y, and r); *M. luteo-alba* (ter, c-w); *M. luteo-grandiflora* (ter, c-w, o, and br-r); *M. splendens* (ter, w, o, and pi); *M. variabilis* (ter, p); *M. venusta* (ter, w, y, and r); *Mitonia candida* (eph, y, w, br, and pi); *M. Clowesii* (eph, y, br, and p); *M. cuneata* (eph, br, y-g, w, and pi); *M. flavescens* (eph, y, spotted r); *M. Lamarckiana* (eph, y and br); *M. Phalaenopsis* (eph, w and p-r); *M. Regnellii* (eph, w-pi and l-pi) and var.; *M. spectabilis* (eph, w and pi-v) and vars.; *M. vexillaria* (eph, pi, w, and r); *M. Warscewiczii* (eph, br, v-p, br-r, &c.); *Odontoglossum bictenense* (eph, y-g, br-p, l, &c.) and vars.; *O. Cervantesii* (eph, pi-l, r-br, and w); *O. cirrhosum* (eph, c-w, p-v, &c.); *O. citrosimum* (eph, w, lip p, sc); *O. Inaleayi* (eph, y or y-g, r-br, y, and br); *O. maxillare* (eph, w, p-br, and o); *O. pulchellum* (eph, w, dotted p, sc); *O. Rosii Ehrenbergii* (eph, w, barred br); *Oncidium annulare* (eph, br and y); *O. calanthum* (eph, y, stained r); *O. chrysothyrsus* (eph, g, r, and y); *O. crispum* (eph, r-br and g-y) and vars.; *O. dasystyle* (eph, ochre, br-p and p); *O. divaricatum* (eph, y and br); *O. euxanthinum* (eph, g-y, br, and y); *O. excavatum* (eph, y, blotched br); *O. flexuosum* (eph, y, spotted br); *O. Forbesii* (eph, r-br, w, and y); *O. Jonesianum* (eph, w-ochre, br, and p); *O. leucochilum* (eph, g, banded br or r, and w or y); *O. macranthum* (eph, y and p-br); *O. Marshallianum* (eph, y, blotched br); *O. oblongatum* (eph, y); *O. protæxum* (eph, br and y, sc); *O. rupestre* (eph, y, spotted br); *O. sarcoodes* (eph, o-y, blotched r); *O. serratum* (eph, br, bordered y); *O. splendendum* (eph, g, barred br; lip y); *O. tigrinum* (eph, br, barred y, lip y, sc); *O. varicosum* (eph, g, br, and y); *O. v. Rogersii* (eph, y); *Phaius albus* (eph, w, marked y and pi); *P. Bensonæ* (pi-p, w, and y); *P. bicolor* (eph, r-br, pi, y, and w); *P. Dodgsonii* (eph, w and r-br); *P. grandifolius* (ter, br and w) and var.; *P. irroratus* (c-w, pi, and y); *P. Marshalliæ* (w, marked y); *P. Wallichii* (ter, o-y or p-y); *Phystrus argenteus* (ter, fol g and st); *P. nobilis* (ter, fol g, veined st); *P. pictus* (ter, fol g, w, and st); *Pogonia Fordii* (ter, y, br, w, and pi); *P. Gammieana* (ter, l, pi, and g); *Ponthieva maculata* (ter, br, w, y, and r-br); *Renanthera coccinea* (eph, r); *Selenipedium Ainsworthii* (ter, w or y-g, and p); *S. calurum* (ter, g, p, pi-r, and r); *S. carolinum* (ter, g, w, br, and bk); *S. caudatum* (ter, y, r-br, and br); *S. Dominicanum* (ter, y-g, r-br, and p); *S. grande* (ter, y-w, r, y-g, &c.); *S. Lindeni* (ter, w, g, and p-r); *S. Roezii* (ter, y-g, r-p, &c.); *S. Schlimii* (ter, w and pi); *S. Schröders* (ter, r-g, g-p, r, &c.); *S. Sedeni* (ter, g-w, w, and r); *Sobralia macrantha* (ter, p and r, sc); *Spiranthes cinnabarina* (ter, y-pi and y); *S. colorans* (ter, r); *Stelis Bruckmülleri* (eph, y-p and p); *S. oiliaris* (eph, p); *Trichocentrum albo-purpureum* (eph, br, y, w, and p); *T. orthocentrum* (eph, br, y, w, and r); *T. Pfavii* (eph, br and w, blotched r); *T. tigrinum* (eph, g-y, p-br, w, and p); *Trichopilia crispata* (eph, r and w); *T. fragrans* (eph, y-g, w, and o, sc); *T. Galleottiana* (eph, g, br, y, and r-p); *T. marginata* (eph, br-r, g-y, w, &c.); *T. nobilis* (eph, w and o,

Intermediate House—continued.

sc); *T. suavis* (eph, w, y, and v-pi, sc); *Vanda oerules* (eph, b); *Zygopetalum brachypetalum* (eph, br, g, w, b-v, and b); *Z. citrinum* (eph, y, blotched r); *Z. Clayi* (eph, p-br, g, v-p, &c.); *Z. Klabochorum* (eph, w, p, y-p, &c.) and vars.

STOVE.—*Acanthophippium bicolor* (ter, p and y); *A. Curtisii* (ter, p and y, &c.); *Acriopsis densiflora* (eph, g and pi); *A. picta* (eph, w, g, and p); *Ada aurantiaca* (eph, o-r, striped bk); *Aeranthus grandiflora* (aurant, y-g); *Aerides affine* (eph, pi); *A. a. superbum* (eph, pi); *A. orassifolium* (eph, p or b, and w); *A. crispum* (eph, p-pi); *A. o. Warneri* (eph, w and pi); *A. c. cylindricum* (eph, w and pi); *A. falcatum* (eph, w, pi, and r); *A. Fieldingii* (eph, w, mottled pi); *A. Houlettianum* (eph, y, w, p, &c.); *A. Lobbii* (eph, w, v, &c.); *A. maculatum* (eph, pi, p-pi, &c.); *A. m. Schraderei* (eph, w, l, and pi); *A. mitratum* (eph, w and v); *A. nobile* (eph, w, pi, y, and pi-p); *A. odoratum* (eph, c-w and pi, sc); *A. o. majus* (eph, c-w and pi, sc); *A. o. purpurascens* (eph, w and pi); *A. quinquevulnerum* (eph, w, r, p, and g, sc); *A. q. Farmeri* (eph, w, sc); *A. roseum* (eph, pi); *A. r. superbum* (eph, pi); *A. virens Ellisii* (eph, w, pi, and b); *A. Williamsii* (eph, pi-w); *Aganisia oerules* (eph, b, w, and v); *A. fimbriata* (eph, w and b); *A. pulchella* (eph, w, blotched y); *Angraecum arcuatum* (eph, w); *A. bilobum* (eph, w, tinged pi); *A. cephalotes* (eph, w); *A. Chaillanum* (eph, w and y-g); *A. citratum* (eph, c-w or y); *A. eburneum* (eph, g-w and w); *A. Ellisii* (eph, w and br, sc); *A. Kotschyi* (eph, y-w, sc); *A. modestum* (eph, w); *A. pellucidum* (eph, w); *A. pertusum* (eph, w); *A. Scottianum* (eph, w and y); *A. aequipedale* (eph, w); *Anoctochilus argyreneura* (ter, fol g and st); *A. Bullenii* (ter, fol g, and r or y); *A. Dawsonianum* (ter, fol g and r-br) and var.; *A. intermedium* (ter, fol g and y); *A. Lowii* (ter, fol g, o-br, and y) and var.; *A. Ordianus* (ter, fol g and y); *A. Roxburghii* (ter, fol g and st); *A. Ruokerii* (ter, fol g, spotted); *A. setaceus* (ter, fol g and r-br) and vars.; *A. striatus* (ter, fol g and w); *A. Turnerii* (ter, fol bronze and y); *A. Veitchii* (ter, fol g); *A. xanthophyllum* (ter, fol g and o); *A. zebrinus* (ter, fol g and r-br); *Ansellia africana* (eph, g-y, br-r, and y); *A. a. gigantea* (eph, y and br, sc); *A. a. nilotica* (eph, g-y, br-r, and y); *Aspasia epidendroides* (eph, w-y); *A. lunata* (eph, g, w, and br); *A. papilionacea* (eph, y, b, o, and v); *A. psittacina* (eph, g, br, p, v, and w); *A. variegata* (eph, g, w and y-r); *Bifrenaria Hadwenii* vars. (ter, b, y, &c.); *Broughtonia sanguinea* (eph, r); *Burlingtonia Batemanni* (eph, w and mv); *B. candida* (eph, w, stained y, sc); *B. decora* (eph, w or pi, spotted r) and vars.; *B. fragrans* (eph, w, stained y, sc); *B. rigida* (eph, p-w, spotted pi); *B. venusta* (eph, w, tinged pi and y); *Calanthe Dominyi* (ter, l and p); *C. Petri* (ter, w-y); *C. Veitchii* (ter, pi, w throat); *C. vestita* (ter, w) and vars.; *Camaridium ochroleucum* (eph, y-w); *Catasotum callosum* (eph, br-y); *C. maculatum* (eph, g, spotted p); *C. Russellianum* (eph, g); *C. saccatum* (eph, p, y, and r); *Cattleya Aolandis* (eph, br, y, pi, and p); *C. superba* (eph, pi, lip r); *Chysis aurea* (eph, y, marked r); *C. a. Lemminghei* (eph, pi); *C. bracteescens* (eph, w, blotched y); *C. ohelsoni* (eph, y, marked r); *C. laevis* (eph, y, o, and r); *Cirrhaea Loddigesii* (eph, g-y and r); *Cirrhopetalum auratum* (eph, y-w, marked r and y); *C. Cumingii* (eph, r-p); *C. Medusæ* (eph, y-w, dotted pi); *C. Thouarsii* (eph, o, y, and r); *C. tripudians* (eph, br and p-w); *Coleogyne asperata* (eph, c, br, y, and o); *C. barbata* (eph, w and br); *C. Gardneriana* (eph, w and y-g); *C. Massangeana* (eph, ochre and br); *C. pandurata* (eph, g and bk, sc); *Coryanthes macrantha* (eph, y, p, r, &c.); *Cycnoches aureum* (eph, y); *C. barbatum* (eph, g-w, spotted pi); *C. chlorochilum* (eph, y-g, sc); *C. Egertonianum* (eph, p); *C. Lehmanni* (eph, pi and o); *C. Loddigesii* (eph, br-g); *C. Warscewiczii* (eph, g); *Cymbidium bicolor* (eph, p, marked r); *C. canaliculatum* (eph, p-br and g-w); *C. Dayanum* (eph, y-w, streaked p); *C. Devonianum* (eph, br, w, and p); *C. giganteum* (eph, br, y, and p); *C. Hookerianum* (eph, g, y, and p); *C. Huttoni*

Stove—continued.

(*eph*, *br* and *w*); *C. Leachianum* (*eph*, *w-y* and *br*); *C. Lowianum* (*eph*, *g*, *br*, *p*, and *w-y*); *C. Parishii* (*eph*, *w* and *o*, spotted *p-br*); *C. pendulum purpureum* (*eph*, *r* and *w*); *Cyrtipedium Argus* (*ter*, *w*, *pi*, *g*, *bk-p*, and *p-br*); *C. Ashburtonæ* (*ter*, *w*, *g*, *p*, and *y*); *C. barbatum* (*ter*, *w* and *p*) and vars.; *C. Boxallii* (*ter*, *g*, *w*, *br-bk*, &c.); *C. concolor* (*ter*, *c*, speckled); *C. Dayanum* (*ter*, *w*, *p*, and *g*); *C. Druryi* (*ter*, *g-y*, *bk*, and *br*); *C. euryandrum* (*ter*, *w*, *r*, &c.); *C. Harrisianum* (*ter*, *p*, tipped *w* and *g*); *C. Haynaldianum* (*ter*, *pi*, *w*, *g*, and *br*); *C. Hookeræ* (*ter*, *y-br*, *pi-p*, and *y*); *C. lævigatum* (*ter*, *p*, *g*, and *y*); *C. Lawrenceanum* (*ter*, *w*, *g*, and *p*); *C. Lowii* (*ter*, *g*, *p*, and *br*); *C. niveum* (*ter*, *w*, freckled *br*); *C. pardinum* (*ter*, *w*, *g*, *p*, &c.); *C. Parishii* (*ter*, *g-w* and *p*); *C. Petri* (*ter*, *w*, *br*, and *g*); *C. selligerum* (*ter*, *w* and *bk-r*); *C. Spioerianum* (*ter*, *w*, *g*, *p*, and *v*); *C. Stonei* (*ter*, *w*, *r*, and *p*); *C. superbiens* (*ter*, *w* and *br*); *C. vernixium* (*ter*, *br*, *r*, and *g*); *C. vexillarium* (*ter*, *w*, *g*, *p*, and *br*); *C. villosum* (*ter*, *o-r*, *g*, *p*, and *br*); *Cyrtocochilus citrinum* (*eph*, *g*); *C. maculatum* (*eph*, *g*, spotted *pi*); *Dendrobium Ainsworthii* (*eph*, *w*, *pi*, and *p*, *ter*); *D. albo-sanguineum* (*eph*, *w*, blotched *r*); *D. Boxallii* (*eph*, *w*, marked *p* and *y*); *D. Brymerianum* (*eph*, *y*); *D. obryosotis* (*eph*, *y*, blotched *p*); *D. olavatum* (*eph*, *y*, spotted *c*); *D. orassinode* (*eph*, *w*, *p*, and *o*) and vars.; *D. crystallinum* (*eph*, *w*, *o*, *p*, and *pi*); *D. Dalhousianum* (*eph*, *y*, *r*, and *pi*); *D. densiflorum* (*eph*, *y* and *o*) and vars.; *D. Devonianum* (*eph*, *w*, *p*, *o*, &c.) and vars.; *D. Draconis* (*eph*, *w*, marked *r*); *D. erythroanthum* (*eph*, *o*, striped *p*); *D. Falconeri* (*eph*, *w*, marked *p* and *o*); *D. Farmeri* (*eph*, *y*, tinged *pi*); *D. fimbriatum* (*eph*, *o*); *D. f. oculatum* (*eph*, *o*, blotched *p*); *D. formosum* (*eph*, *w* and *o*); *D. Fytchianum* (*eph*, *w*); *Epidendrum aurantiacum* (*eph*, *o*, striped *r*); *E. bicornutum* (*eph*, *w*, spotted *r*); *E. falcatum* (*eph*, *g-y* and *y*, *sc*); *E. nemorale* (*eph*, *mv* or *pi-l*, and *v*); *E. syringothyrsis* (*eph*, *p*, marked *o* and *y*); *Epistephium Williamsii* (*ter*, *r-p*); *Galeandra Baueri lutea* (*ter*, *y*, lined *p*); *G. Devoniana* (*ter*, *w*, marked *pi*); *G. nivalis* (*ter*, *y-g*, *w*, and *v*); *Goodyera Veitchii* (*ter*, *r-br*, ribbed *si*); *Grammatophyllum multiflorum* (*eph*, *g*, *br*, and *p*); *G. speciosum* (*eph*, *y*, *p*, and *r*); *Houlletia odoratissima* (*eph*, *o-br* and *y*); *H. picta* (*eph*, *br* and *y*); *Lissochilus Horsfallii* (*ter*, *br*, *w*, *pi*, *g*, and *p*); *L. Krobsii* (*ter*, *g*, *p*, and *y*); *Luisia platyglossa* (*eph*, *p*, or *p* and *w*); *Macradenia Brassavolæ* (*eph*, *br*, *y*, *w*, and *p*); *Microrostylis calophylla* (*ter*, *y*); *M. discolor* (*ter*, *y*, changing to *o*); *M. metallica* (*ter*, *y* and *pi*); *Mormodes atropurpureum* (*eph*, *p-br* or *r-br*); *M. buccinator* (*eph*, *r-br*, dotted); *M. Ocanæ* (*eph*, *o-y*, spotted *r-br*); *M. pardinum* (*eph*, *y*, spotted *br*); *Oncidium ampliatum*

Stove—continued.

(*eph*, *y*) and var.; *O. barbatum* (*eph*, *y* and *br*); *O. bicallousum* (*eph*, *br*, lip *y*); *O. bifolium* (*eph*, *g-br* and *y*) and var.; *O. Cavendishianum* (*eph*, *y*); *O. cebolleta* (*eph*, *y-r*, spotted); *O. Lanceanum* (*eph*, *y*, *br*, *v*, *pi*, &c., *sc*) and vars.; *O. Papilio* (*eph*, *y* and *br*) and vars.; *Pachystoma Thomsonianum* (*ter*, *w*, *p*, *g*, and *br*); *Peristeria elata* (*eph*, *w*, spotted *l*, *sc*); *P. pendula* (*eph*, *y*, spotted *r* and *br*); *Phaius tuberculatus* (*w*, blotched *br*); *Phalænopsis amabilis* (*eph*, *w*, streaked *y*); *P. amethystina* (*eph*, *w*, tinged *y* and *p*); *P. Aphrodite* (*eph*, *w*, lip *r*, *o*, and *y*); *P. Esmeralda* (*eph*, *pi*); *P. Luddomanniana* (*eph*, *w*, *br*, and *v*); *P. Parishii* (*eph*, *c*, lip *p*); *P. Reichenbachiana* (*eph*, *w-g*, *br*, *o*, and *mv-b*); *P. Sanderiana* (*eph*, *pi*, *w*, &c.); *P. Schilleriana* (*eph*, *pi* and *w*); *P. speciosa* (*eph*, *w*, *pi*, *pi-p*, and *y*); *P. Stuartiana* (*eph*, *c*, *g-y*, *br*, and *w*); *P. Veitchiana* (*eph*, *p* and *p-w*); *P. violacea* (*eph*, *w*, *v-r*, and *pi*); *Renanthera Lowii* (*eph*, *g* blotched *r-br*, and *y* marked *r*); *Rhynchostylis retusa* (*eph*, *w*, striped *v-pi*); *Saccolabium acutifolium* (*eph*, *y*, lip *pi*); *S. Berkeleyi* (*eph*, *w* and *b*); *S. bigibbum* (*eph*, *y* and *w*); *S. borneense* (*eph*, *br-y*); *S. calopterum* (*eph*, *p* and *w*); *S. oeleste* (*eph*, *b*); *S. curvifolium* (*eph*, *r*); *S. giganteum* (*eph*, *w*, *b*, and *mv-v*, *sc*) and var.; *S. rubrum* (*eph*, *pi*); *S. Turneri* (*eph*, *l* spotted); *S. violaceum* (*eph*, *w* and *mv*); *S. v. Harrisonianum* (*eph*, *w*, *sc*); *Schomburgkia tibicinis grandiflora* (*eph*, *p*, *o*, *w*, *y*, and *r*); *S. undulata* (*eph*, *br-p* and *v-p*); *Scuticaria Steelii* (*eph*, *y*, *br-r*, and *o*, *sc*); *Sobralia Cattleya* (*ter*, *p-br*, *p*, and *y*); *S. dichotoma* (*ter*, *w*, *v*, &c.); *S. rosea* (*ter*, *mv* and *r*); *Spathoglottis Lobbii* (*ter*, *g-y* and *br*); *S. pubescens* (*ter*, *y*, lip marked *v*); *S. rosea* (*ter*, *pi*); *Stanhopea Bucephalus* (*eph*, *y* and *p*, *sc*); *S. grandiflora* (*eph*, *w*, dotted *r*, *sc*); *S. insignis* (*eph*, *y*, marked *p*, *sc*); *S. oculata* (*eph*, *y*, spotted *l* and *br*); *S. tigrina* (*eph*, *o-y*, blotched *p-br*, *sc*); *S. Wardii* (*eph*, *y*, dotted *p*, *sc*); *Stauroopsis Batemanni* (*eph*, *y*, *p-r*, *v*, and *pi-p*); *S. gigantea* (*eph*, *y*, *br*, and *w*); *Trichoglottis fasciata* (*eph*, *br*, *w*, *y*, and *p*); *Trigonidium obtusum* (*eph*, *r-y*, *w*, and *pi*); *Vanda cœrulescens Boxallii* (*eph*, *w*, *l*, and *b*); *V. Hookeriana* (*eph*, *w*, *pi*, *m*, and *p*); *V. insignis* (*eph*, *br*, *y-w*, *w*, and *p-pi*); *V. lamellata Boxalli* (*eph*, *c*, *r-br*, *m-pi*, &c.); *V. Parishii* (*eph*, *g-y*, *m*, *w*, &c., *sc*); *E. Roxburghii* (*eph*, *g*, *v-p*, *w*, &c.); *V. Sanderiana* (*eph*, *pi*, *y*, *p-r*, &c.); *V. suavis* (*eph*, *v*, *p*, and *pi-p*, *sc*); *V. teres* (*eph*, *w*, *pi-m*, *o*, &c.); *V. tricolor* (*eph*, *w*, *y*, *pi-m*, &c., *sc*); *Warrea tricolor* (*ter*, *y-w*, *y*, and *p*); *Zygopetalum candidum* (*eph*, *w*, *pi-p*, &c.); *Z. Dayanum* (*eph*, *w*, *p-v*, *y*, *r*, &c.); *Z. Gairianum* (*eph*, *v*, *p*, *o*, &c.); *Z. rostratum* (*eph*, *w*, *g*, *br-p*, &c.); *Z. triumphans* (*eph*, *w* and *b-bk*); *Z. Wendlandii* (*eph*, *w*, marked *v-p*) and var.



AN INDEX TO CACTI AND OTHER SUCCULENTS.

DURING the last few years Succulents have been far more extensively cultivated than formerly, and seem to be still growing in popular favour—a fact which is not surprising to anyone acquainted with the singularity of appearance of the plants, and the beauty of form and diversity and brilliancy of colour in their flowers. In addition to these attractions Succulent Plants possess the great merit of being remarkably easy of cultivation, while they are capable of enduring with impunity an amount of neglect which would prove fatal to almost any other subjects.

The lists here given comprise the best species in cultivation. The plants are arranged according to their degrees of hardiness, but those classified as hardy will be found to grow much better if a little protection is afforded them in winter. The great majority of Succulents require cool-house treatment; indeed, most of the species grown in stoves would probably thrive in a lower temperature than that to which they are usually subjected.

For general remarks on the culture of these plants, the reader is referred to the article on "Cactus," in Vol. I.

The following are the abbreviations used in the descriptions of the flowers:—

br, brown; *c*, cream; *g*, green; *mv*, mauve; *o*, orange; *p*, purple; *pi*, pink; *r*, red; *sc*, scented; *v*, violet; *w*, white; *y*, yellow.

HARDY.—*Agave utahensis* (*y*); *Cotyledon Sempervivum* (*r*); *C. spinosa* (*y*); *C. Umbilicus* (*y*); *Euphorbia Cyparissias* (*y*); *E. Myrsinites* (*y*); *Opuntia Engelmanni* (*y*); *O. Ficus-Indica* (*y*); *O. missouriensis* (*y*); *O. Rafinesquii* (*y*); *Sedum album* (*w*); *S. anglicum* (*w* or *pi*); *S. brevifolium* (*w*); *S. glaucum* (*pi-w*); *S. lyidium* (*pi*); *S. pulchellum* (*pi-p*); *S. reflexum* (*y*); *Sempervivum arachnoideum* (*r*); *S. arenarium* (*y*); *S. atlanticum* (*r*); *S. Boissieri* (*r*); *S. Braunii* (*r*); *S. calcareatum* (*r-w*); *S. calcareum* (*r*); *S. fimbriatum* (*r*); *S. Funckii* (*r-p*); *S. Henffeli* (*y*); *S. Lamottei* (*pi*); *S. Moggridgei* (*r*); *S. montanum* (*mv-p*); *S. Pomellii* (*pi-r*); *S. soboliferum* (*y*); *S. Walferi* (*y*); *Yucca filamentosa flaccida* (*w*).

COOL-HOUSE.—*Adenium obesum* (*pi-r*); *Agave americana* (*y-g*); *A. a. picta*; *A. attenuata* (*g-y*); *A. Botteri* (*g-y*); *A. Celsiana* (*p-br*); *A. Corderoyi*; *A. dasy-*

Cool-house—continued.

lirioides (*y*); *A. Deserti* (*y*); *A. Elemoetiana* (*y-g*); *A. filifera* (*g*); *A. heteracantha* (*g*); *A. Hookeri* (*y*); *A. lophantha* (*g*); *A. macracantha* (*g*); *A. Maximiliana*; *A. miradorensis*; *A. pruinosa*; *A. Salmiana* (*g-y*); *A. schidigera* (*g*); *A. Shawii* (*g-y*); *A. striata* (*br-g* outside, *y* inside); *A. Victorie Regina*; *A. virginica* (*g-y*); *A. Warrelliana*; *A. xylacantha* (*g*); *Aloe abyssinica*; *A. albisipina* (*r*); *A. albocincta* (*r*); *A. arborescens* (*r*); *A. Bainesii* (*y-r*); *A. brevifolia* (*r*); *A. cæsia* (*r*); *A. ciliata* (*r*); *A. Cooperi*; *A. dichotoma* (*r*); *A. distans* (*r*); *A. glauca* (*r*); *A. Greenii* (*r*); *A. humilis* (*r*); *A. latifolia* (*y-r*); *A. lineata* (*r*); *A. macrocarpa* (*r*); *A. mitraformis* (*r*); *A. nobilis* (*r*); *A. Perryi* (*g*); *A. saponaria* (*r*); *A. Schimperii* (*r*); *A. serratula* (*r*); *A. striatula* (*y*); *A. succotrina* (*r*); *A. tricolor* (*r*); *A. variegata* (*r*); *A. vera* (*y*);

Cool-house—continued.

Anacampseros arachnoides (w); *A. rubens* (r); *A. varians* (r); *Apiora aspera*; *A. bicarinata*; *A. foliolosa* (g); *A. pentagona* (w); *A. spiralis* (r-w); *Beaucarnea longifolia* (w); *Beschorneria Tonelii* (r and g); *Boucaerosia marocana* (r-p, lined w); *Bulbine alooides* (y); *B. caulescens* (y); *Cotyledon agavoides* (o); *C. atropurpurea* (r); *C. californica* (y); *C. coccinea* (r); *C. coruscans* (o); *C. fulgens* (r and y); *C. gibbiflora metallica* (y, tipped r); *C. grandiflora* (r-o); *C. Pachyphytum* (r); *C. Peacockii* (r); *C. Pestalozzi* (pi); *C. racemosa* (r); *C. retusa* (y); *C. velutina* (y and g); *Crassula arborescens* (pi); *C. Bolusii* (w-pi); *C. ciliata* (c); *C. coccinea* (r); *C. Cooperi* (w); *C. falcata* (r or w); *C. jasminea* (w, turning r); *C. lactea* (w); *C. rosularis* (w); *Dasyliiron acrotrichum* (w); *D. glaucophyllum* (w); *Decabelone Barklyi* (y-w, spotted r); *Davalia Corderoyi* (g or r-br); *D. polita* (br-p); *Dyckia argentea*; *Euphorbia atropurpurea* (r-p); *Furcraea longæva* (w); *Gasteria brevifolia* (r); *G. carinata* (r); *G. Croucheri* (w and pi); *G. disticha* (r); *G. maculata* (r); *G. pulchra* (r); *G. verrucosa* (r); *Haworthia attenuata*; *H. cymbiformis*; *H. retusa*; *H. rigida*; *Hoodia Bainii*; *H. Gordoni*; *Huernia brevirostris* (y, pi-w, and r); *H. oculata* (w and v-p); *Leuchtenbergia principis* (y); *Mammillaria bicolor* (p); *M. clava* (y); *M. dolichocentra* (pi or r); *M. gracilis* (y); *M. Peacockii*; *M. pectinata* (y); *M. pusilla* (y); *M. sanguinea* (r); *M. stellarata* (w); *M. Wildiana* (pi); *Mesembryanthemum blandum* (w, becoming pi or r); *M. candens* (w); *M. coccineum* (r); *M. conspicuum* (r); *M. Cooperi* (p); *M. cordifolium variegatum* (pi-p); *M. crystallinum* (w); *M. densum* (pi); *M. edule* (y); *M. floribundum* (r, marked w); *M. formosum* (p); *M. inclaudens* (p-pi); *M. minutum* (y); *M. multiflorum* (w); *M. purpureo-album* (w, lined p); *M. spectabile* (r); *M. tricolorum* (y and r); *M. violaceum* (pi-w to v); *Opuntia arborescens* (p); *O. Bigelovii*; *O. braziliensis* (y);

Cool-house—continued.

O. cylindrica (r); *O. Davisii* (bronz y g); *O. echinocarpa* (g-y); *O. microdasys*; *O. multiflora* (y); *O. Salmiana* (y and r); *O. Tuna* (r-o); *O. vulgaris* (g-y); *Othonna crassifolia* (y); *Pelecyphora aselliformis* (w and pi); *Pilocereus Dautwitzii*; *P. Houlettii* (v); *P. senilis*; *Rhipsalis Cassytha* (g-w); *P. Houlettii* (y); *P. salicornoides* (y); *Rochea odoratissima* (y, c-w, or pi, sc); *Sedum acre aureum* (y); *S. sarmentosum* (y); *Sempervivum aureum* (y); *S. canariense* (w); *S. tabulariforme* (g-y); *Stapelia Asterias* (v, striped y); *S. namaquensis* (y, spotted p-br); *S. scororia* (p); *Talinum Arnotii* (y); *Trichocaulon piliferum* (y-r and p); *Yucca aloifolia* (w) and vars.

STOVE.—*Agave densiflora* (y-r); *A. polyacantha* (g-y); *A. Seemanni*; *A. univittata* (g); *A. vivipara* (g-y); *A. yuccæfolia* (g-y); *Bryophyllum calycinum* (y-r); *Cereus coccineus* (r); *C. fimbriatus* (pi); *C. flagelliformis* (r or pi); *C. grandiflorus* (w, y, and br, sc); *C. Macdonaldii* (w, r, and o); *C. pentagonus* (w); *C. quadrangularis* (w, sc); *C. serpentinus* (g, p, and w); *C. speciosissimus* (r); *Echinocactus pectiniferus* (g and pi); *E. Pentlandii* (pi); *E. rhodophthalmus* (pi); *Echinopsis cristata* (c-w); *E. Eyriesii* (w, sc); *E. multiplex* (pi); *Epiphyllum truncatum* (r or pi); *Euphorbia fulgens* (o-r); *E. meloformis* (g); *E. Monteiri* (g); *E. pulcherrima* (g-y and r); *E. splendens* (r); *Furcraea Bedinghausii* (g); *F. cubensis* (g); *F. elegans* (g and w); *F. gigantea* (w and g); *F. undulata* (g); *Kalanchoe grandiflora* (y); *Malacocarpus erinaceus* (y); *Melocactus communis* (pi-r); *Nopalea coccinellifera* (r); *Pereskia aculeata* (w); *P. Bleo* (r); *P. grandifolia* (w); *Phyllocactus Ackermanni* (r); *P. anguliger* (w, and o or y, sc); *P. crenatus* (c-w and o, sc); *P. latifrons* (c-w and r); *P. phyllanthoides* (r and w); *Podanthes geminata* (v-y, dotted r); *Talinum triangulare* (r or w).



AN INDEX TO PALMS, CYCADS, BAMBOOS, AND SCREW-PINES.

FOR the decoration of glass-houses Palms and Cycads form prominent objects; while for sub-tropical gardening some of the Palms and the Bamboos are indispensable. The lists here given comprise the choicest and most useful species of the Natural Orders *Arundinaceæ*, *Cycadaceæ*, *Palmeæ*, and *Pandaneæ*, as well as some of the taller specimens of *Gramineæ*. The heights attained by the plants in their native countries are, where known, given in feet. For information on Palms and their uses, and general instructions for their cultivation, the reader is referred to the article on "Palmeæ," in Vol. III.

HARDY.—*Bambusa Fortunei* (1-2) and vars.

HALF-HARDY.—*Arundo conspicua* (3-12); *A. Donax* (12); *A. D. varicolor* (3); *Bambusa aurea* (6-10); *B. striata* (6-10); *B. violascens*; *Diplothemium caudescens* (10).

COOL-HOUSE.—*Bowenia spectabilis*; *B. s. serrulata*; *Brahea dulcis*; *Ceroxylon andicola* (50); *Chamærops humilis* (20); *C. macrocarpa*; *Dioon edule* (3); *Encephalartos Altensteinii*; *E. Frederici Guilielmi*; *E. horridus*; *E. plumosus*; *E. villosus*; *E. v. ampliatus*; *Jubæa spectabilis* (40-60); *Livistona chinensis* (50); *L. Jenkinsiana* (10); *Macrozamia corallipes*; *M. Frazeri*; *M. Perowskiana*; *M. plumosa*; *Rhapis flabelliformis*; *Rhopalostylis Baueri* (20); *R. sapida* (20); *Sabal Adansonii*; *S. Blackburniana* (20-25); *S. Palmetto* (20-40); *S. umbraculifera*; *Trachycarpus excelsus* (24); *T. Fortunei*; *Washingtonia filifera* (20-40).

INTERMEDIATE HOUSE.—*Acrocomia sclerocarpa* (30); *Bambusa nana* (6-8); *Microcycas calocoma*; *Phoenix acaulis* (12); *P. reclinata* (50); *P. rupicola* (15-20); *P. sylvestris* (40); *P. tenuis*; *Zamia amplifolia*; *Z. furfuracea*; *Z. picta*; *Z. Wallisii*.

STOVE.—*Acanthophoenix crinita*; *Attalea amygdalina*; *A. Cohune* (50); *A. excelsa* (70); *A. speciosa* (70); *Bactris caryotefolia* (30); *B. pallidispina*; *Bambusa arundinacea* (50-60); *Borassus flabelliformis* (30); *Calamus asperimus*; *C. ciliaris*; *C. leptospadix*; *C. Lewisianus*; *C. Royleanus*; *C. spectabilis*; *C. viminalis* (50); *Caryota Cumingii* (10); *C. Bumphiana*; *C. sobolifera*; *Catolobtus præmorsus* (30-50); *Ceratolobus glaucescens*; *Chamædorea Arenbergi*;

Stove—continued.

iana; *C. desmoncoides*; *C. elegans* (4); *C. Ernesti-Augusti*; *C. formosa*; *C. geonomiformis* (4); *C. glaucifolia* (20); *C. graminifolia*; *C. microphylla*; *C. Sartorii*; *C. Wendlandi*; *Chrysalidocarpus lutescens* (30); *Cocos plumosa* (40-50); *C. Romanzoffiana*; *C. schizophylla* (8); *C. Weddeliana*; *Copernicia cerifera*; *Corypha umbraculifera* (100); *Cycas circinalis*; *C. media*; *C. Normanbyana*; *C. revoluta* (7); *Desmoncus granatensis*; *D. minor*; *Geonoma Carderi*; *G. congesta*; *G. elegans*; *G. gracilis*; *G. Martiana*; *G. Porteana*; *G. procumbens*; *G. pumila*; *G. Schottiana*; *Guilielma speciosa*; *Hedysoepe Cantorburyana* (32); *Heterospathe elata*; *Howea Belmoreana*; *H. Forsteriana* (35); *Hyophorbe amaricanalis*; *H. Verschaffeltii*; *Iriartea deltoidea*; *Lantania Commersonii* (7); *L. Loddigesii* (10); *L. Verschaffeltii* (7); *Lionala elegans*; *L. grandis* (6); *Livistona australis* (80); *L. humilis* (6-30); *Loxococcus rupicola* (30-40); *Martinezia caryotefolia*; *M. granatensis*; *Nephrosperma Van Houtteanum* (20-35); *Oreodoxa regia*; *Pandanus Candelabrum variegatus*; *P. conoides* (14); *P. heterocarpus*; *P. Houletii*; *P. minor*; *P. odoratissimus* (20); *P. Pancheri*; *P. utilis* (60); *P. Vandermeeschii* (20); *P. Veitchii*; *Phytelephas macrocarpa* (6); *Prestoea pubigera* (10-12); *Pritchardia pacifica* (10); *P. peroularum*; *P. Vuylstekiana*; *Scheela excelsa* (40-50); *S. unguis*; *Stevensonia grandiflora* (40); *Syagrus campestris*; *S. cocoides* (8-10); *Synechanthus fibrosus* (4); *Thrinax multiflora* (6-8); *T. parviflora* (10-12); *T. radiata*; *Veitchia Johannis*; *Verschaffeltia splendida* (80); *Wallichia caryotoides*; *Welfia regia* (60).

AN INDEX TO TREES AND SHRUBS FOR SPECIAL SITUATIONS AND SOILS.

OF the many books that have been written on Dendrology, Forestry, and cognate subjects, some contain list of Trees and Shrubs for particular purposes and positions, but the lists are, as a rule, of the most meagre description. Hence, perhaps, the monotony which is conspicuous in so many of our plantations and shrubberies. The exhaustive classification here presented embraces, in a condensed form, the practical results of the experience of several eminent authorities on the treatment of hardy ligneous plants. By its help, the reader may readily make varied selections of Trees and Shrubs that will thrive in Chalky, Peaty, or Clay Soils, in Marshes and Swamps, on Mountains, in dense Towns and Cities, by the Riverside, or in close proximity to the Sea. A list of the best Trees and Shrubs for the formation of Hedges is also included.

After each name is given abbreviated information as to whether the plant is evergreen (*ev*), nearly or partially so (*s-ev*), or deciduous (*dec*). The figures represent the approximate height in feet.

Much of the so-called waste land which is at present a blot on many an English landscape might, by careful selection and a moderate expenditure of the proprietor's time and money, be converted into woodlands, which would become not only a source of pleasure to himself, but also a valuable legacy to posterity.

CHALKY SOILS.—Calcareous or Chalky Soils are those which contain more than 20 per cent. of Carbonate of Lime. They are variously known as Calcareous Sands, Calcareous Loams, and Calcareous Clays, according to the amount of sand, loam, or clay, that enters into their composition. A large number of trees and shrubs will grow in calcareous soils, as is evidenced by the following list. "There is a prevailing idea that trees require a deep soil for their growth; but this is an entire fallacy as regards the greater portion of them. That trees will prosper more in a good deep soil than in a similar soil that is superficial, is no doubt true; but a thin rich soil is better than a deep poor one; and the most fatal mistake that can be

Chalky Soils—continued.

made in trenching land preparatory to planting is to throw up a barren subsoil, and bury the better elements beneath it. This is particularly the case on the Chalk lands. That trees of very large size will grow upon the very thin soil may be rendered evident to anyone who travels through the Chalk cuttings on our southern railways. In many places the soil is not 6in. deep above the Chalk, and yet splendid trees, especially Beeches, are seen clothing the hills. . . . In trenching Chalk land such as I am referring to, the trench should be carried to the bottom of the loam, but no further. However superficial the top soil may be, even 3in. or 4in., it alone should be

Chalky Soils—continued.

turned over in the trench, and not a grain of Chalk should be raised. The Chalk may be broken into large lumps with a pickaxe, and left at the bottom of the trench; but there it should remain." (James Salter, F.R.S.)

Abies bracteata (ev; 25); *A. magnifica* (ev; 200); *A. nobilis* (ev; 100-300); *A. Nordmanniana* (ev; 80-100); *A. pectinata* (ev; 80-100); *A. Pinsapo* (ev; 60-80); *Acer campestre* (dec; 20); *A. dasycarpum* (dec; 40); *A. pennsylvanicum* (dec; 20); *A. platanoides* (dec; 50) and vars.; *A. Pseudo-Platanus* (dec; 3-60) and vars.; *A. rubrum* (dec; 20); *A. saccharinum* (dec; 40); *A. tartaricum* (dec; 20); *Æsculus Hippocastanum* (dec; 40) and vars.; *Ailantus glandulosa* (dec; 60); *Alnus glutinosa* (dec; 50-60) and vars.; *Amelanchier canadensis* (dec; 6-8) and vars.; *Amorpha fruticosa* (dec; 6) and vars.; *Ampelopsis tricuspidata* (dec climber); *Amygdalus communis* (dec; 10-30) and vars.; *Berberis Aquifolium* (ev; 3-6); *B. aristata* (ev; 6); *B. Darwinii* (ev; 2); *B. vulgaris* (dec; 8-20) and vars.; *Betula alba* (dec; 50-60); *Buddleia globosa* (ev; 15); *Bupleurum frutescens* (ev; 1); *Buxus sempervirens* (ev; 1-30) and vars.; *Calycanthus floridus* (dec; 4-6); *Caragana Altagana* (dec; 2-3); *C. arboreoens* (dec; 15-20); *C. Chamlagu* (dec; 2-4); *C. spinosa* (dec; 4-6); *Castanea sativa* (dec; 50-70); *Catalpa bignonioides* (dec; 20-40); *Ceanothus americanus* (dec; 1-3); *C. azureus* (ev; 10); *C. dentatus* (dec; 4-6); *C. floribundus* (ev; 4); *C. Veitchianus* (ev; 3); *Cedrus atlantica* (ev; 80-120); *C. Deodara* (ev; 150-200); *Cerasus Avium* (dec; 20-40) and vars.; *C. Laurocerasus* (ev; 6-10) and vars.; *C. lusitanica* (ev; 10-20); *C. Mahaleb* (dec; 10); *C. Padus* (dec; 10-30); *Cercis Siliquastrum* (dec; 20-30); *Chamaecyparis ericoides* (ev; 3-4); *C. Lawsoniana* (ev; 75-100); *C. nutkaensis* (ev; 40-60); *Cistus ladaniferus* (ev; 4); *C. laurifolius* (ev; 4); *C. villosus* (ev; 8); *Clematis Flammula* (dec climber); *C. Jackmanni* (dec climber); *C. Vitalba* (dec climber); *Colutea arboreoens* (dec; 6-10); *C. oruenta* (dec; 4-6); *Cornus mas* (dec; 10-15) and vars.; *C. sanguinea* (dec; 6); *C. stolonifera* (dec; 4-10); *Corylus Avellana* (dec; 20); *Cotoneaster buxifolia* (ev; 3-4); *C. microphylla* (ev; 3-4); *C. rotundifolia* (ev; 3-4); *C. Simonsii* (ev); *Crataegus coccinea* (dec; 20-30) and vars.; *C. cordata* (dec; 20); *C. Crus-galli* (dec; 10-30) and vars.; *C. Douglasii* (dec; 10-15); *C. Oxyacantha* (dec; 10-20) and vars.; *C. Pyracantha* (ev; 10-20); *Cupressus macrocarpa* (ev; 50-60); *Cytisus albus* (dec; 6-10); *C. biflorus* (dec; 3); *C. purpureus* (dec; procumbent); *C. Scoparium* (dec; 3-10); *C. sessilifolius* (dec; 4-6); *Deutzia crenata* (dec; 4-8) and vars.; *D. gracilis* (dec; 1-2); *Diervilla grandiflora* (dec; 8); *D. rosea* (dec; 6); *Dimorphanthus mandchuricus* (dec; 6-10); *Eacallonia macrantha* (ev; 3-6); *E. Philippiana* (ev); *E. rubra* (ev; 3-6); *Enonymus americanus* (dec; 2-6); *E. europæus* (dec; 6-20); *E. japonicus* (ev; 20) and vars.; *Fagus ferruginea* (dec; 30); *F. sylvatica* (dec; 60-100); *Fraxinus americana* (dec; 30-40); *F. excelsior* (dec; 30-80) and vars.; *F. Ornus* (dec; 20-30); *F. oxyphylla* (dec; 30-40); *Garrya elliptica* (ev; 8-10); *Genista stœnensis* (ev; 6-15); *G. hispanica* (ev; 1-1); *G. radiata* (ev; 1-3); *G. triangularis* (ev; 2-4); *Ginkgo biloba* (dec; 60-80); *Gleditschia sinensis* (dec; 30-50); *G. triacanthos* (dec; 30-50); *Halimodendron argenteum* (grafted on *Caragana arboreoens*) (dec; 4-6); *Hamelis arborea* (dec); *H. japonica* (dec); *H. virginica* (dec; 12); *Hedera Helix* var. (ev climber); *Hypericum calycinum* (s-ev; 1); *Ilex Aquifolium* (ev; 10-40) and vars.; *I. cornuta* (ev; 15); *I. opæa* (ev; 20-40); *Jasminum nudiflorum* (dec climber); *J. officinale* (dec climber); *Juglans cinerea* (dec; 30-60); *J. nigra* (dec; 60); *J. regia* (dec; 40-60) and vars.; *Juniperus chinensis* (ev; 15-20) and vars.; *J. communis* (ev; 3-30) and vars.; *J. Sabina* (ev; 5-8); *J. virginiana* (ev; 10-15) and vars.; *Kerria japonica* (dec; 3-4); *K. j. flore-pleno* (dec; 3-4); *Koelerteria paniculata* (dec; 10-15); *Laburnum Adami* (dec); *L. alpinum* (dec; 15-20); *L. vulgare* (dec; 20) and vars.; *Larix europæa* (dec;

Chalky Soils—continued.

80-100); *L. leptolepis* (dec; 40); *Lavandula vera* (dec; 1-2); *Leycesteria formosa* (dec; 4-6); *Ligustrum japonicum* (ev; 6-8); *L. lucidum* (ev; 8-12); *L. sinense* (ev or s-ev; 18); *L. vulgare* (s-ev; 6-10) and vars.; *Lonicera Caprifolium* (dec twiner); *L. flexuosa* (dec twiner); *L. Periclymenum* (dec climber); *L. sempervirens* (ev climber); *Magnolia acuminata* (dec; 30-60); *M. conspicua* (dec; 20-50); *M. glauca* (ev; 15); *M. grandiflora* (ev; 70-80); *M. macrophylla* (dec; 30); *M. Umbrella* (dec; 35); *Morus alba* (dec; 20-30); *M. rubra* (dec; 14-70); *Myrica germanica* (dec; 3-6); *Negundo acroides* (dec; 40) and vars.; *Pavia alba* (dec; 3-9); *P. californica* (dec; 12-40); *P. flava* (dec; 20); *Philadelphus coronarius* (dec; 2-10); *P. Gordonianus* (dec; 10); *P. grandiflorus* (dec; 6-10); *Phillyrea latifolia* (ev; 20-30) and vars.; *P. media* (ev; 10-15) and vars.; *Phlomis fruticosa* (ev; 2-4); *Picea excelsa* (ev; 80-100) and vars.; *P. orientalis* (ev); *Pinus austriaca* (ev; 75-100); *P. excelsa* (ev; 50-150); *P. insignis* (ev; 80-100); *P. Laricio* (ev; 100-150) and vars.; *P. Mughus* (ev; 5-15); *P. Pinaster* (ev; 60-80); *P. ponderosa* (ev; 100-150); *P. sylvestris* (ev; 50-100) and vars.; *Populus alba* (dec; 60-100); *P. balsamifera* (dec; 70) and vars.; *P. monilifera* (dec; 80); *P. Tremula pendula* (dec; 40-80); *Prunus spinosa* (dec; 10-15); *Pyrus Aria* (dec; 4-40); *P. Aucuparia* (dec; 10-30); *P. floribunda* (dec; 8); *P. japonica* (dec; 5-6); *P. spectabilis* (dec; 20-30); *P. terminalis* (dec; 10-50); *Quercus Ballota* (ev; 30); *Q. Cerris* var. (dec or s-ev; 40-60); *Q. Esculna* (dec; 20-30); *Q. Ilex* (ev; 15-60) and vars.; *Q. macrocarpa* (dec; 30); *Q. pedunculata* (dec; 50-100); *Q. pseudoumbr* (ev; 50); *Q. sessiliflora* (dec; 60); *Q. Suber* (ev; 25); *Q. Toza* (dec; 20-30); *Rhamnus otharticus* (dec; 5-10); *R. Frangula* (dec; 5-10); *Rhus Cotinus* (dec; 6-8); *R. glabra* (dec; 5-18) and var.; *R. typhina* (dec; 10-30); *Ribes alpinum aureum* (dec; 3); *R. aureum* (dec; 6-8); *R. sanguineum* (dec; 4-8); *Robinia Pseudacacia* (dec; 30-60) and vars.; *Rosa canina* (dec; 6-8); *R. repens* (dec; 2-8); *R. rubiginosa* (dec; 5); *R. spinosissima* (dec; 1-4); *R. tomentosa* (dec; 6); *Salix alba* (dec; 80); *S. daphnoides* (dec; 10-20); *S. fragilis* (dec; 80-90); *S. pentandra* (dec; 6-20); *S. purpurea* (dec; 5-10); *S. triandra* (dec; 20); *S. viridis* (dec; 30); *Sequoia gigantea* (ev; 400); *Sparteanum junceum* (dec; 6-10); *Spiraea bella* (dec; 2-3); *S. discolor arifolia* (dec; 4-10); *S. Lindleyana* (dec; 4-8); *Syringa Emodi* (dec; 6); *S. vulgaris* (dec; 8-20) and vars.; *Tamarix gallica* (dec; 5-10); *Taxus baccata* (ev; 15-50) and vars.; *Teucoma radicans* (dec climber); *Thuya occidentalis* (ev; 40-50) and vars.; *T. orientalis* (ev; 18-20) and vars.; *T. plicata* (ev; 20); *T. tatarica* (ev; 8-10); *Thuopsis dolabrata* (ev; 40-50); *T. argentea* (dec; 30-50); *T. cordata* (dec); *T. platyphylla* (dec; 70-80); *T. vulgaris* (dec; 70-80); *Torreya taxifolia* (ev; 40-50); *Tsuga canadensis* (ev; 60-80) and vars.; *Ulmus americana* (dec; 80-100); *U. glabra vegeta* (dec; 60-80); *Viburnum Lantana* (dec; 6-20); *V. Opulus* (dec; 6-8) and vars.; *V. Tinus* (ev; 8-10) and vars.; *Yucca filamentosa* (ev); *Y. gloriosa* (ev; 8-12) and vars.

CLAY SOILS.—Under this heading are enumerated those trees and shrubs which will thrive in an Argillaceous or Clay Soil, i.e., soil which contains some 50 per cent. of Clay. When Clay Soils have been improved by draining, trenching, the admixture of long manure and lime, &c., they become very productive.

Abies nobilis (ev; 200-300); *A. Nordmanniana* (ev; 80-100); *A. pectinata* (ev; 80-100); *Acer campestre* (dec; 20); *A. dasycarpum* (dec; 40); *A. platanoides* (dec; 50); *A. Pseudo-platanus* (dec; 30-60); *A. tartaricum* (dec; 20); *Æsculus Hippocastanum* (dec; 40) and vars.; *Ailantus glandulosa* (dec; 60); *Alnus cordata*; *A. glutinosa* (dec; 50-60) and vars.; *Amelanchier canadensis* (dec; 6-8) and vars.; *Amorpha fruticosa* (dec; 6) and vars.; *Ampelopsis tricuspidata* (dec climber);

Clay Soils—continued.

Amygdalus communis (dec; 10-30) and vars.; *Aucuba japonica* (ev; 6-10); *Berberis Aquifolium* (ev; 3-6); *B. aristata* (ev; 6); *B. Darwinii* (ev; 2); *B. vulgaris* (dec; 8-20) and vars.; *Betula alba* (dec; 50-60); *Buddleia globosa* (ev; 15); *Buxus balaoarica* (ev; 15-20); *B. sempervirens* (ev; 1-30) and vars.; *Calycoanthus floridus* (dec; 4-6); *Caragana Altagana* (dec; 2-3); *C. arborescens* (dec; 15-20); *C. Chamslagu* (dec; 2-4); *C. spinosa* (dec; 4-6); *Carpinus americana* (dec; 10-50); *C. Betula* (dec; 30-70); *Carya alba* (dec; 50-70); *C. amara* (dec; 50-60); *C. tomentosa* (dec; 60-70); *Castanea sativa* (dec; 50-70); *Catalpa bignonioides* (dec; 20-40); *Celtis crassifolia* (dec; 20-30); *C. occidentalis* (dec; 30-50); *Cerasus Avium* (dec; 20-40) and vars.; *C. Laurocerasus* (ev; 6-10) and vars.; *C. Lusatiana* (ev; 10-20); *C. Mahaleb* (dec; 10); *C. Padus* (dec; 10-30); *Cercis Siliquastrum* (dec; 20-30); *Chamaecyparis ericoides* (ev; 3-4); *C. Lawsoniana* (ev; 75-100); *C. nutkaensis* (ev; 40-60); *Cladraetus amurensis* (dec; 6); *Clematis Flammula* (dec climber); *C. Jackmanni* (dec climber); *C. Vitalba* (dec climber); *Colutea arborescens* (dec; 6-10); *C. cruenta* (dec; 4-6); *Cornus mas* (dec; 10-15) and vars.; *C. sanguinea* (dec; 6); *C. stolonifera* (dec; 4-10); *Corylus Avellana* (dec; 20); *Cotoneaster burxifolia* (ev; 3-4); *C. microphylla* (ev; 3-4); *C. rotundifolia* (ev; 3-4); *C. Simonsii* (ev); *Crataegus coccinea* (dec; 20-30) and vars.; *C. cordata* (dec; 20); *C. Crus-galli* (dec; 10-30) and vars.; *C. Douglasii* (dec; 10-15); *C. Oxyacantha* (dec; 10-20) and vars.; *C. Pyracantha* (ev; 10-20); *Cytisus albus* (dec; 6-10); *C. biflorus* (dec; 8); *C. purpureus* (dec; procumbent); *C. scoparius* (dec; 3-10); *C. sessilifolius* (dec; 4-6); *Deutzia crenata* (dec; 4-6) and vars.; *D. gracilis* (dec; 1-2); *Diervilla grandiflora* (dec; 8); *D. rosea* (dec; 6); *Euonymus americanus* (dec; 2-6); *E. europæus* (dec; 6-20); *E. japonicus* (ev; 20) and vars.; *Fagus ferruginea* (dec; 30); *F. sylvatica* (dec; 60-199); *Fraxinus americana* (dec; 30-40); *F. excolesa* (dec; 30-80) and vars.; *F. Ornus* (dec; 20-30); *F. oxyphylla* (dec; 30-40); *Garrya elliptica* (ev; 8-10); *Genista ætensis* (ev; 6-15); *G. hispanica* (ev; $\frac{1}{2}$ 1); *G. radiata* (ev; 1-3); *G. triangularis* (ev; 2-4); *Gleditschia sinensis* (dec; 30-50); *G. triacanthos* (dec; 30-50); *Gymnocladus canadensis* (dec; 30-60); *Halesia hispida* (dec); *H. tetraptera* (dec; 15-20); *Hamamelis arborea* (dec); *H. japonica* (dec); *H. virginica* (dec; 12); *Hedera Helix* var. (ev climber); *Hypericum calycinum* (s-ev; 1); *Ilex Aquifolium* (ev; 10-40) and vars.; *I. cornuta* (ev; 15); *I. opaca* (ev; 20-40); *Jasminum nudiflorum* (dec climber); *J. officinale* (dec climber); *Juglans cinerea* (dec; 30-60); *J. nigra* (dec; 60); *J. regia* (dec; 40-60) and vars.; *Juniperus communis hibernica* (ev); *J. recurva* (ev; 5-8); *J. Sabina* (ev; 5-8); *Kerria japonica* (dec; 3-4); *K. j. flore-pleno* (dec; 3-4); *Koeleruteria paniculata* (dec; 10-15); *Laburnum Adami* (dec); *L. alpinum* (dec; 15-20); *L. vulgare* (dec; 20) and vars.; *Larix europæa* (dec; 80-100); *L. septolepis* (dec; 40); *Lavandula vera* (dec; 1-2); *Leycesteria formosa* (dec; 4-6); *Ligustrum japonicum* (ev; 6-8); *L. lucidum* (ev; 8-12); *L. sinense* (ev or s-ev; 18); *L. vulgare* (s-ev; 6-10); *Magnolia acuminata* (dec; 30-60); *M. conspicua* (dec; 20-50); *M. glauca* (ev; 15); *M. grandiflora* (ev; 70-80); *M. macrophylla* (dec; 30); *M. Umbrella* (dec; 35); *Mæspilus germanica* (dec; 10-20); *Morus alba* (dec; 20-30); *M. rubra* (dec; 14-70); *Negundo aceroides* (dec; 40) and vars.; *Nemopanthes canadensis* (dec; 3); *Osmanthus Aquifolium* (ev); *O. fragrans* (ev; 6-10); *Parrotia persica* (dec; 10); *Pavia alba* (dec; 3-9); *P. californica* (dec; 12-40); *P. flava* (dec; 20); *P. rubra* (dec; 10); *Philadelphus coronarius* (dec; 2-10); *P. Gordonianus* (dec; 10); *P. grandiflorus* (dec; 6-10); *Picea Aleoquiana* (ev; 90-120); *P. excelsa* (ev; 80-100) and vars.; *P. nigra* (ev; 50-100); *P. orientalis* (ev); *P. Smithiana* (ev; 80-120); *Pinus austriaca* (ev; 75-100); *P. excelsa* (ev; 50-150); *P. insignis* (ev; 80-100); *P. Lambertiana* (ev; 150-300); *P. Laricio* (ev; 100-150); *P. Mughus* (ev; 5-15); *P. Pinaster*

Clay Soils—continued.

(ev; 60-80); *P. ponderosa* (ev; 100-150); *P. sylvestris* (ev; 50-100) and vars.; *Platanus occidentalis* (dec; 70-80); *P. orientalis* (dec; 60-80) and vars.; *Populus alba* (dec; 60-100); *P. balsamifera* (dec; 70) and vars.; *P. monilifera* (dec; 80); *P. Tremula pendula* (dec; 40-80); *Pyrus Aria* (dec; 4-40); *P. Anouparia* (dec; 10-30); *P. floribunda* (dec; 8); *P. japonica* (dec; 5-6); *P. spectabilis* (dec; 20-30); *P. terminalis* (dec; 10-50); *Quercus Ballota* (ev; 60); *Q. Cerris* var. (dec or s-ev; 40-60); *Q. Ilex* (ev; 15-60) and vars.; *Q. pedunculata* (dec; 50-100); *Q. pseudosuber* (ev; 50); *Q. sessiliflora* (dec; 60); *Q. Suber* (ev; 20-25); *Q. Toza* (dec; 20-30); *Rhamnus catharticus* (dec; 5-10); *R. Frangula* (dec; 5-10); *Rhus Cotinus* (dec; 6-8); *R. glabra* (dec; 5-18) and var.; *R. typhius* (dec; 10-30); *Ribes alpinum aureum* (dec; 3); *R. aureum* (dec; 6-8); *R. sanguineum* (dec; 4-8); *Robinia Pseudacacia* (dec; 30-60) and vars.; *Rosa canina* (dec; 6-8); *R. repens* (dec; 2-8); *R. rubiginosa* (dec; 5); *R. spinosissima* (dec; 1-4); *R. tomentosa* (dec; 6); *Salix alba* (dec; 80); *S. daphnoides* (dec; 10-20); *S. fragilis* (dec; 80-90); *S. pentandra* (dec; 6-20); *S. purpurea* (dec; 5-10); *S. triandra* (dec; 20); *S. viridis* (dec; 30); *Sambucus nigra* (dec; 25); *S. racemosa* (dec; 10-20); *Sassafras officinale* (dec; 15-20); *Sequoia gigantea* (ev; 400); *Spartium junceum* (dec; 6-10); *Spiræa bella* (dec; 2-3); *S. diacolor arizifolia* (dec; 4-10); *S. Lindleyana* (dec; 4-8); *Syringa Emodi* (dec; 6); *S. vulgaris* (dec; 8-20) and vars.; *Tamarix gallica* (dec; 5-10); *Taxus baccata* (ev; 15-50) and vars.; *Thuja occidentalis* (ev; 40-50) and vars.; *T. orientalis* (ev; 18-20) and vars.; *T. plicata* (ev; 20); *T. tatarica* (ev; 3-10); *Thuyopsis dolabrata* (ev; 40-50); *Tilia argentea* (dec; 30-50); *T. cordata* (dec); *T. platyphyllos* (dec; 70-80); *vulgaris* (dec; 70-80); *Torreya taxifolia* (ev; 40-5); *Tsuga canadensis* (ev; 60-80) and vars.; *Ulmus americana* (dec; 80-100); *U. glabra vegeta* (dec; 60-80); *U. montana* (dec; 80-100) and vars.; *Viburnum Lantana* (dec; 6-20); *V. Opulus* (dec; 6-8) and vars.; *V. Tinus* (ev; 8-10) and vars.; *Xanthoeras sorbifolia* (5-15); *Yucca filamentosa* (ev); *Y. gloriosa* (ev; 8-12) and vars.

HEDGES.—Two indispensable qualifications in plants selected for the formation of Hedges are: (1) that they should have dense foliage and closely arranged branchlets, and (2) that they should bear frequent clipping without being materially injured thereby. A select list of trees and shrubs suitable for the purpose is here given. The heights quoted are those attained by the plants under natural conditions. For further instruction the reader is referred to the article on Hedges, in Vol. II. Mongredien, in his "Trees and Shrubs for English Plantations," says: "Where a cheap Hedge is wanted, why not try the common Gooseberry? Cuttings (to be had for nothing) strike freely in garden soil, whence, if transplanted the ensuing year to the hedge-bank (provided it be sufficiently wide and flat to catch and retain the moisture from rain), they will rapidly grow into dense, prickly bushes, easily kept in shape by clipping, and never expanding either trunk or roots into such dimensions as to injure the bank on which they are planted." Clipping of Conifers should only be performed when the sap is comparatively quiescent: either in spring, before new growth commences, or in autumn, when the year's growth is completed.

Berberis vulgaris (dec; 8-20) and vars.; *Buxus sempervirens* (ev; 1-30); *Caragana spinosa* (dec; 4-6); *Carpinus Betulus* (dec; 30-70); *Cerasus Laurocerasus* (ev; 6-10); *Chamaecyparis Lawsoniana* (ev; 75-100); *C. nutkaensis* (ev; 40-60); *C. obtusa* (ev; 70-100); *Crataegus Oxyacantha* (dec; 10-20) and vars.; *Fagus sylvatica* (dec; 60-100); *Hibiscus syriacus* (dec; 6); *Hippophae rhamnoides* (dec; 2-20); *Ilex Aquifolium* (ev; 10-40) and vars.; *Juniperus chinensis* (ev; 15-20); *J. communis* (ev; 8-20); *J. virginiana* (ev; 10-15) and var. *aurea*; *Laurus nobilis* (ev; 30-60); *Ligustrum ovalifolium* (s-ev); *L. vulgare*

Hedges—continued.

(s-ev; 6-10); *Phillyrea angustifolia* (ev; 8-10); *P. latifolia* (ev; 20-30); *P. media* (ev; 10-15); *Prunus cerasifera* (dec; 20); *P. divaricata* (dec; 10-12); *P. spinosa* (dec; 10-15); *Rhamnus Alaternus* (ev; 20); *R. catharticus* (dec; 5-10); *Ribes Grossularia* (dec; 4); *Rosa rubiginosa* (dec; 5); *Rosmarinus officinalis* (ev; 2-4); *Taxus baccata* (ev; 15-50) and vars.; *Thuya occidentalis* (ev; 40-50); *T. orientalis* (ev; 18-20); *T. plicata* (ev; 20); *Viburnum Tinus* (ev; 8-10).

MARSHES AND BOGS.—The following enumeration of trees and shrubs which are found to thrive in Bogs and other swampy places embraces many which will also grow in tolerably dry soils, and in some cases at considerable elevations. When planting in wet soils, it will be advisable to place some peat, or an admixture of the same, around the roots, in order to give the subjects a fair start.

Abies balsamea (ev; 40-60); *Acer rubrum* (dec; 20); *Alnus cordifolia* (dec; 15-50); *A. glutinosa* (dec; 50-60); *A. viridis* (dec); *Andromeda polifolia* (ev; 1); *Arbutus Unedo* (ev; 8-10); *Betula lutea* (dec; 70-80); *B. nana* (dec; 1-3); *Bryanthus Gmelini* (ev trailer); *Cassandra angustifolia* (ev; 1-2); *C. calyculata* (ev; 1-3); *Chamaecyparis spheroides* (ev; 40-70); *Chionanthus virginica* (dec; 10-30); *Clematis Viorna* (dec climber); *Clethra alnifolia* (dec; 3-4); *C. tomentosa* (dec; 3-4); *Cornus paniculata* (dec; 4-8); *C. sericea* (dec; 5-8); *Dirca palustris* (dec; 2-5); *Erica Tetralix* (ev; 1-1); *Gordonia pubescens* (dec; 4-6); *Hedera Helix* vars. (ev); *Juniperus communis* (ev; 3-20) and vars.; *J. virginiana* (ev; 10-15); *Ledum palustre* (ev; 2); *Liquidambar styraciflua* (dec; 30-50); *Myrica cerifera* (ev; 5-12); *M. Gale* (dec; 2-4); *Nemopanthes canadense* (dec; 3); *Nyssa multiflora* (dec; 30-50); *Oxycoocus macrocarpus* (ev trailer); *O. palustris* (ev trailer); *Picea nigra* (ev; 50-80); *Pinus Cembra* (ev; 50-150); *P. contorta* (ev; 25-30); *P. rigida* (ev; 30-45); *P. Strobus* (ev; 120-160); *Platanus orientalis acerifolia* (dec; 60-80); *Populus alba* (dec; 60-100) and vars.; *P. balsamifera* (dec; 70); *P. monilifera* (dec; 80); *P. nigra* (dec; 50-60) and vars.; *P. Tremula* (dec; 40-80) and vars.; *Pyrus arbutifolia* (dec; 2-10); *Quercus aquatica* (dec; 60-80); *Q. lyrata* (dec; 50); *Q. palustris* (dec; 60); *Q. Phellos* (dec; 50); *Q. Prinus* (dec; 70-90); *Rosa lucida* (dec; 1-2); *Rubus Idæus* (dec; 4-8); *Salix alba* (dec; 80); *S. babylonica* (dec; 30); *S. Caprea* (dec; 15-30); *S. daphnoides* (dec; 10-20); *S. pentandra* (dec; 6-8); *S. phylicifolia* (dec; 10); *S. purpurea* (dec; 5-10); *S. rubra Helix* (dec; 10-12); *S. viridis* (dec; 30); *Sambucus canadensis* (dec; 4-6); *S. nigra* (dec; 25); *S. racemosa* (dec; 10-20); *Taxodum distichum*; *Thuya occidentalis* (ev; 40-50) and vars.; *Viburnum nudum* (dec; 6-10).

MOUNTAINOUS DISTRICTS.—Careful discrimination is necessary in the choice of trees and shrubs for elevated and exposed positions. Sturdy, well-rooted specimens that have been transplanted, say, two years previously should be selected; and delay in getting them into their permanent quarters should be avoided. The following trees and shrubs will, when once established, thrive at considerable altitudes.

Abies amabilis (ev; 150); *A. cephalonica* (ev; 50-60); *A. Nordmanniana* (ev; 80-100); *A. pectinata* (ev; 80-100); *A. Pindrow* (ev; 150); *A. subalpina* (ev; 50-100); *A. Veitchii* (ev; 120-140); *Acer montanum* (dec; 18); *A. opulifolium* (dec; 8); *A. platanoides* (dec; 50); *A. Pseudo-platanus* (dec; 30-60); *Arctostaphylos Uva-ursi* (ev trailer); *Aucuba japonica* (ev; 6-10); *Berberis Aquifolium* (ev; 8-6); *B. vulgaris* (dec; 8-20); *Betula alba* (dec; 50-60) and vars.; *B. fruticosa* (dec; 6 or more); *B. nana* (dec; 1-3); *B. pumila* (dec; 2-3); *Buxus sempervirens* (ev; 1-30) and vars.; *Calluna vulgaris* (ev; 1-3); *Caragana pygmaea* (1-3); *Castanea sativa* (dec; 50-70); *Cedrus Libani* (ev; 60-80); *Cercasus Laurocoranus* (ev; 6-10); *Chamaecyparis*

Mountainous Districts—continued.

Lawsoniana (ev; 75-100); *Colutea arborescens* (dec; 6-10); *Corylus Avellana* (dec; 20); *Cotoneaster frigidus* (s-ev; 10); *C. nummularia* (s-ev; 10-15); *C. rotundifolia* (ev; 3-4); *C. vulgaris* (dec; 3-5); *Crataegus Oxycantha* (dec; 10-20) and vars.; *Daphne altaica* (dec; 1-3); *D. Blagayana* (ev; 1); *D. collina* (ev; 2-3); *D. Mezereum* (dec; 3-4); *Diervilla trifida* (dec; 3-4); *Fagus sylvatica* (dec; 60-100); *Hedera Helix* vars. (ev); *Ilex Aquifolium* (ev; 10-40) and vars.; *Juniperus communis* (ev; 3-20) and vars.; *J. nana*; *J. Sabina* (ev; 5-8); *Kalmia latifolia* (ev; 3-10); *Larix dahurica* (dec; 30); *L. europæa* (dec; 80-100); *L. Ledebourii* (dec; 80-100); *L. leptolepis* (dec; 2-40); *L. occidentalis* (dec; 150); *Leiphyllyum buxifolium* (ev; 1-1); *Loiseleuria procumbens* (ev; procumbent); *Philadelphus coronarius* (dec; 2-10); *Paylodocus taxifolia* (ev; 2); *Picea alba* (ev; 30-40); *P. Englemanni* (ev; 80-100); *P. excelsa* (ev; 80-100) and vars.; *P. Menziesii* (ev; 50-70); *P. nigra* (ev; 50-80); *P. orientalis* (ev; 80-120); *P. Smithiana* (ev; 80-120); *Pinus aristata* (ev; 40-50); *P. austriaca* (ev; 70-100); *P. Balfouriana* (ev; 40-50); *P. Cembra* (ev; 5-50); *P. excelsa* (ev; 60-150); *P. flexilis* (ev; 5-50); *P. Laricio* (ev; 100-150); *P. monophylla* (ev; 20-25); *P. monticola* (ev; 75-100); *P. Mughus* (ev; 5-15); *P. muricata* (ev; 25-50); *P. Pinaster* (ev; 60-80); *P. Strobus* (ev; 120-160); *P. sylvestris* (ev; 50-100) and vars.; *Populus monilifera* (dec; 80); *Potentilla fruticosa* (dec; 2-4); *Pseudotsuga Douglasii* (ev; 3-150); *Prunus Aria* (dec; 4-15); *P. Aucuparia* (dec; 10-30); *P. Chamaemespilus* (dec; 5-6); *P. Malus* (dec; 20); *Quercus pedunculata* (dec; 50-100); *Q. sessiliflora* (dec; 60); *Rhamnus alpinus* (dec; 4); *R. catharticus* (dec; 5-10); *Ribes sanguineum* (dec; 4-8); *Rosa rubiginosa* (dec; 5); *R. spinosissima* (dec; 1-4); *Rubus biflorus* (dec); *R. fruticosus* (dec); *R. Idæus* (dec; 4-8); *R. spectabilis* (dec; 6-10); *Salix alba* (dec; 80); *Sambucus nigra* (dec; 25); *Spiraea tomentosa* (dec; 3); *Symphoricarpos racemosus* (dec; 4-6); *Syringa vulgaris* (dec; 8-20); *Taxus baccata* (ev; 15-50) and vars.; *Tsuga canadensis* (ev; 60-80) and vars.; *Thuya occidentalis* (ev; 40-50); *T. plicata* (ev; 20); *Ulex europæus* (ev; 2-3); *Ulmus campestris* (dec; 125); *U. montana* (dec; 80-120).

PEATY SOILS.—Vegetable Earth, or Peat, has already been treated at length in this Dictionary (see **Soil**, in Vol. III.). Peaty Soil is best adapted for the reception of most of the trees and shrubs enumerated hereunder: some of them, however, may be equally well accommodated in soils of a widely different description.

Abies balsamea (ev; 40-60); *A. grandis* (ev; 100); *A. nobilis* (ev; 200-300); *A. Nordmanniana* (ev; 80-100); *A. pectinata* (ev; 80-100); *Acer Pseudo-platanus* (dec; 30-60); *A. tartaricum* (dec; 20); *Alnus glutinosa* (dec; 50-60); *Andromeda polifolia* (ev; 1); *Arbutus Andrachne* (ev; 10-14); *A. Menziesii* (ev; 6-10); *A. Unedo* (ev; 8-10); *Arctostaphylos alpina* (dec trailer); *A. Uva-ursi* (ev trailer); *Asimina triloba* (dec; 10); *Azalea arborescens* (dec; 10-20); *A. calendulacea* (dec; 2-6); *A. hispida* (dec; 10-15); *A. ledifolia* (ev; 2-6); *A. nudiflora* (dec; 3-4); *A. pontica* (dec; 4-6); *A. speciosa* (dec; 3-4); *A. viscosa* (dec; 2-4); *A. varieties*; *Betula lutea* (dec; 70-80); *Calluna vulgaris* (ev; 1-3); *Calycoanthus floridus* (dec; 4-6); *C. glaucus* (dec; 4-6); *C. lavigatus* (dec; 3-6); *C. occidentalis* (dec; 6-12); *Cassandra angustifolia* (ev; 1-2); *C. calyculata* (ev; 1-3); *Cassiope hypnoides* (ev creeper); *C. tetragona* (ev; 3); *Catalpa bignonioides* (dec; 20-40); *Ceanothus americanus* (dec; 1-3); *C. dentatus* (dec; 4-6); *C. floribundus* (ev; 4); *C. Veitchianus* (ev; 3); *Cephalanthus occidentalis* (dec; 7); *Chamaecyparis Lawsoniana* (ev; 75-100); *C. nutkaensis* (ev; 40-60); *C. obtusa* (ev; 70-100) and vars.; *Chionanthus virginica* (dec; 10-30); *Claedratis amurensis* (dec; 6); *Clethra acuminata* (dec; 10-15); *C. alnifolia* (dec; 3-4); *C. paniculata* (dec; 3-4); *C. tomentosa* (dec; 3-4); *Colutea arborescens* (dec; 6-10);

Peaty Soils—continued.

C. oruenta (dec; 4-6); *Comptonia asplenifolia* (dec; 3-4); *Corema alba* (ev; 1); *Cornus florida* (dec; 20-30); *Daboecia polifolia* (ev; 1-2); *Daphne Cneorum* (ev trailer); *D. Gnidium* (ev; 2); *D. pontica* (ev; 4-5); *Desfontainea spinosa* (ev; 3); *Direa palustris* (dec; 2-5); *Empetrum nigrum* (ev; 1-1) and var.; *Epigæa repens* (ev creeper); *Erica arborea* (ev; 10-20); *E. australis* (ev; 3-6); *E. carnea* (ev; 1); *E. cinerea* (ev; 1-1); *E. oodonodes* (ev; 1); *E. mediterranea* (ev; 4-6); *E. multiflora* (ev; 2); *E. scoparia* (ev; 2-3); *E. Tetralix* (ev; 1-1); *Euonymus americanus* (dec; 2-6); *E. atropurpureus* (dec; 6-14); *E. europæus* (dec; 6-20); *E. japonicus* (ev; 20) and vars.; *Fothergilla alnifolia* (dec; 3-6) and vars.; *Gaultheria procumbens* (ev; procumbent); *G. Shallon* (ev; procumbent); *Gordonia lasianthus* (s-ev; 8-10); *G. pubescens* (dec; 4-6); *Halesia hispida* (dec); *H. tetraptera* (dec; 15-20); *Hedera Helix* (ev); *Hydrangea arborescens* (dec; 4-6); *Itea virginica* (dec; 6-7); *Juniperus communis* (ev; 3-20) and vars.; *J. recurva* (ev; 5-8); *J. Sabina* (ev; 5-8); *Kalmia angustifolia* (ev; 2-3); *K. latifolia* (ev; 3-10); *Kerria japonica* (dec; 3-4) and var.; *Koeleruteria paniculata* (dec; 10-15); *Laburnum Adami* (dec); *L. alpinum* (dec; 15-20); *L. vulgare* (dec; 20) and vars.; *Laurus nobilis* (ev; 30-60); *Ledum latifolium* (ev; 1-2); *L. palustre* (ev; 2); *Leiophyllum buxifolium* (ev; 1-1); *Lenochoe axillaris* (ev; 2-8); *L. Davisæ* (ev; 3-5); *L. racemosa* (ev; 4-10); *Ligustrum japonicum* (ev; 6-8); *L. lucidum* (ev; 8-12); *L. Massalongoanum* (ev; 6); *L. ovalifolium* (s-ev; 6) and vars.; *Lindera Benzoin* (ev; 6-15); *Lyonia ligustrina* (ev; 3-10); *Magnolia conspicua* (dec; 30-50); *M. glauca* (ev; 15); *M. stellata* (dec); *Menispermum canadense* (dec climber); *Menziesia ferruginea globularis* (ev; 2-5); *Mespilus germanica* (dec; 10-20); *M. Smithii* (dec; 20); *Myrica californica* (ev; 30-40); *M. cerifera* (ev; 5-12); *M. Gale* (dec; 2-4); *Negundo aceroides* (dec; 40) and vars.; *Neillia opulifolia* (dec; 5); *Nuttallia cerasiformis* (dec; 5); *Olearia Haastii* (ev); *Ostrya carpinifolia* (dec; 30-40); *O. virginica* (dec; 15-40); *Oxyococcus macrocarpus* (ev trailer); *Periploca græca* (dec climber); *Pernettya furens* (ev; 3); *P. mucronata* (ev; 6); *Philadelphus coronarius* (dec; 2-10) and vars.; *P. Gordonianus* (dec; 10); *P. grandiflorus* (dec; 6-10); *P. hirsutus* (dec; 3); *P. inodorus* (dec; 4-6); *Phillyrea media* (ev; 10-15); *P. Vilmoriniana* (ev); *Phyllocladus taxifolia* (ev; 2); *Picea Alokuania* (ev; 90-120); *P. exoelsa* (ev; 100) and vars.; *P. nigra* (ev; 50-100); *P. orientalis* (ev); *P. Smithiana* (ev; 80-120); *Pinus Lambertiana* (ev; 150-300); *P. Lariois* (ev; 100-150); *P. sylvestris* (ev; 50-100); *Polygala Chamæbuxus* (ev; 1); *Pyrus Aucuparia* (dec; 10-30); *Quercus alba* (dec; 60); *Q. rubra* (dec; 80-90); *Rhamnus Frangula* (dec; 5-10); *Rhododendron albiflorum* (ev; 2-3); *R. Anthopogon* (ev; 1-1); *R. catarabiense* (ev; 3-6); *R. caucasicum* (ev; 1); *R. ciliatum* (ev; 2); *R. dahuricum* (ev; 3); *R. Farræ* (ev; 3); *R. ferrugineum* (ev; 1); *R. Fortunei* (ev; 12); *R. hirsutum* (ev; 1-2); *R. ponticum* (ev; 6-12); *R. varieties* (ev); *Rhodora canadensis* (dec; 2-4); *Rhodothamnus Chamæcistus* (ev; 1); *Rhodotypos korrioides* (ev; 15); *Sambucus nigra* (dec; 25) and vars.; *S. racemosa* (dec; 10-20); *Sciadopitys verticillata* (ev; 80-120); *Skimmia japonica* (ev; 3-4); *S. Laureola* (ev; 4); *S. oblata* (ev); *S. rabella* (ev); *Solanum Dulcamara* (dec trailer); *Spartium junceum* (dec; 6-10); *Spiræa balla* (dec; 2-3); *S. acontionensis* (ev; 3-4); *S. obamadrifolia* (dec; 1-2); *S. discolor arifolia* (dec; 4-10); *S. levigata* (dec; 1-3); *S. Lindleyana* (dec; 4-8); *S. prunifolia flore-pleno* (dec; 3); *S. salicifolia* (dec; 3-5) and vars.; *S. Thunbergi* (dec; 1-3); *S. trilobata* (dec; 1-2); *Staphylea oclechia* (dec; 3-5); *S. pinnata* (dec; 6-12); *S. trifolia* (dec; 6-12); *Stephanandra flexuosa* (dec); *Stuartia pentagyna* (dec; 10); *S. virginica* (dec; 8); *Syringa Emodi* (dec; 6); *S. japonica* (dec); *S. vulgaris* (dec; 8-20) and vars.; *Tamarix gallica* (ev; 5-10); *Taxus baccata* (ev; 15-50) and var.; *T. cuspidata* (ev; 15-20); *Thuja gigantea* (ev; 50-150); *T.*

Peaty Soils—continued.

occidentalis (ev; 40-50) and vars.; *T. orientalis* (ev; 18-20) and vars.; *Thuyopsis dolabrata* (ev; 40-50); *Ulex europæus* (ev; 2-3); *U. nanus* (ev; 1-3); *Vaccinium corymbosum* (dec; 5-10); *V. formosum* (dec; 2-3); *V. Myrsinites* (ev; 1-2); *V. pennsylvanicum* (dec; 1-1); *V. stamineum* (dec; 2-3); *V. Vitis-Idæa* (ev; procumbent); *Viburnum dentatum* (dec; 5-10); *V. dilatatum* (dec; 10); *V. Lentago* (dec; 15-30); *V. macrocephalum* (dec; 20) and var.; *V. Opulus* (dec; 6-8) and vars.; *V. plicatum* (dec; 4-6) and var.; *V. prunifolium* (dec; 8-10); *V. Tinus* (ev; 3-10) and vars.; *Wistaria chinensis* (dec climber) and var.; *W. japonica* (dec twiner); *Xanthoxerax acrifolia* (5-15); *Xanthorrhiza apiifolia* (dec; 1-3); *Zenobia speciosa* (ev; 2-4) and var.

SANDY SOILS.—Many of our ornamental and useful trees and shrubs require a light, sandy soil which affords a ready means of ingress to both air and water, and which prevents the accumulation of stagnant moisture about the roots. A list of trees and shrubs which thrive well in such soils is here given.

Acer campestre (dec; 20); *A. macrophyllum* (dec; 30); *A. platanoides* (dec; 50); *A. Pseudo-platanus* (dec; 30-60); *A. rubrum* (dec; 20); *A. tataricum* (dec; 20); *Aesculus glabra* (dec; 20); *Æ. Hippocastanum* (dec; 50-60); *Æ. rubicunda* (dec; 20); *Alnus cordifolia* (dec; 15-50); *Aristolochia Sipho* (dec climber); *Artemisia Abrotanum* (dec; 2-4); *Berberis Aquifolium* (ev; 3-6); *B. Darwini* (ev; 2); *B. empetrifolia* (ev; 1-2); *B. vulgaris* (dec; 8-20) and vars.; *Betula alba* (dec; 2-3) and vars.; *B. nigra* (dec; 60-70); *B. pumila* (dec; 2-3); *Broussonetia papyrifera* (dec; 10-20); *Buxus sempervirens* (ev; 12-15); *Culluna vulgaris* (ev; 1-3); *Caragana Altagana* (dec; 2-3); *C. spinosa* (dec; 4-6); *Carya alba* (dec; 50-70); *C. amara* (dec; 50-60); *C. tomentosa* (dec; 60-70); *Castanea sativa* (dec; 50-70) and vars.; *Catalpa bignonioides* (dec; 20-40); *Ceanothus americanus* (dec; 1-3); *C. dentatus* (dec; 4-6); *C. floribundus* (ev; 4); *C. Veitohianus* (ev; 3); *Cedrus Libani* (ev; 60-80); *Celtis crassifolia* (dec; 20-30); *C. occidentalis* (dec; 30-50); *Cerasus Avium* (dec; 20-40); *C. depressa* (dec; 1); *C. Laurocerasus* (ev; 6-10); *C. Mahaleb* (dec; 10); *C. Padus* (dec; 10-30); *Cercis canadensis* (dec; 12-20); *C. Siliquastrum* (dec; 20-30); *Chamaecyparis nutkaensis* (ev; 40-60); *C. obtusa* (ev; 70-100) and vars.; *Cladrastis amurensis* (dec; 6); *Colutea arborescens* (dec; 6-10); *C. oruenta* (dec; 4-6); *Corylus Avellana* (dec; 20); *Crataegus Oxycantha* (dec; 10-20) and vars.; *Cryptomeria japonica* (ev; 50-100); *Cupressus Goveniana* (ev; 15-20); *C. macrocarpa* (ev; 50-60); *C. sempervirens* (ev; 6-100); *C. torulosa* (ev; 50-70); *Cytisus albus* (dec; 6-10); *C. biflorus* (dec; 3); *C. purpureus* (dec); *C. scoparius* (dec; 3-10); *Diospyros virginiana* (ev; 20-30); *Elaeagnus hortensis* (dec; 15-20); *E. longipes* (ev; 3); *E. macrophylla* (6); *E. pungens* (6); *Euonymus americanus* (dec; 2-6); *E. atropurpureus* (dec; 6-14); *E. europæus* (dec; 6-20); *E. japonicus* (ev; 20) and vars.; *Fagus ferruginea* (dec); *F. sylvatica* (dec; 60-100); *Fontanesia Fortunei* (s-ev); *F. phillyroides* (s-ev; 10-14); *Forsythia suspensa* (dec); *F. viridissima* (dec; 10); *Fothergilla alnifolia* (dec; 3-6); *Fraxinus americana* (dec; 30-40); *F. excolior* (dec; 30-80); *F. Ornus* (dec; 20-30); *Fremontia californica* (dec; 6-10); *Genista anglica* (1-2); *G. pilosa* (ev procumbent); *G. tinctoria* (ev; 1-2); *Ginkgo biloba* (dec; 60-80); *Gleditsia sinensis* (dec; 30-50); *G. triacanthos* (dec; 30-50); *Gymnocladus canadensis* (dec; 30-60); *Halesia hispida* (dec); *H. tetraptera* (dec; 15-20); *Hamamelis arborea* (dec; 15-20); *H. virginica* (dec; 20); *Hedera Helix* (ev climber); *Hibiscus syriacus* (dec; 6) and vars.; *Hypericum calycinum* (s-ev; 1); *H. elatum* (dec; 5); *H. hircinum* (dec; 2-4); *H. Kalmianum* (dec; 2-4); *H. patulum* (ev; 6); *Idesia polycarpa*; *Ilex Aquifolium* (ev; 10-40) and vars.; *I. cornuta* (ev); *I. latifolia* (ev; 20); *I.*

Sandy Soils—continued.

opaca (ev; 20-40); *Juglans cinerea* (dec; 30-60); *J. nigra* (dec; 60); *J. regia* (dec; 40-60) and vars.; *Juniperus chinensis* (ev; 15-30) and vars.; *J. communis* (ev; 3-20) and vars.; *J. excoela* (ev; 20-40) and var.; *J. phoenicea* (ev; 15-18); *J. procumbens* (ev; procumbent); *J. Sabina* (ev; 5-8) and vars.; *J. thurifera* (ev; 15-25); *J. virginiana* (ev; 10-15) and vars.; *Kerria japonica* (dec; 3-4) and var.; *Koeleria paniculata* (dec; 10-15); *Laburnum Adami* (dec); *L. alpinum* (dec; 15-20); *L. vulgare* (dec; 20) and var.; *Larix europæa* (dec; 80-100); *Laurus nobilis* (ev; 30-60); *Lavandula vera* (dec; 1-2); *Leiphyllym buxifolium* (ev; 1-1); *Ligustrum japonicum* (dec; 6-8); *L. lucidum* (ev; 5-12); *L. Masmalongoanum* (ev; 6); *L. ovalifolium* (s-ev; 6) and var.; *L. vulgare* (s-ev; 6-10); *Lycium africanum* (dec; 6-10); *L. barbarum* (dec climber); *L. europæum* (dec; 10-12); *Magnolia acuminata* (dec; 30-60); *M. complanata* (dec; 30-50); *M. grandiflora* (ev; 70-80); *M. macrophylla* (dec; 30); *M. parviflora* (dec); *M. stallata* (dec); *M. Umbrella* (dec; 35); *Morus alba* (dec; 20-30); *M. nigra* (dec; 20-30); *M. rubra* (dec; 40-70); *Muehlenbeckia complexa* (ev climber); *Myrica californica* (ev; 30-40); *M. cerifera* (ev; 5-12); *Myrica germanica* (dec; 3-6); *Negundo aceroides* (dec; 40) and vars.; *Neillia ovalifolia* (dec; 5); *Nuttallia cerasiformis* (dec; 5); *Olearia Haastii* (ev); *Ononis fruticosa* (dec; 1-2); *Osmanthus Aquifolium* (ev); *O. fragrans* (ev; 6-10); *Ostrya carpinifolia* (dec; 30-40); *O. virginica* (dec; 15-40); *Pavia alba* (dec; 3-9); *P. californica* (dec; 12-40); *P. flava* (dec; 20); *P. rubra* (dec; 6-10); *Periploca græca* (dec climber); *Petteria ramantacea* (dec; 15); *Philadelphus coronarius* (dec; 2-10) and vars.; *P. Gordonianus* (dec; 10); *P. grandiflorus* (dec; 6-10); *P. hirsutus* (dec; 3); *P. inodorus* (dec; 4-6); *Phlomis fruticosa* (ev; 2-4); *Photinia serrulata* (ev; 10-20); *Picea Alcoquiæna* (ev; 90-120); *Pinus austriaca* (ev; 75-100); *P. Cembra* (ev; 50-150); *P. excoela* (ev; 50-150); *P. halepensis* (ev; 40-50); *P. Lambertiana* (ev; 150-300); *P. Laricio* (ev; 100-150); *P. monophylla* (ev; 20-25); *P. Mughus* (ev; 5-15); *P. Pinaster* (ev; 60-80); *P. Pinea* (ev; 50-60); *P. ponderosa* (ev; 100-150); *P. pyrenaica* (ev; 60-80); *P. rigida* (ev; 30-45); *P. Strobus* (ev; 120-160); *P. sylvestris* (ev; 50-100); *Podocarpus andina* (ev; 40-50); *P. Nageia* (ev; 30-60); *Pseudolarix Kämpferi* (dec; 120-130); *Purshia tridentata* (ev; 2-3); *Pyrus arbutifolia* (dec; 2-10); *P. Aria* (dec; 4-40); *P. Aucuparia* (dec; 10-30); *P. baocata* (dec; 15-20); *P. communis* (dec; 20-40); *P. coronaria* (dec; 20); *P. domestica* (dec; 20-60); *P. floribunda* (dec); *P. Malus* vars. (dec; 20); *P. spectabilis* (dec; 20-30); *P. Toringo* (dec); *Quercus alba* (dec; 60); *Q. Catesbeii* (dec; 15-30); *Q. Cerris* (dec; 40-60) and vars.; *Q. coccinea* (dec; 50); *Q. Ilex* (ev; 15-60) and vars.; *Q. ilicifolia* (dec; 3-8); *Q. nigra* (dec; 8-25); *Q. Suber* (ev; 25); *Q. tinctoria* (dec; 80-100); *Q. Toza* (dec; 20-30); *Rhamnus Alaternus* (ev; 20); *R. Frangula* (dec; 5-10); *Rhus Cotinus* (dec; 6-8); *R. typhina* (dec; 10-30); *Ribes aureum* (dec; 6-8); *R. floridum* (dec; 4); *R. gracile* (dec; 4-5); *R. Grossularia* (dec; 4); *R. nigrum* (dec; 5); *R. oxycanthoides* (dec; 2-3); *R. rubrum* (dec; 4); *R. sanguineum* (dec; 4-8); *R. speciosum* (dec; 4-6); *Robinia hispida* (dec; 3-8); *R. Psudacocia* (dec; 30-60) and vars.; *R. viscosa* (dec; 20-40); *Rosa canina* (dec; 6-8); *R. repens* (dec; 2-8); *R. rubiginosa* (dec; 5); *R. spinosissima* (dec; 1-4); *R. tomentosa* (dec; 6); *Rosmarinus officinalis* (ev; 2-4); *Rubus fruticosus* (dec trailer); *Ruscus aculeatus* (ev; 1-2); *R. Hypophyllum* (ev; 1-1½); *R. racemosus* (ev; 4); *Santolina Chamæcyparius* (ev; 1-2); *Sassafras officinale* (dec; 15-20); *Sequoia gigantea* (ev; 300-400) and vars.; *S. sempervirens* (ev; 200-300) and vars.; *Smilax aspera* (ev climber); *S. rotundifolia* (ev climber); *Sophora japonica* (dec; 30-40) and var.; *Spartium junceum* (dec; 6-10); *Spiræa bella* (dec; 2-3); *S. cantoniensis* (ev; 3-4); *S. chamedrifolia* (dec; 1-2); *S. discolor arifolia* (dec; 4-10); *S. levigata* (dec; 1-3); *S. Lindleyana* (dec; 4-8); *S. prunifolia flore-*

Sandy Soils—continued.

pleno (dec; 3); *S. salicifolia* (dec; 3-5) and vars.; *S. trilobata* (dec; 1-2); *Staphylea oolichica* (dec; 3-5); *S. pinnata* (dec; 6-12); *S. trifolia* (dec; 6-12); *Stantonia hexaphylla* (ev); *Stephanandra flexuosa* (dec); *Styrax grandifolia* (dec; 6); *S. serrulata* (dec; 40); *Symphoricarpos occidentalis* (dec); *S. racemosus* (dec; 4-6); *S. vulgaris* (dec; 3-6); *Syringa Emodi* (dec; 6); *S. japonica* (dec); *S. vulgaris* (dec; 8-20) and vars.; *Tamarix gallica* (ev; 5-10); *Ulex europæus* (ev; 2-3); *U. nanus* (ev; 1-3); *Ulmus campestris* (dec; 125) and var.; *Viburnum dentatum* (dec; 5-10); *V. dilatatum* (dec; 10); *V. Lentago* (dec; 15-30); *V. macrocephalum* (dec; 20) and var.; *V. Opulus* (dec; 6-8) and var.; *V. plicatum* (dec; 4-6) and var.; *V. prunifolium* (dec; 8-10); *V. Tinus* (ev; 8-10) and var.; *Xanthoxerax sorbifolia* (5-15); *Xanthorrhiza apiifolia* (dec; 1-3); *Yucca aloifolia* (ev; 15-20); *Y. angustifolia* (ev; 4-8); *Y. filamentosa* vars. (ev); *Y. gloriosa* (ev; 4-6) and var.

SEASIDE.—Plants suitable for cultivation on the Seacoast have been briefly dealt with in the Dictionary, under the title **Seaside Grounds and Plants**, in Vol. III. All the trees and shrubs here named will thrive in close proximity to the sea; but some of them require protection from rough winds in very exposed situations. "The best sheltering nurses amongst deciduous trees are the Sallow, Alder, Osier, and Birch, and among evergreens the Scotch Pine; but as these nurses would be gladly accepted in many instances as permanent occupants, I would earnestly recommend them as particularly fitted for such situations." (Grigor's "Arboriculture.") Such subjects as require to be partially sheltered from the sea-breeze are denoted by an asterisk.

Abies concolor * (ev; 80-150); *A. nobilis* * (ev; 100-300); *A. pectinata* * (ev; 80-100); *A. Pinea* * (ev; 60-80); *Acer creticum* (s-ev; 4); *A. monspessulanum* (dec; 10-20); *A. platanoides* * (dec; 50); *A. Pseudo-platanus* (dec; 30-60); *Ailantas glandulosa* (dec; 60); *Alnus glutinosa* (dec; 50-60) and vars.; *Araucaria imbricata* * (ev; 50-100); *Arbutus Andrachne* * (ev; 10-14); *A. Menziesii* * (ev; 6-10); *A. Unedo* * (ev; 8-10); *Aucuba japonica* * (ev; 6-10) and vars.; *Azalea pontica* * (dec; 4-6); *Baccharis halimifolia* (dec; 6-12); *Berberis Aquifolium* (ev; 3-6); *B. Darwinii* (ev; 2); *B. empetrifolia* (ev; 1½-2); *B. vulgaris* (dec; 8-20) and var.; *Betula alba* (dec; 50-60) and vars.; *Buddleia globosa* * (ev; 15); *Bupleurum frutescens* (ev; 1); *Buxus balearica* * (ev; 15-20); *B. sempervirens* * (ev; 1-30) and vars.; *Carpinus Betulus* (dec; 30-70); *Ceanothus americanus* (dec; 1-3); *Cerasus Avium* * (dec; 20-40); *C. Laurocerasus* * (ev; 6-10); *C. lusitanica* * (ev; 10-20); *C. Padus* (dec; 10-30); *Chamæcypris Lawsoniana* (ev; 75-100); *C. nutkaensis* (ev; 40-60); *Cistus ladaniferus* (ev; 4); *C. laurifolius* (ev; 4); *C. villosus* (ev; 3); *Clematis Flammula* (dec climber); *C. Vitalba* (dec climber); *Colutea arborescens* * (dec; 6-10); *Cornus sanguinea* * (dec; 6); *Coronilla Emerus* (dec; 3-4); *Corylus Avellana* (dec; 20) and vars.; *Cotonaster microphylla* (ev; 3-4); *C. vulgaris* (dec; 3-5); *Crataegus Oxycantha* (dec; 10-20) and vars.; *C. Pyracantha* (ev; 10-20); *Cupressus macrocarpa* * (ev; 50-60); *Cytisus albus* * (dec; 6-10); *C. scoparius* (dec; 3-10); *Daphne Cneorum* (ev trailer); *D. Laureola* * (ev; 3-4); *D. pontica* (ev; 4-5); *Desfontainea spinosa* * (ev; 3); *Doutzia crenata* * (dec; 4-8); *Diervilla grandiflora* * (dec; 8); *D. rosea* * (dec; 6); *Elmagnus hortensis* (dec; 15-20); *E. longipes* (ev; 3); *E. macrophylla* (6); *E. pungens* (6); *Ephedra vulgaris* (ev; 1-2); *Escallonia macrantha* (ev; 3-6); *Euonymus japonicus* (ev; 20) and vars.; *Fagus sylvatica* (dec; 60-100); *Ficus Carica* * (dec; 15-30); *Fraxinus excelsior* (dec; 30-80) and vars.; *Garrya elliptica* * (ev; 8-10); *Griselinia littoralis* * (ev; 30); *G. lucida* * (ev); *Halimodendron argenteum* (dec; 4-6); *Hedera Helix* vars. (ev climbers); *Hippophae rhamnoides* (dec; 2-20); *Hydrangea hortensis* * (dec; 2-3) and vars.; *Ilex Aquifolium* (ev; 10-40) and

Sandy Soils—continued.

vars.; *Juniperus communis* (ev; 3-20); *Laburnum alpinum* (dec; 15-20); *L. vulgare* (dec; 20); *Laurus nobilis* * (ev; 30-60); *Lavandula vera* (dec; 1-2); *Lycocateria formosa* (dec; 4-6); *Ligustrum ovalifolium* (s-ev; 6) and vars.; *L. vulgare* (s-ev; 6-10); *Lonicera Periclymenum* (dec climber); *Lycium europæum* (dec; 10-12); *Myricaria germanica* (dec; 3-6); *Myrtus communis* * (ev; 3-10); *Philadelphus coronarius* * (dec; 2-10); *Phillyrea angustifolia* * (ev; 8-10); *P. latifolia* * (ev; 20-30); *P. media* * (ev; 10-15); *Picea Monziesii* * (ev; 50-70); *P. orientalis* * (ev; 80-120); *Pinus australis* * (ev; 60-70); *P. austriaca* (ev; 75-100); *P. Cembra* (ev; 50-150); *P. Coulteri* (ev; 50-70); *P. insignis* (ev; 80-100); *P. koraiensis* (ev; 20-30); *P. Laricio* (ev; 100-150); *P. Massoniana* (ev; 70-80); *P. Mughus* (ev; 5-15); *P. Pinaster* (ev; 60-80); *P. Pinea* (ev; 50-60); *P. Sabiniana* (ev; 40-60); *P. Strobus* (ev; 120-160); *Platanus orientalis* (dec; 60-80); *Populus alba* * (dec; 60-100); *P. nigra* * (dec; 50-60); *P. Tremula* * (dec; 40-80); *Prunus maritima* (dec; 2-3); *Pyrus arbutifolia* (dec; 2-10); *P. Aria* (dec; 4-40); *P. Aucuparia* (dec; 10-30); *P. baccata* (dec; 15-20); *P. communis* (dec; 20-40); *P. coronaria* (dec; 20); *P. domestica* (dec; 20-60); *P. floribunda* (dec); *P. prunifolia* (dec; 20-30); *Quercus Ilex* (ev; 15-6') and vars.; *Q. pedunculata* (dec; 50-100); *Q. Phellos* (dec; 50); *Q. sessiliflora* (dec; 60); *Q. Suber* (ev; 25); *Rhamnus Alaternus* (dec; 20); *R. catharticus* (dec; 5-10); *Rhododendron catawbiense* (ev; 3-6); *R. ponticum* (ev; 6-12); *R. hybrids* and alpine vars. * (ev); *Ribes sanguineum* (dec; 4-8); *Rosa ruginosa* (dec; 5); *R. rugosa* (dec; 4); *R. spinosissima* (dec; 1-4); *Salix alba* (dec; 80); *S. Caprea* (dec; 15-30); *S. viminalis* (dec; 30); *Sambucus nigra* (dec; 25) and vars.; *Shpherdia argentea* (dec; 12-18); *Spartium junceum* * (dec; 6-10); *Spiræa Douglasii* * (dec; 3); *S. japonica* * (ev; 4-6); *S. Lindleyana* * (dec; 4-8); *S. trilobata* * (dec; 1-2); *Symphoricarpos racemosus* (dec; 4-6); *Syringua persica* * (dec; 4-5); *S. vulgaris* * (dec; 8-20); *Tamarix gallica* (ev; 5-10); *Taxus baccata* * (ev; 15-50) and vars.; *Thuya occidentalis* * (ev; 40-50) and vars.; *Ulox europæus* (ev; 2-3) and vars.; *Ulmus montana* (dec; 80-120) and vars.; *Viburnum Opulus sterile* * (dec; 6-8); *V. Tinus* * (ev; 8-10); *Yucca angustifolia* (ev; 4-5); *Y. filamentosa* vars. (ev); *Y. gloriosa* (ev; 4-6) and vars.

TOWNS.—A selection of the trees and shrubs best calculated to withstand the smoke and chemical impurities of atmosphere which abound in most large manufacturing Towns, is here given. Those which come in leaf late, e.g., Elms, Willows, Poplars, Laburnums, Alders, &c., are best suited to the purpose, as they do not suffer so much from the smoke given off by the domestic fires in winter and early spring. The asterisks indicate those trees and shrubs which are better adapted for Towns in the midland and southern districts than for those in the north. Very few of the Conifers will survive the effects of the atmosphere of a densely populated Town.

Acer macrophyllum (dec; 60); *A. platanoides* (dec; 50); *A. Pseudo-platanus* (dec; 30-60); *Æsculus Hippocastanum* (dec; 50-60); *Ailantus glandulosa* * (dec; 60); *Alnus glutinosa* (dec; 50-60); *Amelanchier canadensis* (dec; 6-8); *Ampelopsis quinquefolia* (dec creeper); *A. tricuspidata* (dec climber); *Amygdalus communis* * (dec; 10-30); *Arbutus Andrachne* * (ev; 10-14) and var.; *A. Unedo* * (ev; 8-10); *Artemisia Abrotanum* (dec; 2-4); *Anouba himalaica* (ev); *A. japonica* (ev; 6-10) and vars.; *Berberis Aquifolium* (ev; 3-6); *B. Darwinii* (ev; 2); *B. empetrifolia* (ev; 1½-2); *B. vulgaris* (dec; 8-20); *Betula alba* (dec; 50-60) and vars.; *Buddleia globosa* (ev; 15); *Buxus sempervirens* (ev; 1-30) and vars.; *Calluna vulgaris* (ev; 1-3) and vars.; *Caragana arborescens* (dec; 15-20); *Castanea sativa* (dec; 50-70); *Cercasus Avium* (dec; 20-40); *C. Leucocerasus colchica* (ev; 6-10); *C. lusitanica* (ev; 10-20); *C. Padus* (dec; 10-30); *Cercis Siliquastrum* * (dec; 20-30); *Chimonanthus fra-*

Towns—continued.

grans (dec; 6-8); *Clematis Flammula* (dec climber); *C. Vitalba* (dec climber); *C. varieties* (dec climbers); *Colutea arborescens* (dec; 6-10); *C. eruenta* (dec; 4-6); *Cornus mas* (dec; 10-15) and vars.; *C. sanguinea* (dec; 6); *Cotoneaster microphylla* (ev; 3-4); *C. Simonsii* (ev); *Crataegus Crus-galli* (dec; 10-20) and vars.; *C. flava* (dec; 12-20); *C. heterophylla* (dec; 10-20); *C. orientalis* (dec; 12-20); *C. Oxyacantha* (dec; 10-20) and vars.; *C. Pyracantha* (ev; 10-20); *C. tanaacetifolia* (dec; 12-20); *Cydonia Maulei* * (dec); *C. vulgaris* * (dec; 20) and vars.; *Cytisus albus* (dec; 6-10); *Daphne Mesereum* (dec; 3-4); *Diervilla rosea* * (dec; 6); *Erica carnea* (ev; 3); *E. multiflora* (ev; 2); *E. vagans* (ev; 1); *Euonymus europæus* (dec; 6-20); *E. japonicus* (ev; 20) and vars.; *Fagus sylvatica* (dec; 60-100); *Ficus Carica* * (dec; 15-30) and vars.; *Forsythia viridissima* (dec; 10); *F. suspensa* (dec); *Fraxinus americana* (dec; 30-40); *F. excelsior* (dec; 30-80) and vars.; *F. Ornus* (dec; 20-30); *F. oxphylla parvifolia* (dec; 30-50); *Garrya elliptica* (ev; 8-10); *Gaultheria Shallon* (ev; procumbent); *Genista tinctoria* (ev; 1-2); *Ginkgo biloba* (dec; 60-80); *Gleditschia triacanthos* (dec; 30-50); *Hedera Helix* vars. (ev climbers); *Hibiscus syriacus* (dec; 6) and vars.; *Hippophae rhamnoides* (dec; 2-20); *Hypericum calycinum* (s-ev; 1); *Ilex Aquifolium* (ev; 10-40) and vars.; *Jasminum nudiflorum* (dec climber); *J. officinale* (dec climber); *Juglans nigra* (dec; 60); *J. regia* (dec; 40-60) and vars.; *Juniperus communis* (ev; 3-20) and vars.; *J. Sabina* (ev; 5-8); *Kerria japonica* (dec; 3-4); *Koeleruteria paniculata* (dec; 10-15); *Laburnum Adami* (dec); *L. alpinum* (dec; 15-20); *L. vulgare* (dec; 20) and vars.; *Laurus nobilis* (ev; 30-60); *Lycocateria formosa* (dec; 4-6); *Ligustrum japonicum* * (ev; 6-8); *L. lucidum* * (ev; 8-12); *L. vulgare* (s-ev; 6-10) and vars.; *Liriodendron tulipifera* (dec; 75-100); *Magnolia conspicua Soulangiana* * (dec; 20-50); *M. obovata discolor* (dec; 5); *Morus alba* (dec; 20-30); *M. nigra* (dec; 20-30); *M. rubra* (dec; 40-70); *Paulownia imperialis* * (dec; 30); *Philadelphus coronarius* (dec; 2-10); *Phillyrea media* (ev; 10-15); *Pinus sylvestris* (ev; 50-100) and vars.; *Platanus occidentalis* (dec; 70-80); *P. orientalis* * (dec; 60-80) and vars.; *Populus alba* (dec; 60-100); *P. monilifera* * (dec; 80); *P. nigra pyramidalis* (dec; 50-60); *P. Tremula* (dec; 40-80); *Potentilla fruticosa* (dec; 2-4); *Pyrus Aucuparia* (dec; 10-30); *P. prunifolia* (dec; 20-30); *P. spectabilis* (dec; 20-30); *Quercus Corris* vars. (dec or s-ev; 40-60); *Q. coccinea* (dec; 50); *Q. Ilex* * (ev; 15-60); *Rhamnus Alaternus* * (ev; 20); *Rhododendron Anthopogon* (ev; 1-1½); *R. catawbiense* (ev; 3-6); *R. caucasicum* (ev; 1); *R. oiliatum* (ev; 2); *R. dahuricum* * (ev; 3); *R. ferrugineum* (ev; 1); *R. Fortunei* (ev; 12); *R. hirsutum* (ev; 1-2); *R. ponticum* (ev; 6-12); *Rhus Cotinus* (dec; 6-8); *R. typhina* (dec; 10-30); *Ribes alpinum aureum* (dec; 3); *R. aureum*; *R. sanguineum* (dec; 4-8); *Robinia Pseudo-acacia* (dec; 30-60) and vars.; *Salix alba* (dec; 80); *S. babylonica* (dec; 30); *S. Caprea* (dec; 15-30); *S. viridis* (dec; 30); *Sambucus nigra* (dec; 25); *S. racemosa* (dec; 10-20); *Sophora japonica* (ev; 4-6); *Spiræa Douglasii* (dec; 3); *S. japonica* * (ev; 4-6); *S. Lindleyana* (dec; 4-8); *S. trilobata* (dec; 1-2); *Symphoricarpos racemosus* (dec; 4-6); *Syringua persica* * (dec; 4-5); *S. vulgaris* * (dec; 8-20); *Taxus adpressa* (ev; 4); *T. baccata* (ev; 30-50); *Thuya gigantea* (ev; 50-150) and vars.; *T. occidentalis* (ev; 40-50); *T. orientalis* (ev; 18-20) and vars.; *Thuyopsis dolabrata* (ev; 40-50); *Tilia argentea* (dec; 30-50); *T. petiolaris* (dec; 50); *T. platyphylla* (dec; 70-80); *T. vulgaris* (dec; 60-90); *Ulmus campestris* (dec; 125) and vars.; *U. montana* (dec; 80-120) and vars.; *Viburnum Lantana* (dec; 6-20); *V. Opulus sterile* * (dec; 6-8); *V. Tinus* * (ev; 8-10) and vars.; *Vinca major* (dec; procumbent) and vars.; *Wistaria chinensis* * (dec climber); *Yucca acutifolia* (ev); *Y. angustifolia* (ev; 4-5); *Y. a. stricta* (ev); *Y. filamentosa* var. (ev); *Y. gloriosa* (ev; 4-6) and vars.

WATERSIDE.—For planting in close proximity to ornamental Waters, or on the banks of Rivers, the trees and shrubs named below will be found suitable. Some of them will also thrive in swamps, but the majority prefer an open soil in the immediate vicinity of running Water.

Acer macrophyllum (*dec*; 60); *A. rubrum* (*dec*; 20); *Alnus glutinosa* (*dec*; 50-60); *Andromeda polifolia* (*ev*; 1); *Arbutus Unedo* (*ev*; 8-10); *Betula alba* (*dec*; 50-60); *B. lutea* (*dec*; 70-80); *B. nigra* (*dec*; 60-70); *B. papyracea* (*dec*; 60-70); *Caragana arborea* (*dec*; 15-20); *C. frutescens* (*dec*; 2-3); *Catalpa bignonioides* (*dec*; 20-40); *Celtis crassifolia* (*dec*; 20-30); *Cerasus depressa* (*dec*; 1); *Chamaecyparis leptoclada* (*ev*; 8-10); *C. sphaeroidea* (*ev*; 40-70); *Clematis virginiana* (*dec* climber); *Cornus circinata* (*dec*; 5-10); *C. paniculata* (*dec*; 4-8); *C. sericea* (*dec*; 5-8); *C. stolonifera* (*dec*; 4-10); *C. stricta* (*dec*; 8-15); *Crataegus apiifolia* (*dec*; 10-20); *C. coccinea* (*dec*; 20-30); *C. cordata* (*dec*; 20); *C. Crna-galli* (*dec*; 10-30); *C. Douglasii* (*dec*; 10-15); *C. Oxyacantha* (*dec*; 10-20); *C. Pyracantha* (*ev*; 10-20); *C. pyrifolia* (*dec*; 6-10); *C. tanacetifolia* (*dec*; 12-20); *Cryptomeria elegans* (*ev*; 23); *C. japonica* (*ev*; 50-100); *Cydonia vulgaris* (*dec*; 20); *Dirca palustris* (*dec*; 2-5); *Halesia diptera* (*dec*; 10); *H. tetraptera* (*dec*; 15-20); *Juniperus phoenicea* (*ev*; 15-18); *J. recurva* (*ev*; 5-8); *J. virginiana* (*ev*; 10-15) and vars.; *Ledum palustre* (*ev*; 2); *Myrica cerifera* (*ev*; 5-12); *M. Gale* (*dec*; 2-4); *Oxycoocus macrocarpus* (*ev* trailer); *O.*

Waterside—continued.

palustris (*ev* trailer); *Picea ajanensis* (*ev*; 70-80); *P. alba* (*ev*; 30-40); *P. Engelmanni* (*ev*; 80-100); *P. Manziessii* (*ev*; 50-70); *P. nigra* (*ev*; 50-80); *P. orientalis* (*ev*); *P. Smithiana* (*ev*; 80-120); *Pinus austriaca* (*ev*; 75-100) and var.; *P. Balfouriana* (*ev*; 40-50); *P. Cembra* (*ev*; 50-150); *P. contorta* (*ev*; 25-30); *P. Coulteri* (*ev*; 50-70); *P. excelsa* (*ev*; 60-150); *P. ponderosa* (*ev*; 100-150); *P. rigida* (*ev*; 30-45); *P. Strobus* (*ev*; 120-160); *Platanus orientalis* (*dec*; 60-80) and vars.; *Populus alba* (*dec*; 60-100) and vars.; *P. balsamifera* (*dec*; 70); *P. monilifera* (*dec*; 80); *P. nigra* (*dec*; 50-60) and vars.; *P. Tremula* (*dec*; 40-80) and vars.; *Pterocarya fraxinifolia* (*dec*; 20-40); *Quercus coccinea* (*dec*; 50); *Q. macrocarpa* (*dec*; 30); *Q. rubra* (*dec*); *Rubus fruticosus cuneus* (*dec*; prostrate); *R. spectabilis* (*dec*; 6-10); *Salix alba* (*dec*; 80); *S. babylonica* (*dec*; 30); *S. Caprea* (*dec*; 15-30); *S. daphnoides* (*dec*; 10-20); *S. pentandra* (*dec*; 6-8); *S. phylicifolia* (*dec*; 10); *S. purpurea* (*dec*; 5-10); *S. rubra Helix* (*dec*; 10-12); *S. viridis* (*dec*; 30); *Shepherdia canadensis* (*dec*; 3-6); *Syringa Josikæa* (*dec*; 5-10); *Taxodium distichum* (*dec*; 120) and vars.; *Taxus canadensis* (*ev*; 3-4); *Thuja gigantea* (*ev*; 50-150); *T. occidentalis* (*ev*; 40-50) and vars.; *T. orientalis* (*ev*; 18-20) and vars.; *Thuyopsis dolabrata* (*ev*; 40-50); *Tsuga canadensis* (*ev*; 60-80) and vars.; *Ulmus montana* (*dec*; 80-120) and vars.



AN INDEX TO ANIMALS BENEFICIAL OR INJURIOUS TO HORTICULTURE.

FULL lists of the Insects and other Animals of special interest to horticulturists are subjoined, the useful species being given in one list and the injurious in another. In order to facilitate reference to any species, the heading is given in heavy type under which the information concerning it is chiefly to be found. In the case of certain species, however, that injure many kinds of plants without being specially restricted to any (*e.g.*, Cockchafers, Mole Crickets, Wireworms), it has not been found possible to give complete lists of references, and for these animals, therefore, only the most important headings have been mentioned.

Every effort has been made to render the information given in the **DICTIONARY OF GARDENING** upon this very important department of horticulture a reliable statement of all that is known with regard to the friends and foes of the gardener and farmer in the British Isles, and of the most effectual methods of detecting the presence and checking the ravages of harmful species. To do this more thoroughly foreign species have been described where there seems reason to believe that they may yet be found in Britain. But even should in the future some foes not described in this work prove hurtful, the means recommended under the headings in this list will be found beneficial against them also.

J. W. H. TRAIL.

USEFUL.

Apis mellifica. **Honey Bee; Wasps.**
Bombus lucorum, *B. terrestris*. **Humble Bee.**
Bufo vulgaris. **Toad.**
Carabus (Ground Beetles). **Insects.**
 Chalcididae. **Hymenoptera; Insects.**
Chrysopa vulgaris (Golden-eyed Fly). **Lacewing Fly.**
Cicindela (Tiger Beetle). **Insects.**
Coccinella bipunctata (Two-spotted Ladybird), *C. septempunctata* (Seven-spotted Ladybird), *C. undecimpunctata* (Eleven-spotted Ladybird), *C. variabilis* (Variable Ladybird). **Ladybirds.**
Copris lunaris. **Unicorn Beetle.**
Drilus. **Snails.**
Epeira diademata (Garden Spider). **Spiders.**

Useful - continued.

Goerius olens (Devil's Coach Horse). **Staphylinidae.**
Harpalus (Ground Beetle). **Insects.**
Hemerobius. **Lacewing Flies.**
Hypona proboscidalis. **Snout Moths.**
Ichneumonidae. **Ichneumon Flies.**
Lampyrus noctiluca (Glow-worm). **Insects (COLEOPTERA).**
Linyphia. **Spiders.**
Lumbricus (Earthworm). **Worms.**
Lycosa (Hunting Spider). **Spiders.**
Macroglossa stellatarum (Humming Bird Hawk Moth). **Microgaster.**
Mustela vulgaris. **Weasel.**
Myriapoda (Centipedes).
Neriana. **Spiders.**

Useful—continued.

Neuroptera (Stink Fly). **Insects; Lacewing Fly.**
 Salticus (Leaping Spider). **Spiders.**
Staphylinidæ (Devil's Coach-horses, or Rove Beetles).
Syrphus (Hawk Fly).
 Tachina. **Insects.**
 Testacella haliotidea, T. Mangei. **Slugs; Testacella.**
 Thrips Phylloxera. **Thrips.**
 Vanessa Atalanta (Red Admiral Butterfly), V. Io (Peacock Butterfly), V. Urticæ (Small Tortoiseshell Butterfly).
Vanessa.
 Vespa Crabro (Hornet). **Wasps.**
 Walckenaera. **Spiders.**

HURTFUL.

Abraxas grossulariata. **Gooseberry or Magpie Moth.**
 Acarida. **Mites.**
 Acherontia Atropos (Death's Head Hawk Moth). **Sphinxidæ; Potato** (INSECT PESTS).
 Acronycta psi (Dagger Moth). **Pear** (INSECTS).
 Agrilus viridis. **Rosa** (INSECTS).
 Agriotes lineatus, A. obscurus, A. sputator (Click Beetle, or Skipjack). **Wireworms.**
 Agrotis exclamationis (Heart-and-Dart Moth), A. nigricans (Garden Dart Moth), A. segetum (Turnip Moth). **Noctua; Turnip Moth.**
 Agrotis Tritici (White-line Dart Moth). **Noctua; Vine Moths.**
 Aleyrodes Brassicæ. **Cabbage Powdered-wing.**
 Aleyrodes proleptella. **Snowy Fly.**
 Aleyrodes vaporariorum (Snowy Fly). **Tomato** (INSECTS).
 Altica. **Turnip Flea.**
 Alucitina (Plume Moths). **Moths.**
 Anarsia lineatella. **Peach** (INSECT PESTS).
 Andricus curvator, A. glandium, A. inflator, A. terminalis (Oak-Apple Gall Fly). **Oak Galls.**
 Anguillulidæ. **Nematoid Worms.**
 Anomala Frischii, A. Vitis. **Vine** (ANIMAL PESTS).
 Anthidium manicatum. **Wood-boring Bees.**
 Anthomyia Beta. **Beet or Mangold Fly.**
 Anthomyia Brassicæ. **Cabbage Fly.**
 Anthomyia canicularis, A. foveosa, A. boralis, A. radicum (Radish Fly), A. Raphani. **Radish** (INSECTS).
 Anthomyia Lactucæ. **Lettuce Fly.**
 Anthomyia (Phorbia) oeparum. **Onion Fly.**
 Anthonomus druparum. **Peach** (INSECT PESTS).
 Anthonomus pomorum. **Apple Blossom Weevil.**
 Anthonomus prunicida (Plum Gouger). **Plum** (INSECT PESTS).
 Anthonomus Rubi (Raspberry Weevil). **Raspberry** (INSECTS).
 Antispila Pfeifferella. **Vine Moths.**
 Aphides (Green Flies, or Plant Lice). **Aphides; Black Fly.**
 Aphlothrix collaris, A. gemmæ (Artichoke Oak-Gall Fly), A. globuli. **Oak Galls.**
 Aphis Amygdali, A. Persicæ. **Peach** (INSECT PESTS).
 Aphis Cerasi, A. Rumicis (Collier). **Black Fly.**
 Aphis lentiginis, A. pyrarica. **Pear** (INSECTS).
 Aphrophora spumaria (Frog or Cuckoo Spit). **Frog Hopper.**
 Aporia Crateri (Black-veined White Butterfly). **Hawthorn Caterpillars.**
 Aretia Caja (Common Tiger Moth), A. villica (Cream-spotted Tiger Moth). **Tiger Moths.**
 Arion ater (Black Slug), A. hortensis (Garden Slug). **Slugs.**
 Armadillo vulgaris (Pill Millipede, or Woodlouse). **Oniscids.**
 Aromia moschata. **Musk Beetle.**
 Arvicola amphibia (Water Rat, or Water Vole). **Rats.**
 Arvicola arvalis (Short-tailed Field Mouse or Vole). **Mice.**
 Aspidiotus Camelliae (Camellia Scale), A. Nerii, A. palmarum. **Scale**

Hurtful—continued.

Aspidiotus conchiformis (Oyster-shell Bark Louse). **Apple Mussel-scale; Scale Insects.**
 Aspidiotus ostreaformis (Pear Oyster-scale). **Pear** (INSECTS); **Scale Insects.**
 Athalia ancilla, A. spinarum (Nigger, or Black Palmer). **Turnip Sawfly.**
 Athous hæmorrhoidalis. **Wireworms.**
 Balaninus nucum. **Corylus** (INSECTS); **Nut Weevil.**
 Baridius trinotatus (Potato-stalk Weevil). **Potato** (INSECT PESTS).
 Batoneus Populi. **Populus** (INSECT PESTS).
 Biorhiza aptera. **Oak Galls.**
 Blatta orientalis. **Cockroach.**
 Blennocampa pusilla. **Rose Sawflies.**
 Bombycina. **Moths.**
 Bombyx mori (Silkworm Moth). **Moths.**
 Bombyx neustria. **Lackey Moth.**
 Bostrichus bidentatus, B. chalcographus, B. cinereus, B. Laricis, B. lineatus, B. micrographus, B. saturalis, B. typographus (Bark-beetles). **Scolytidæ.**
 Brachelytra (Rove or Cocktail Beetles). **Staphylinidæ.**
 Bruchidæ. **Pea** (INSECT PESTS).
 Bruchus granarius. **Bean Beetle; Pea** (INSECT PESTS)
 Bruchus Pisi. **Pea** (INSECT PESTS).
 Byturus tomentosus (Raspberry Beetle), B. unicolor. **Raspberry** (INSECTS).
 Callimorpha dominula (Scarlet Tiger Moth). **Tiger Moths.**
 Carpocapsa funebrana (Plum Tortrix). **Plum** (INSECT PESTS).
 Carpocapsa pomonana. **Apple or Codlin Grub.**
 Cecidomyia floricola. **Tilia** (INSECTS).
 Cecidomyia marginem-torquens, C. rosaria, C. salicina. **Salix** (INSECTS).
 Cecidomyia anophila. **Vine** (ANIMAL PESTS).
 Cecidomyia Pisi. **Pea** (INSECT PESTS).
 Cecidomyia Rosæ (Rose Gall Midge). **Rose Galls.**
 Cecidomyia Tritici (Wheat Midge). **Red Maggot.**
 Ceroplastes floridensis. **Scale Insects.**
 Cetonia aurata (Rose Bug). **Rosechafer.**
 Ceuthorrhynchus assimilis. **Radish** (INSECTS); **Turnip-seed Weevil.**
 Ceuthorrhynchus contractus. **Turnip** (ANIMAL PESTS).
 Ceuthorrhynchus sulciocollis (Turnip-gall Weevil). **Cabbage-gall Weevil; Turnip Galls.**
 Cherocampa Elpenor (Elephant Hawk Moth). **Sphingidæ.**
 Cheimantobia brumata. **Winter Moth.**
 Chermes. **Pinus** (INSECTS).
 Chermes Abietis. **Spruce-gall Aphis.**
 Chilognatha. **Myriapoda.**
 Chionaspis Eunymi (Spindle-tree Scale). **Scale Insects.**
 Chlorita viridula. **Potato** (INSECT PESTS).
 Chrysomelidæ. **Populus** (INSECT PESTS).
 Chrysopa vulgaris (Golden Eyes). **Lacewing Flies.**
 Cidaria fulvata (Barred Yellow Moth). **Rosa** (INSECTS).
 Cladius Padi, C. pectinicornis. **Rose Sawflies.**
 Cnethocampa processionea (Processionary Moth). **Web-forming Caterpillars.**
 Coccidæ (Mealy Bug and Scale). **Scale Insects.**
 Coccotorus scutellaris (Plum Gouger). **Plum** (INSECT PESTS).
 Coccus adonidum. **Mealy Bug.**
 Coccus Vitis. **Vine Scale Insects.**
 Coleophora hemerobiella. **Pear** (INSECTS).
 Coleoptera. **Beetles; Insects.**
 Conotrachelus nenuphar (Plum Curculio). **Plum** (INSECT PESTS).
 Cosmus ligniperda. **Goat Moth.**
 Crioceris Asparagi (Cross-bearer). **Asparagus Beetle.**
 Crioceris merdiger. **Lily Beetle.**
 Cressia Bergmanniana. **Rosa** (INSECTS).
 Cressia holmiana.
 Crustacea. **Oniscids.**

Hurtful—continued.

Cryptocampus angustus, *C. pentandrus*. **Salix** (INSECTS).
 Curculionidae. **Weevils.**
 Cynipidæ (True Gall Flies). **Oak Galls; Rose Galls.**
Cynips aptera, *C. Kollarii*. **Oak Galls.**
Dactylopius adonidum, *D. destructor*, *D. longifilis*. **Scale Insects.**
Dasychira fascelina (Dark Tussock Moth), *D. pudibunda* (Pale Tussock Moth or Hop Dog). **Tussock Moths.**
Deilephila Elpenor, *D. Porcellus* (Elephant Hawk Moth). **Vine Moths.**
Deltoides. **Snout Moths.**
Depressaria. **Flat-body Moth; Parsnip** (INSECTS).
Depressaria cicutella (Common Flat-body Moth). **Depressaria.**
Depressaria daucella. **Carrot-blossom Moth.**
Depressaria depressella. **Purple Carrot-seed Moth.**
Depressaria heracleana. **Parsonip-seed Moth.**
 Dermaptera. **Earwigs.**
Diaspina. **Scale Insects.**
Diaspis ostryiformis (Pear Oyster-scale), *D. Rosæ*. **Scale Insects.**
 Rubi. **Raspberry** (INSECTS).
Dioranura bicuspis (Alder Kitten), *D. bifida* (Poplar Kitten), *D. furcula* (Sallow Kitten), *D. vinula* (Puss Moth). **Puss Moth.**
Dietypteryx contaminana. **Pear** (INSECTS).
Dimona stilata. **Hawthorn Caterpillars.**
Diplosis tremula. **Populus** (INSECT PESTS).
 Diptera. **Insects.**
Ditula angustiorana. **Vine Moths.**
 Diurni (Butterflies). **Insects; Lepidoptera.**
Dorcus parallelipipedus (Small Stag Beetle). **Lucanus cervus.**
Doryphora decemlineata (Colorado Beetle). **Potato Beetle.**
Dryophanta divisa, *D. folii*. **Oak Galls.**
Dryotera terminalis (Oak-apple Gall Fly). **Oak Galls.**
 Elateridæ (Snap Beetles, Spring Beetles, or Skipjacks). **Wireworms.**
einctus, *E. melanarius*, *E. rufocinctus*. **Rose Sawflies.**
Endopisa nigricans, *E. proximana*. **Pea** (INSECT PESTS).
Endrosia fenostrella. **Tineina.**
Eriocampa adumbrata, *E. limacina* (Pear or Plum Slug-worm). **Hawthorn Caterpillars; Slugworms.**
Eriocampa annulipes, *E. ovata*. **Slugworms.**
Eriocampa Rosæ. **Rose Sawflies; Slugworms.**
Eupoecilia ambiguella. **Vine Moths.**
Eupteryx picta, *E. Solani* (Frog Hopper). **Potato** (INSECT PESTS).
 Eura. **Willow Sawflies.**
Fenusa Pumilio. **Raspberry** (INSECTS).
Fenusa Ulmi. **Sawflies.**
Fidonia piniaria (Bordered White Moth). **Pinus** (INSECTS).
Forficula auricularia. **Earwigs.**
 Formicidæ. **Ants.**
Geometrina (Looper Moths). **Moths.**
Geotrupes stercorarius (Dor Beetle). **Shard-borne Beetle.**
Grapholitha botrana. **Vine Moths.**
Grapholitha pisana, *G. tenebrosana*. **Pea** (INSECT PESTS).
 Gryllidæ. **Crickets.**
Gryllotalpa vulgaris. **Mole Cricket.**
Gryllus campestris (Field Cricket), *G. domesticus* (House Cricket). **Crickets.**
Hadena oleracea. **Potherb Moths.**
Halia Wavaria (V Moth). **Ribes** (INSECTS).
Haltica. **Turnip Flea.**
Harpalus ruficornis (Ground Beetle). **Insects** (COLEOPTERA).
Hedya cœclang. **Pear** (INSECTS).
Heliazus Populi. **Populus** (INSECT PESTS).
Hemiteles adonidum, *H. hæmorrhoidalis*. **Thrips.**

Hurtful—continued.

Helix aspera (Common Snail), *H. hortensis* (Garden Snail), *H. nemoralis*, *H. Pomatia*. **Snails.**
 Hemiptera Heteroptera, *H. Homoptera*. **Insects.**
Hepialus Humuli (Ghost Swift). **Otter Moth.**
 Heterocera. **Insects; Lepidoptera.**
Heterodera radicolica. **Vine** (ANIMAL PESTS).
Heterodera Schachtii. **Nematoid Worms.**
 Heteroptera (Plant Bugs). **Insects** (HEMIPTERA).
Homalomyia canicularis. **Radish** (INSECTS).
 Homoptera. **Insects** (HEMIPTERA).
Hyalopterus Pruni. **Peach** (INSECT PESTS).
Hybernia aurantiaria (Scarce Umber Moth), *H. defoliaria* (Mottled Umber Moth). **Hybernia; Umber Moths.**
Hybernia leucophœaria (Spring Usher Moth), *H. rupicaprararia* (Early Moth). **Hybernia.**
Hylesinus angustus, *H. crenatus*, *H. Fraxini*, *H. palliatus*, *H. roligraphus*, *H. vittatus* (Bark Beetles). **Scolytidæ.**
Hylesinus ater, *H. opacus*, *H. piniperda*. **Pine-bark Beetle; Scolytidæ.**
Hylobius Abietis. **Pine Weevils.**
Hylotoma enodis, *H. gracilicornis*, *H. pagana*, *H. Rosæ*. **Rose Sawflies.**
 Hymenoptera. **Insects.**
Hypena rostralis (Buttoned Snout Moth). **Pyralis.**
Hyponomeuta padella (Small Ermine Moth). **Hawthorn Caterpillars.**
Ixodes erinaceus (Dog Tick). **Ticks.**
 Ixodida. **Ticks.**
Julus gutturalatus, *J. terrestris*. **Millipedes.**
Lachnus. **Pinus** (INSECTS).
Lampronia rubiella. **Raspberry** (INSECTS).
Lasioptera obfuscatâ (Wheat Midge). **Red Maggot.**
Lasioptera Rubi (Raspberry Midge). **Raspberry** (INSECTS).
Lasioptera Vitis (Vine Midge). **Vine Galls.**
Lecanium hesperidum. **Scale Insects.**
Lecanium Persicæ (Peach Scale). **Peach** (INSECT PESTS).
Lecanium Vitis (Vine Scale). **Vine Scale Insects.**
Lema trilineata (Three-lined Leaf Beetle). **Potato** (INSECT PESTS).
 Lepidoptera. **Insects; Moths.**
Leptus autumnalis (Harvest Bug). **Mites.**
Limax agrostis (Field Slug), *L. arborum* (Tree Slug), *L. maximus* (Great Slug), *L. Sowerbii* (Keel'd Slug). **Slugs.**
Limax flavus. **Slugs; Yellow Slug.**
Lina Populi, *L. Tremulæ*. **Populus** (INSECT PESTS).
Liparis auriflora (Gold-tail Moth), *L. chrysothorhæa* (Brown-tail Moth), *L. monacha* (Black Arches), *L. Salicis* (Satin Moth). **Liparis.**
Liparis dispar. **Gipsy Moth; Liparis.**
Lithocolletis. **Leaf-miners.**
Lobesia reliquana. **Vine Moths.**
Longicornia. **Musk Beetle.**
Lophyrus frutetorum, *L. Pini*, *L. rufa*, *L. sertiferus*, *L. virens*. **Pine Sawflies.**
Lozotania rosana. **Pear** (INSECTS); **Rosa** (INSECTS).
Lucanus cervus. **Stag Beetle.**
Lyda campestris, *L. Pyri*. **Lyda.**
Lyda erythrocephala, *L. nemorum*, *L. stellata*. **Pine Sawflies.**
Lyda inanita. **Rose Sawflies.**
Lyda nemoralis. **Lyda; Peach** (INSECT PESTS).
Lyda punctata. **Hawthorn Caterpillars.**
Macrocnema exoleta. **Potato** (INSECT PESTS).
Mamestra Brassicæ. **Cabbage Moth; Mamestra.**
Melolontha vulgaris. **Cockchafer; May Bug.**
Merodon clavipes, *M. equestris*. **Narcissus Fly.**
 Microlepidoptera. **Moths.**
Mus decumanus (Brown or Norway Rat), *M. Rattus* (Black Rat). **Rats.**
Mus sylvaticus (Long tailed Field Mouse).

Hurtful—continued.

Myriapoda. Millipedes.
Mytilaspis pomorum. **Scale Insects.**
Mytilaspis Vitis. **Vine Scale Insects**
Myzus Persicæ. **Peach** (INSECT PESTS).
Myzus Ribis. **Ribes** (INSECTS).
Nænia typica (Gothic Moth). **Vine Moths.**
Nematus abbreviatus, *N. bellus*, *N. gallarum*, *N. ischnocerus*,
N. herbaceus, *N. Salicis-cinereæ*, *N. vaciniellus*, *N.*
vesicator. **Nematus.**
Nematus appendiculatus, *N. consobrinus*. **Nematus;**
Ribes (INSECTS).
Nematus gallicola, *N. pedunculii*. **Willow Sawflies.**
Nematus Ribesii. **Gooseberry and Currant Sawfly;**
Ribes (INSECTS).
Nematus viminalis. **Salix** (INSECTS).
Nemophila plantaginis (Wood Tiger Moth). **Tiger**
Moths.
Nepticula Rosa (INSECTS).
 Neuroptera. **Insects.**
Neuroterus fumipennis, *N. læviusculus*, *N. lenticularis* (Oak
 Spangle Gall Flies), *N. numismatis* (Silky Button Oak
 Gall Fly). **Oak Galls.**
Noctua (Night Moths).
 Noctuidæ. **Moths; Noctua.**
 Notodontidæ. **Moths.**
Enactra Pilleriana. **Vine Moths.**
Oniscidæ (Woodlice, or Slaters).
Oniscus asellus. **Oniscidæ.**
Orchestes Fagi, *O. Quercus* (Oak Weevil). **Orchestes.**
Orgyia antiqua (Vapourer Moth).
 Orthoptera. **Insects.**
Otiorynchus Ligustici. **Otiorynchus; Peach** (IN-
 SECT PESTS).
Otiorynchus picipes (Clay-coloured Vine Weevil, or
 Pitchy-legged Weevil), *O. rufus*, *O. sulcatus* (Black
 Vine Weevil), *O. tenebrioides* (Red-legged Garden
 Weevil). **Otiorynchus.**
Oxyuris vermicularis. **Nematoid Worms.**
Pardia tripunctata. **Rosa** (INSECTS).
Pemphigus bursarius. **Pemphigus; Populus** (INSECT
 PESTS).
Pemphigus fuscifrons, *P. lactucarius*. **Lettuce** (INSECTS).
Pemphigus spirothecæ. **Populus** (INSECT PESTS).
Peronea aspersana, *P. comparana* (Strawberry-leaf Button
 Moths). **Strawberry** (INSECTS).
Peronea variegana. **Rosa** (INSECTS).
Phædon Betulæ (Mustard Beetle).
Phalæna Wavaria (V Moth). **Ribes** (INSECTS).
Phorodon Humuli (Hop Aphis), *P. Mahaleb*. **Plum**
 (INSECT PESTS).
Phragmatobia fuliginosa (Ruby Tiger Moth). **Tiger**
Moths.
Phratora vitellina (Willow-leaf Beetle).
Phyllobius oblongus, *P. Pyri*, *P. viridicollis*. **Phyllobius.**
Phyllopertha horticola (Bracken Cuck, or Lesser May
 Bug). **May Bugs; Rosa** (INSECTS).
Phyllotreta concinna, *P. consobrina*? (Hop Flea), *P. flexuosa*,
P. Lepidii, *P. nemorum* (Turnip Flea, or Turnip Fly),
P. obscurella. **Turnip Flea.**
Phylloxera vastatrix. **Grape or Vine Louse.**
 Physopoda. **Thrips.**
Phytomyza. Pea (INSECT PESTS).
Phytomyza Ilicis. **Holly-leaf Fly.**
Phytomyza nigricornis. **Phytomyza.**
 Phytotidæ (Gall Mites). **Mites; Pinus** (INSECTS);
Plum (INSECT PESTS); **Populus** (INSECT PESTS).
Phytoptus Pyri. **Pear** (INSECTS).
Phytoptus Ribis. **Ribes** (INSECTS).
Phytoptus Vitis. **Vine** (ANIMAL PESTS).
Pieris Brassicæ (Large White Cabbage Butterfly), *P. Rapæ*
 (Small White Cabbage Butterfly). **Cabbage Cater-**
pillars.
Pionea forficaris (Garden Pebble Moth).

Hurtful—continued.

Piophilæ Apii (Celery-stem Fly).
Pissodes notatus, *P. Pini*. **Pine Weevils.**
Platypus cylindrus. **Oak** (INSECT PESTS).
Plusia Gamma (Silver-Y or Gamma Moth).
Plutella cruciferarum (Diamond-back or Turnip Moth).
Poecilosma candidatum. **Rosa** (INSECTS); **Rose Saw-**
fies.
Polydesmus complanatus. **Millipedes.**
Porcellio scaber (Woodlouse). **Oniscidæ.**
 Pseudo-bombycæ. **Moths.**
Pisila Rosæ (Carrot Fly). **Carrot Grub; Parsnip**
 (INSECTS).
Psylla apiophila, *P. Pyri* (Pear Sucker), *P. pyricola*, *P.*
simulans. **Pear.** (INSECTS).
Psylla Mali. **Psylla.**
Psylla pyrisuga. **Pear** (INSECTS); **Psylla.**
Pterophorina (Plume Moth). **Moths.**
Pygæra bucephala. **Buff-tip Moth.**
 Pyralidina. **Moths.**
Pyralis rostralis (Hop Smout Moth).
Retinia Buoliana, *R. duplana*, *R. occultana*, *R. pinicolana*,
R. resinana, *R. turionana*. **Retinia.**
Rhodites centifolia, *R. Eglanterie*, *R. Mayri*, *R. Rosæ*,
R. rosarum (Rose Gall Insects), *R. spinosissima*.
Rhodites; Rose Galls.
 Rhopalocera. **Moths.**
Rhopalosiphum Ribis. **Ribes** (INSECTS).
Rhynchites Alliarie, *R. Baccus*, *R. Betuleti*, *R. bicolor*,
R. conicus. **Rhynchites.**
Rhynchites cupreus. **Plum** (INSECT PESTS); **Rhyn-**
chites.
 Rhynchophora. **Weevils.**
Rusina. Noctua.
Saperda carcharias, *S. populina*. **Populus** (INSECT
 PESTS); **Saperda.**
Sarcoptes scabiei (Itch Mite). **Mites.**
Saturnia. Moths.
Schizoneura lanigera. **American Blight; Woolly**
Aphis.
Scolytidæ (Bark Beetles).
Scolytus destructor, *S. Geoffroyi*, *S. Pruni*, *S. pygmaeus*,
S. Ratzeburgi. **Scolytidæ.**
Selandria Cerasi. **Slugworms.**
Selandria Rosæ. **Rose Sawflies.**
Selandria Vitis. **Vine Slug.**
Sesia apiformis (Hornet Clearwing Moth). **Populus**
 (INSECT PESTS).
Sesia bombeciformis (Willow Hornet Clearwing Moth), *S.*
formiciformis (Red-tipped Clearwing Moth), *S. vespi-*
formis. **Sesia.**
Sesia myopiformis (Red-belted Clearwing Moth). **Pear**
 (INSECTS).
Sesia tipuliformis. **Currant Clearwing Moth.**
Silpha opaca. **Beet Carrion Beetle; Silpha.**
Siphonophora dirhoda, *S. Rosæ*, *S. rosarum*. **Rosa**
 (INSECTS).
Siphonophora Pisi. **Pea** (INSECT PESTS).
Sirex gigas (Giant Sirex), *S. juvenis* (Steel-blue Sirex).
Sirex.
Sitona crinita (Spotted Pea Weevil), *S. lineata* (Striped
 Pea Weevil). **Pea** (INSECT PESTS); **Sitona.**
Smerinthus ocellatus (Eyed Hawk Moth), *S. Populi*
 (Poplar Hawk Moth), *S. Tiliæ* (Lime Hawk Moth).
Sphingidæ.
Spathegaster baccarum (Currant Gall Fly), *S. Taschen-*
bergi, *S. vesicator* (Oak Blister Gall Fly). **Oak Galls.**
Sphingidæ. Moths.
Sphinx Atropos. **Death's Head Moth; Potato** (INSECT
 PESTS).
Sphinx Ligustri (Privet Hawk Moth). **Sphingidæ.**
Spilionota roborata. **Rosa** (INSECTS).
Talpæ europæa. **Mole.**
Termes lucifugus, *T. ruficollis*. **White Ants.**

Hurtful—*continued.*

Tenthredinids. **Sawflies.**
 Tenthredo Cerasi. **Slugworms.**
 Tephritis Onopordinis (Celery-leaf Miner). **Celery Fly;**
Parsnip (PESTS).
 Tetranychidæ (Plant Mites). **Mites.**
 Tetranychus (Harvest Bug). **Mites; Tetranychus**
telarius.
Tetranychus telarius. **Red Spider.**
 Thera coniferata, T. firmata (Pine Carpet Moth), T.
 juniperata, T. variata (Juniper Moth). **Juniper**
Moths.
 Thysanoptera. **Thrips.**
 Tinea. **Tineina.**
Tineina. **Moths.**
 Tipula maculosa, T. oleracea (Daddy Long Legs; larva
 called the Grub or Leather Jacket). **Crane Fly;**
Tipulids.
Tipulids (Crane Flies).
 Tischeria. **Rosa (INSECTS).**
 Tomicus bidentatus, T. Laricis. **Pine Bark Beetles.**
Tortricina. **Moths.**
 Tortrix angustiorana, T. heparana, T. icterana. **Tortrix.**

Hurtful—*continued.*

Tortrix Pilleriana, T. vitisana. **Tortrix; Vine Moths.**
 Tortrix ribeana. **Pear (INSECTS); Tortrix.**
 Tortrix viridana. **Oak (INSECT PESTS); Tortrix.**
 Trachea piniperda (Pine Beauty Moth). **Pinus (INSECTS);**
Trachea.
 Tremex columba (Pigeon Tremex). **Tremex.**
 Trichiosoma lucorum. **Sawflies.**
 Tryphæna fimbria (Broad-bordered Yellow Underwing
 Moth), T. ianthina (Lesser Broad-bordered Yellow
 Underwing Moth), T. interjecta (Least Yellow Under-
 wing Moth), T. Orbona (Lesser Yellow Underwing
 Moth), T. Pronuba (Common Yellow Underwing Moth),
 T. subsequa. **Tryphæna.**
 Tycheus quinquepunctatus. **Pea (INSECT PESTS).**
 Tylenchus devastatrix, T. Dipsaci, T. Tritici. **Nematoid**
Worms.
 Typhlocyba Rosæ. **Rosa (INSECTS).**
 Vanessa Antiopa (Camberwell Beauty Butterfly), V. poly-
 chlora (Great Tortoiseshell Butterfly). **Vanessa.**
 Vespa vulgaris. **Wasps.**
 Xyleborus dryographus. **Oak (INSECT PESTS).**
 Zeuzera Esculi. **Leopard Moth.**



AN INDEX TO POPULAR PLANT NAMES.

THOUGH trivial or popular names of plants may at first sight appear an unscientific enumeration, yet to many they are informing. Indeed, to a vast number of people, such names, often crude, are the only ones by which certain plants can be identified; and on that score alone they are useful. To give a complete list of even the names of those native plants that find a place in Horticulture is by no means easy. When, therefore, one attempts the compilation of an Index embodying the chief popular plant names of the English-speaking World, the task is increased a hundredfold. Nor is it so much because of their number, large as that is, as on account of the comparatively restricted areas over which some of the trivial names extend, more especially in the case of trees and shrubs.

In making this Index the aim has been as far as possible to collect names that have some reason for their being, and not, as is sometimes done, to include as "common," names which are simply translations of the specific ones. Some few popular names familiar to students and others have no place here because of their extreme coarseness; while others are omitted—*Crocus*, *Petunia*, *Pelargonium*, &c.—because they are purely generic. Similarly under family names like Lily there are no references to the popular names of species that rightly belong to the genus *Lilium*—Bermuda Lily, Golden-rayed Lily, Madonna Lily, &c. These, however, will be found in their proper alphabetical sequence, and the particular species indicated. Lilies so called belonging to other genera—*v.g.*, Arum Lily—are given under Lily as well as in their alphabetical order. The trivial names of the older authors—more particularly those used in works that have become classics—have been respected in so far as they apply to cultivated plants, and where the species can with any accuracy be identified: the Marybuds and the Long Purples of Shakespeare, and the Lily of the Field of Scripture, for instance.

In those cases where the names apply to genera or species described, or nomenclature corrected, in the "Century Supplement," the letter **S** is affixed.

That the Index at a first, or even at a second, attempt can be made complete, is next to impossible, and therefore any suggestions, additions, or emendations, will be gratefully considered by those responsible for the work.

Aar *Alnus*.**Aaron's Board** - *Hypericum calycinum*, *Saxifraga sarmentosa*, *Verbascum Thapsus*.**Aaron's Rod** *Verbascum Thapsus*.**Abelo-tree** *Populus alba*.**Abricook** *Armeniaca vulgaris* (*Prunus Armeniaca* **S**) (Apricot).**Absinthe** *Artemisia Absinthium* **S**.**Abyssinian Banana** *Musa Essete*.**Abyssinian Primrose** *Primula* (*Boronia verticillata* **S**).**Acacia, False** *Robinia Pseudacacia*.**Acacia, Rose** *Robinia hispida*.**Aconite** *Aconitum*.**Aconite, Winter** *Eranthis*.**Adam and Eve** *Aplectrum lacinale*, *Sempervivum tectorum*.**Adam's Apple** *Citrus Limetta*, *Musa paradisiaca*, *Taberna- montana coronaria*.**Adam's Apple Plantain** *Musa* (*sapientum* **S**) *paradisiaca*.**Adam's Fig** *Musa paradisiaca*.**Adam's Flannel** *Verbascum Thapsus*.**Adam's Needle** *Yucca*.**Adam's Needle and Thread** *Yucca filamentosa*.**Adder-spit** *Pteris aquilina*.**Adder's Fern** *Polypodium vulgare*.**Adder's Mont** *Stellaria Holostea*.**Adder's-tongue** *Erythronium*.**Adder's-tongue Fern** *Ophioglossum*.**Adder's Violet** *Gonolycia pubescens*.**Adderwort** *Polygonum Bistorta*.**Adiantum, Black** *Asplenium Adiantum-nigrum*.**Adventure Bay Pine** *Phalloscladus rhomboidalis*.**Eglops** *Quercus Eglops*.**African Almond** *Brachium*.**African Bladder Nut** *Rourea lucida*.**African Bread-fruit Tree** *Treculia africana*.**African Corn Flag** *Antholyza*.**African Corn Lily** *Lilia*.**African Cypress** *Widdringtonia*.**African Fleabane** *Trochocanthus*.**African Harebell** *Isoetes citata*.**African Hemp** *Sparmannia africana*.**African Honeysuckle** *Halteria lucida*.**African Lily** *Agapanthus*.**African Locust** *Parkia africana*.**African Lotus** *Zizyphus Lotus*.**African Marigold** *Tuyetes erecta*.**African Milk-bush** *Simodacnum*.**African Millet** *Sorghum vulgare*.**African Oak** *Oldfieldia africana*.**African Rubber-tree** *Landolphia*.**African Satin-bush** *Podalyria sericea*.**African Snowdrop-tree** *Rourea lucida*.**African Teak** *Oldfieldia africana*.**African Toad-flower** *Stapelia*.**African Tulip** *Hemeranthus*.**Agaric** - *Agaricus*.**Agaric, Honey** *Armillaria mellea*.**Agnus-castus** *Vitis Agnus-castus*.**Agrimony** *Agrimonia*.**Agrimony, Hemp** *Eupatorium cannabinum*.**Aguate** *Persea gratissima*.**Ague-tree** *Sassafras officinale*.**Air-plant** *Aerides*.**Akee-tree** *Copaiva sativa*.**Alder** *Alnus*.**Alder, American Witch** *Fothergilla alnifolia*.**Alder, Berry-bearing** *Rhamnus Frangula*.**Alder, Black** *Ilex verticillata*.**Alder, White** *Platyphus trifoliatus*.**Alecost** *Tanaecium* (*Chrysanthemum*) *Balsamita* (Costmary).**Alexanders** *Smyrnium*.**Alexandrian Laurel** *Ruscus racemosus* (*Dauric Laurus* **S**).**Alfalfa** *Medicago sativa*.**Algaroba Bean** *Ceratonia*.**Algerian Fir** *Abies habroensis* (*juniperifera* **S**).**Alicant Soda** *Salsola*.**Alisanders** *Smyrnium*.**Alkanet** *Achusa* (*Alkanaa* **S**) *tinctoria*.**Alkekengi** *Physalis Alkekengi*.**Alleghany Vine** *Aitonia circhosa* **S**.**All-good** *Cheopodium Bonus-Henricus*.**All-heal** *Prenalla* (*Benalla* **S**) *vulgaris*, *Valeriana officinalis*.**All Saints' Cherry** *Cerasus* (*Prunus*) *semperflorens*.**Alligator Apple** *Anona palustris*.**Alligator Pear** *Persea gratissima*.**Alligator Wood** *Guarea grandifolia*.**Allspice** *Calycanthus*.**Allspice-tree** *Pimenta*.**Alme** *Ulmus campestris*.**Almond** *Amygdalus* (*Prunus*).**Almond, African** *Brachium*.**Almond-leaved Willow** *Salix triandra*.**Almond-tree, Malabar** *Terminalia Catappa*.**Aloe** (of gardens) *Agave*.**Aloe, American** *Agave americana*.**Aloe, Bourbon** *Lomatophyllum aloiflorum* (*borbonicum* **S**).**Aloe, Water** *Stenotus alpidus*.**Alpine Auricula** *Primula Auricula* (*Auricula*).**Alpine Bladder Fern** *Cystopteris alpina*.**Alpine Phloxes** *Phlox subulata* var.**Alpine Pinks** *Dianthus alpidus*.**Alpine Rose** *Rhododendron ferrugineum*, *R. hirsutum*.**Alpine Strawberry** *Fragaria vesca monophylla*, *F. v. semper- florens* **S**.**Alpine Wallflower** *Erysimum ochroleucum*.**Alsike** *Tritolium hybridum*.**Alum** *Symphytum officinale*.**Alum-root** *Geranium maculatum*, *Heuchera*.**Alyssum, Sweet** *Koeniga* (*Alyssum*) *maritima*.

Amaranth, Globe—*Gomphrena*.
Amstungula—*Carissa grandiflora*.
Amazon Lily—*Eucharis amazonica*.
Ambash—*Herniniera Elaphrozyton*.
Amber, Sweet—*Hypericum Androsæmum*.
Amber-tree—*Anthospermum æthiopicum*.
Amboyna Pine—*Dammara orientalis* (*Agathis loranthifolia* s).
American Aloe—*Agave americana*.
American Arbor-vite—*Thuja occidentalis*.
American Arrow Wood—*Viburnum dentatum*.
American Aspen—*Populus tremuloides*.
American Bass Wood—*Tilia americana*.
American Black Haw—*Viburnum prunifolium*.
American Black Oak—*Quercus tinctoria* (*velutina* s).
American Blackberry—*Rubus villosus*.
American Centaury—*Sabbatia*.
American China Root—*Smilax*.
American Cotton-plant—*Gossypium*.
American Cotton-wood—*Populus monilifera*.
American Cowslip—*Dodecatheon*.
American Cranberry—*Oxycoccus macrocarpus*.
American Cress—*Barbarea præcox*.
American Day Flower—*Commelinia*.
American Dewberry—*Rubus canadensis*.
American Elm—*Ulmus americana*.
American False Heath—*Hudsonia ericoides*.
American Gamboge—*Vismia guianensis*.
American Gooseberry—*Pereskia aculeata*.
American Great Laurel—*Rhododendron maximum*.
American Gutta Gum Tree—*Vismia guianensis*.
American Hackberry—*Celtis crassifolia*.
American Hazel—*Corylus americana*.
American High Blackberry—*Rubus villosus*.
American Holly—*Ilex opaca* (*quercifolia* s).
American Ivy—*Ampelopsis* (*Vitis*) *hederacea*.
American Jasmine—*Ipomœa coccinea* s.
American Kidney-bean Tree—*Wistaria frutescens*.
American Larch—*Larix americana* (*pendula* s).
American Laurel—*Kalmia*.
American Low Blackberry—*Rubus canadensis*.
American Maidenhair Fern—*Adiantum pedatum*.
American Mandrake—*Podophyllum peltatum*.
American May Apple—*Podophyllum peltatum*.
American Mountain Ash—*Pyrus americana*.
American Pitch Pine—*Pinus australis* (*palustris* s).
American Rock Brake—*Cryptogramme crispæ acrostichoides*.
American "Spanish" Oak—*Quercus falcata*.
American Star Grass—*Aletris*.
American Swamp Lily—*Saururus cernuus*.
American Turk's-cap Lily—*Lilium superbum*.
American Water Willow—*Dianthera americana*.
American Wayfaring-tree—*Viburnum lantanoides*.
American Weeping Willow—*Salix purpurea pendula*.
American White Oak—*Quercus alba*.
American White Wood—*Tilia americana*.
American Wild Black Currant—*Ribes floridum* (*americanum* s).
American Wild Pink—*Silene* (*Melandryum* s) *pennsylvanica*.
American Wild Red Cherry—*Prunus pennsylvanica*.
American Wild Red Raspberry—*Rubus strigosus*.
American Wild Yellow or Red Plum—*Prunus americana*.
American Witch Alder—*Fothergilla alnifolia*.
American Withe Rod—*Viburnum nudum*.
American Wood Lily—*Trillium*.
American Woodbine—*Ampelopsis quinquefolia* (*Vitis* s. *hederacea*).

American Yellow-striped Water-lily—*Nuphar advena*.
American Yew—*Taxus canadensis*.
Ammoniac, Gum—*Dorena Ammoniacum*.
Amoor Pink—*Dianthus dentosus*.
Anatto—*Bixa*.
Anchovy Pear—*Grias*.
Anemone, Rue—*Thalictrum anemonoides*.
Anemone, Water—*Ranunculus aquatilis*.
Angelica—*Archangelica officinalis*.
Angelica-tree—*Aralia spinosa*.
Angels' Eyes—*Veronica Chamædrys*.
Angel's Tears—*Narcissus triandrus*.
Angel's Trumpet—*Datura suaveolens*.
Angle Pod—*Gonolobus*.
Angostura Bark—*Galipea trifoliata*.
Anil—*Indigofera Anil*.
Animated Oat—*Avena sterilis*.
Anime Resin—*Hypanœa Courbaril*.
Anise—*Fimpinella Anisum*.
Anise Hyssop—*Lophanthus anisatus*.
Anise, Star—*Illicium verum* s.
Aniseed-tree—*Illicium*.
Annatto—*Bixa*.
Annual Maidenhair—*Gymnogramme leptophylla*.
Annual Mullein—*Verbascum Boerhaavi*.
Annual Stock, Branching—*Mateolmia maritima*.
Antwerp Hollyhook—*Athraa foetifolia*.
Apostles and Christ—*Crinum acutum*.
Apple—*Pyrus Malus*.
Apple, Adam's—*Citrus Limetta, Musa paradisiaca, Tabernaemontana coronaria*.
Apple, Alligator—*Anona palustris*.
Apple, Balsam—*Monardica Balsamifera*.
Apple Berry—*Billantiera*.
Apple, Bitter—*Citrullus Colocynthis*.
Apple, Carthaginian—*Punica granatum*.
Apple, Cherry—*Pyrus baccata*.
Apple, Custard—*Annona Asimina triloba*.
Apple, Devil's—*Mandragora vernalis* (*officinatum* s).
Apple, Elephant—*Peruvia Elephantum*.
Apple, Golden—*Ægle, Atalantia monophylla, Spodias lutea*.
Apple, Jew's—*Solanum Melongena* (*Aubergine*).
Apple, Kangaroo—*Solanum aviculare*.
Apple, Love—*Lycopersicon esculentum* (*Tomato*).
Apple, Mad—*Solanum Melongena* (*Aubergine*).
Apple, Malay—*Eugenia Jambos, &c.*
Apple, May—*Passiflora incarnata, Podophyllum peltatum*.
Apple, Median—*Citrus medica*.
Apple, Monkey—*Chusca fura*.
Apple, Oak—A spongy excrecence of the Oak, due to insect agency.
Apple of Peru—*Nicandra physaloides*.
Apple, Osage—*Maclura aurantiaca*.
Apple, Otaheite—*Spodias*.
Apple Pie—*Epilobium hirsutum*.
Apple, Rose—*Eugenia Jambos*.
Apple Rose, Great—*Rosa pomifera* s.
Apple, Star—*Chrysophyllum*.
Apple, Thorn—*Datura Stramonium*.
Apple, Venus' Golden—*Atalantia monophylla*.
Apricock—The same as Apricot.
Apricot—*Armeniaca vulgaris* (*Prunus Armeniaca* s).
Arab Tea—*Catha edulis*.
Arabic, Gum—*Acacia arabica, A. vera*.
Arar-tree—*Callitric quadrivalvis* (*Tetradimn articulata* s).
Arbor-vite—*Thuja*.

- Arecnthes**—*Juniperus drupacea*.
Archangel—*Angelica*.
Archangel Larch—*Larix Ledebourii* (*europæa sibirica* s).
Archangel, Yellow—*Lamium Galeobdolon*.
Archer, Water—*Sagittaria sagittifolia*.
Aria—*Pyrus Aria*.
Arnotto—*Riza*.
Aroid—*Aroidea*.
Aromatic Wintergreen—*Gaultheria*.
Aronicum—*Arnica scorpioides*, *Doronicum*.
Arrow Arum—*Peltandra virginica*.
Arrow Grass—*Triglochin*.
Arrow-head—*Sagittaria*.
Arrow-leaved Spoon Flower—*Xanthosoma sagittifolium*.
Arrow-root—*Maranta*, *Tacca plantifida*.
Arrow Wood, American—*Viburnum dentatum*.
Artichoke, Chinese—*Stachys tuberosa* s (*Crosnes*).
Artichoke, Globe—*Cynara* (*Carduoculus*) *Scolymus*.
Artichoke, Japanese—*Stachys tuberosa* s (*Crosnes*).
Artichoke, Jerusalem—*Helianthus tuberosus*.
Artillery-plant—*Pilea microphylla*.
Arum, Arrow—*Peltandra virginica*.
Arum, Bog—*Calla palustris*.
Arum Lily—*Richardia africana*.
Arum, Water—*Peltandra virginica*.
Asafetida—*Ferula fetida* s, *F. Nardus* s.
Asarabacca—*Asarum europæum*.
Ascyron—*Hypericum Ascyron*.
Ash—*Fraxinus*.
Ash, Flowering or Manna—*Fraxinus Ornus*.
Ash, Hoop—*Celtis crassifolia*.
Ash, Mountain—*Pyrus Aucuparia*, *P. occidentalis* s.
Ash, Poison—*Chionanthus virginica*, *Rhus venenatum*.
Ash, Prickly—*Zanthoxylum*.
Ash, Wafer—*Ptelea trifoliata*.
Asiatic Poison Bulb—*Crinum asiaticum*.
Askallion—*Allium ascalonicum*.
Aspen—*Populus Tremula*, *P. tremuloides*.
Asphodel—*Asphodelus*.
Asphodel, Bog—*Narthecium*.
Asphodel, False—*Typhelia*.
Asphodel, Sooty—*Tofieldia palustris*.
Assagay or Assagal Tree—*Curtisia faginea*.
Ass's-foot—*Tussilago Farfara*.
Aster, Cape—*Agatheu caletis* (*Aster rotundifolius* s).
Aster, China, French, or German—*Callistephus chinensis*.
Aster, Perennial—*Michaelmas Daisy* species and varieties of *Aster*.
Aster, Stokes'—*Stokesia cymosa*.
Aster, White-topped—*Scircoarpus*.
Atamasco Lily—*Zephyranthes Atamasco*.
Atlas Cedar—*Cedrus atlantica*.
Aubergine—*Solanum Melongena*.
Aume-tree—*Ulmus campestris*.
Aurioula—*Primula Auricula*.
Australian Banyan—*Ficus macrophylla*.
Australian Blackwood—*Acacia melanoxylon*.
Australian Bluebell Creeper—*Sollya heterophylla*.
Australian Braeken—*Pteris tremula*.
Australian Buffalo Grass—*Stenotaphrum americanum* (*glabrum* s).
Australian Feather Palm—*Ptychosperma* (*Archontophoenix* s).
Australian Fuchsia—*Correa*.
Australian Harebell—*Wahlenbergia gracilis*.
Australian Mint-bush—*Frostanthera*.
Australian Pepper-tree—*Schinus molle*.
Australian Pitcher-plant—*Cephalotus follicularis*.
Australian Red or Sea Berry—*Ragodia*.
Australian Rush Broom—*Viminaria denudata*.
Australian Sassafras—*Doryphora Sassafras*.
Australian Turmeric-tree—*Zieria*.
Australian Turpentine-tree—*Trietonia conferta*.
Australian Tussock Grass—*Xerotes longifolia*.
Australian Vine—*Vitis hypoglauca*.
Australian Water Lily—*Nymphaea gigantea*.
Austrian Briar Roses—*Rosa lutea*.
Autumn Sneesewort—*Helenium*.
Avena—*Grum*.
Avena, Mountain—*Dryas octopetala*.
Avocado Pear—*Persea gratissima*.
Awlwort—*Subularia*.
Axweed—*Securigera Coronilla*.
Ayrshire Roses—*Rosa cepeus hybrida* s.
Baberry-tree—*Pimenta acris*.
Baby's Breath—*Gypsophila paniculata*.
Bachelor's Buttons—*Lychnis diurna* (*diocia* s), *Ranunculus acris*, &c.
Bacon and Eggs—*Linaria vulgaris*, *Narcissus*.
Badger's Bane—*Acrotium melictomum*.
Bael-tree—*Egle Marmelos*.
Bagshot Park Arbor-vitæ—*Thuja occidentalis cristata*.
Bald Cypress—*Taxodium distichum*.
Bald Money—*Meum athamanticum*.
Balloon Flower, Chinese—*Platyodon grandiflorum*.
Balloon Vine—*Cardiospermum Halicacabum*.
Balm—*Melissa officinalis*.
Balm, Bastard—*Melittis melisophyllum*.
Balm, Bee—*Monarda didyma*.
Balm, Honey—*Melittis melisophyllum*.
Balm, Molucca—*Moluccella larix*.
Balm of Gilead—*Abies balsamea*, *Cedronella triphylla*, *Populus balsamifera*.
Balm of Heaven—*Umbellularia californica*.
Balsam—*Impatiens*.
Balsam Apple—*Momordica Balsaminea*.
Balsam, Canada—*Abies balsamea*.
Balsam Fir—*Abies balsamea*, *A. Fraseri*.
Balsam, Garden—*Dianthera pectoralis* s.
Balsam of Capevi or Copaliba—*Copalifer*.
Balsam, Peru—*Myroxylon peruiferum*.
Balsam Poplar—*Populus balsamifera*.
Balsam, Seaside—*Croton Kluteria*.
Balsam, Tolu—*Myroxylon toluiferum*.
Balsam-tree—*Clusia*, *Myroxylon peruiferum*.
Balsam, Water—*Tytonia natans* (*Hydrocera angustifolia* s).
Bamboo—*Arundinaria*, *Bambusa*, *Phyllotachys*.
Bamboo Palm—*Raphia tediigera*.
Banana—*Musa*.
Band-plant—*Vinca major*.
Banberry—*Actæa*.
Banksian Roses—*Rosa Banksie*.
Banyan, Australian—*Ficus macrophylla*.
Baobab-tree—*Adansonia*.
Barbados Cedar—*Juniperus bermudiana*.
Barbados Cherry—*Malpighia glabra*.
Barbados Cotton—*Gossypium barbadense*.
Barbados Gooseberry—*Pereskia aculeata*.
Barbados Lily—*Hippeastrum equestris*.
Barbary Fig—*Opuntia vulgaris*.
Barbary Oak—*Quercus Ballota*.
Barbary Ragwort—*Othonnopsis cheirifolia*.

Barbo de Capnoin—*Cichorium Intybus* (Chicory).
Barberry—*Berberis*.
Barber's Brushes—*Dipsacus sylvestris*.
Barcelona Nut—*Corylus Avellana grandis*.
Barley—*Hordeum*.
Barren Oak—*Quercus nigra*.
Barren Strawberry—*Waldsteinia fragarioides*.
Barrenwort—*Epimedium*.
Bartram's Oak—*Quercus heterophylla* s.
Barwood—*Baphia*.
Basil—*Ocimum*.
Basil Thyme—*Calamintha Acinos*.
Basket Oak—*Quercus Michauxii* s.
Bass—*Tilia*.
Beak—*Scirpus lacustris*.
Beak, Cuba—*Hibiscus elatus*.
Bastard—See also **False**.
Bastard Acacia—*Robinia Pseudacacia*.
Bastard Balm—*Melittis*.
Bastard Box—*Polygala Chamæboxus*.
Bastard Cabbage-tree—*Geoffrea*.
Bastard Cedar—*Cedrela, Guazuma*.
Bastard Cherry—*Cerasus (Prunus) Pseudo-cerasus*.
Bastard Cinnamon—*Cinnamomum Cassia*.
Bastard Clover—*Trifolium hybridum*.
Bastard Cork-tree—*Quercus pseudo-suber*.
Bastard Cress—*Thlaspi*.
Bastard Cypress—*Chamaecyparis*.
Bastard Feverfew—*Parthenium Hysterophorus*.
Bastard Hare's-ears—*Phyllis Nobis*.
Bastard Indigo—*Amorpha*.
Bastard Ironwood—*Trichilia hirta, Zanthoxylum Pterota*.
Bastard Lupine—*Trifolium Lupinaster*.
Bastard Quince—*Pyrus Chamæespilus*.
Bastard Vervain—*Stachytarpheta*.
Bastard Vetch—*Phaca*.
Bastard Wind-flower—*Gentiana Pseudo-pneumonanthe*.
Bastard Wood-sage—*Teucrium Pseudo-scorodonia*.
Bat's-wing Fern—*Pteris incisiva*.
Bawd Money—*Meum*.
Bay—*Laurus nobilis*.
Bay-leaved Willow—*Salix pentandra*.
Bay, Loblolly—*Gordonia Laniathus*.
Bay, Red—*Persea carolinensis* s.
Bay, Rose—*Epibobium angustifolium, Nerium Oleander, Ternæmontana coronaria*.
Beach Plum—*Prunus maritima*.
Bead Fern—*Gleichenia*.
Bead-tree—*Melia, Ormosia*.
Bead-plant—*Nertera depressa*.
Beam-tree—*Pyrus Aria*.
Beam-tree, Himalayan—*Pyrus vestita* s.
Beam-tree, Swedish—*Pyrus intermedia* s.
Beam-tree, Swiss—*Pyrus intermedia* s.
Bean, Algaroba—*Ceratonia*.
Bean, Bog—*Menyanthes trifoliata*.
Bean, Brook—*Menyanthes trifoliata*.
Bean, Buck—*Menyanthes trifoliata*.
Bean, Broad and Long-podded—*Faba vulgaris (Vicia Faba)* s.
Bean, Butter—*Phaseolus vulgaris* var.
Bean Caper—*Zygophyllum*.
Bean, Chinese Kidney—*Wistaria chinensis*.
Bean, Curl Brush—*Pithecolobium*.
Bean, Dwarf or French—*Phaseolus vulgaris*.
Bean, Egyptian (of Pythagoras)—*Nelumbium speciosum*.
Bean, Haricot—*Phaseolus*.

Bean, Horse—*Canavalia ensiformis, Faba vulgaris equina* (Vicia Faba var. s).
Bean, Kidney—*Phaseolus multiflorus, P. vulgaris*.
Bean, Lablab—*Dolichos Lablab*.
Bean, Ordeal (of Old Calabar)—*Physostigma*.
Bean, Runner or Climbing—*Phaseolus vulgaris multiflorus*.
Bean, Sacred—*Nelumbium, Nymphaea Lotus*.
Bean, Tick—*Faba vulgaris* var.
Bean, Tonquin or Tonga—*Dipteris odorata*.
Bean-tree—*Ceratonia Siliqua, Scholia*.
Bean, Underground—*Vanduzeeia subterranea*.
Bean, Water—*Nelumbium*.
Bearberry—*Aretostaphylos alpina, A. Ursi*.
Bearbind—*Caloptegia, Convolvulus arvensis*.
Bear Scrub Oak—*Quercus ilicifolia*.
Bear's-breech—*Acanthus*.
Bear's Ears—*Primula Auriculata*.
Bear's-ear Sanicle—*Curtusa*.
Bear's-foot—*Helleborus foetidus*.
Bear's-foot Fern—*Davallia Thermanii*.
Bear's Grape—*Aretostaphylos Urs-ursi*.
Bear's Grass—*Yucca*.
Bear's-paw Fern—*Polypodium Menciianum* s.
Beardgrass—*Polypogon*.
Beard-tongue—*Pentstemon*.
Beaver Tree—*Magnolia glauca*.
Bedstraw—*Galium*.
Bee Balm—*Monarda didyma*.
Bee Orchis—*Ophrys apifera*.
Beech—*Fagus*.
Beech, Blue—*Carpinus americana*.
Beech Fern—*Polypodium Phegopteris*.
Beech, Seaside—*Erostemma caribæum*.
Beef-steak Fungus—*Fistulina hepatica*.
Beef-steak-plant—*Begonia Erasmiana*.
Beef-suet Tree—*Shepherdia argentea*.
Beef Wood—*Cassiarina, Stenocarpus salignus*.
Beet—*Beta*.
Beetle, Marsh—*Typha latifolia*.
Beggar's Basket—*Pulmonaria officinalis*.
Beggar's Basket, Blanket—*Verbascum Thapsus*.
Belgian Variegated Arbor-vitæ—*Thuja occidentalis Ver-veucana*.
Belladonna—*Atropa Belladonna*.
Belladonna Lily—*Amaryllis Belladonna*.
Bellbind—*Convolvulus sepium*.
Bell-flower—*Campnula, Campanula Campanula*.
Bell-flower, Chinese—*Platygodon grandiflorum*.
Bell-flower, Gland—*Adenophora*.
Bell Pepper—*Capricorn groenium*.
Belleisle Cress—*Barbarea præcox* (Cress, American).
Bells, Sea—*Calypurgia Soldanella*.
Bellwort—*Uvularia*.
Bengal Quince—*Egle Marmelos*.
Bengal Root—*Zingiber Cassumunar*.
Benjamin-bush—*Lindera Benzoin*.
Benjamin-tree—*Ficus Benjaminia, Lindera Benzoin*.
Bent Grass—*Agrostis*.
Berberis—*Berberis*.
Bergamot—*Monarda didyma*.
Bergamot Lemon—*Citrus (medica) Limetta*.
Bergamot Mint—*Mentha citrata (aquatica)* s.
Bergamot Orange—*Citrus Aurantium Bergamia* s.
Bergamot, Wild—*Monarda fistulosa*.
Bermuda Cedar—*Juniperus bermudiana*.
Bermuda Lily—*Lilium longiflorum eximium*.

- Berry-bearing Alder**—*Rhamnus Frangula*.
Besom Weed—*Thlaspi*.
Betel or Betle—*Piper Betle*.
Bethlehem, Sage of—*Pulmonaria officinalis*.
Bethlehem, Star of—*Ornithogalum umbellatum*.
Beth-root—*Trillium erectum*.
Betony—*Stachys Betonica*.
Betony, Water—*Scrophularia aquatica*.
Betony, Wood—*Peduncularis canadensis, Stachys Betonica*.
Bristan Pine—*Pinus excelsa*.
Bibid-tree—*Nectandra Rodias*.
Biennial Stock—*Mathiola*.
Bigarade—*Citrus vulgaris*.
Big-tree—*Sequoia gigantea*.
Bijou Lemon—*Citrus medica Riversii* s.
Bilberry—*Vaccinium Myrtillus*.
Bilimbi-tree—*Averrhoa Bilimbi*.
Bilsted—*Liquidambar styraciflua*.
Bindweed—*Calystegia sepium, Convolvulus*.
Birch—*Betula*.
Birch, West Indian—*Bursera gummifera*.
Bird Cherry—*Cerasus (Prunus) Padus, Pimelea drupacea*.
Bird-of-Paradise Flower—*Strelitzia*.
Bird Pepper—*Capsicum baccatum*.
Bird-plant—*Heterotoma lobelioides*.
Bird Solanum—*Solanum aviculare*.
Bird's-bill—*Trigonella ornithopodioides*.
Bird's-eye Maple—*Acer saccharinum*.
Bird's-eye Primrose—*Primula farinosa*.
Bird's-eyes—*Veronica Chamædrys, Primula pusilla*.
Bird's-foot—*Ornithopus*.
Bird's-foot Fern—*Pellaea ornithopus*.
Bird's-foot Ivy—*Hedera Helix pedata*.
Bird's-foot Trefoil—*Lotus corniculatus*.
Bird's-foot Violet—*Viola pedata* s.
Bird's-nest Fern—*Asplenium Nidus*.
Bird's-tongue—*Ornithoglossum*.
Bird's-tongue Flower—*Strelitzia*.
Birtheroot—*Trillium erectum*.
Birthwort—*Aristolochia*.
Bishop's Cap—*Mitella*.
Bishop's Hat—*Epimedium alpinum*.
Bishop's Hood—*Echinocactus inyostrigata*.
Bishop's Pine—*Pinus muricata*.
Bishop's Wort—*Stachys japonica*.
Bistort—*Polygonum Bistorta*.
Bitter Almond—*Amygdalus communis amara (Prunus)*.
Bitter Apple—*Citrullus Colocynthis*.
Bitter Bark Tree—*Pinckneya pubens*.
Bitter Bur—*Petasites vulgaris (officinalis) s.*
Bitter Cress—*Cardamine pratensis*.
Bitter Cucumber—*Citrullus Colocynthis*.
Bitter Damson—*Simaruba amara*.
Bitter Oak—*Quercus Cerris*.
Bitter Orange—*Citrus vulgaris (C. Aurantium Bigaradia) s.*
Bittersweet—*Solanum Dulcamara*.
Bittersweet, False—*Celastrus scandens*.
Bitter Vetch—*Orobanch*.
Bitter Wood—*Simaruba, Xylopia*.
Black Adiantum—*Asplenium Adiantum-nigrum*.
Black Alder—*Ilex verticillata*.
Black Bearberry—*Arostaphylos alpina*.
Blackberry—*Rubus fruticosus*.
Blackberry, American—*Rubus villosus*.
Blackberry Lily—*Pardanthus chinensis* s.
Blackberry, Low—*Rubus canadensis*.
Blackberry, Sand—*Rubus cuneifolius*.
Black Birch—*Betula nigra*.
Black Boy—*Xanthorrhæa*.
Black Bryony—*Tamus communis*.
Black Bullace—*Prunus inuititia*.
Black Cinnamon—*Pimenta acris*.
Black Currant—*Ribes nigrum*.
Black Currant, American Wild—*Ribes floridum (americanum) s.*
Black Cypress—*Taxodium distichum*.
Black-eyed Susan—*Thunbergia alata*.
Black Haw, American—*Viburnum prunifolium*.
Black Irish Elm—*Ulmus montana nigra*.
Black Jack Oak—*Quercus nigra, Q. marilandica* s.
Black Larch—*Larix americana (pendula) s.*
Black Maidenhair Spleenwort—*Asplenium Adiantum-nigrum*.
Black Mulberry—*Morus nigra*.
Black Oak—*Quercus Robur, Q. ilicifolia, Q. tinctoria (velutina) s.*
Black Paralely—*Thapsia decipiens*.
Black Pine—*Pinus (Laricio) s. austriaca, Prumnopitys spicata* s.
Black Plum—*Vitex Doniana*.
Black Poplar—*Populus nigra*.
Black Raspberry—*Rubus occidentalis*.
Black Root—*Symphytum officinale*.
Black Saltwort—*Glaux maritima*.
Black Spruce—*Picea nigra*.
Blackthorn—*Prunus spinosa*.
Black Varnish-tree—*Melanorrhæa usitatissima (usitata) s.*
Black Wattle—*Callioma serratifolia*.
Black Wood—*Dalbergia latifolia*.
Black Wood, Australian—*Acacia melanoxylon*.
Bladder Campion—*Silene inflata*.
Bladder Catchfly—*Silene inflata*.
Bladder Fern—*Cyrtopteris*.
Bladder Flower, White—*Physianthus albens (Araujia coccifera) s.*
Bladder Ketmia—*Hibiscus Trionum*.
Bladder Nut—*Royena lucida Staphylea*.
Bladder Pod—*Kennedy, Vesicaria*.
Bladder Seed—*Physospermum, Vesicaria*.
Bladder Senna—*Colutea, Sutherlandia frutescens*.
Bladder Vetch—*Phaca*.
Bladderwort—*Utricularia*.
Blanket Beggar's Basket—*Verbasum Thapsus*.
Blanket Flower—*Gaillardia*.
Blanket Leaf—*Verbasum Thapsus*.
Blazing Star—*Liatris*.
Bleaberry—*Vaccinium Myrtillus*.
Bleeding Heart—*Cheiranthus Cheiri, Colocasia esculenta, Dicentra*.
Bleeding Nun—*Cyclamen europeum*.
Blessed Thistle—*Carbenia benedicta s, Silybum Marianum*.
Blind Eyes—*Papaver Rheas*.
Blood-berry—*Rivina humilis*.
Blood-flower—*Hæmanthus*.
Blood Orange—*Citrus aurantium var.*
Blood-root—*Hæmodorum, Sanguinaria canadensis, Potentilla Tormentilla*.
Bloodwort—*Sanguinaria canadensis*.
Bloody Butcher—*Orchis maculata*.
Bloody Man's Finger—*Orchis maculata*.
Bloody Warrior—*Cheiranthus Cheiri*.
Blooming Sally—*Epilobium angustifolium*.

- Blue Ash**—*Fraxinus quadrangulata*.
Blue Ball—*Scabiosa succisa*.
Blue Beech—*Carpinus americana*.
Bluebell—*Campanula rotundifolia*, *Scilla nutans (festalis) s.*
Bluebell Creeper, Australian—*Sollya heterophylla*.
Bluebell, New Zealand—*Wahlenbergia saxicola*.
Bluebell, Spanish—*Scilla hispanica*.
Blueberry—*Vaccinium Myrtillus*.
Blueberry, Swamp—*Vaccinium corymbosum*.
Blue Bonnets—*Centaurea Cyanus*, *Scabiosa succisa*.
Bluebottle—*Centaurea Cyanus*.
Blue Bush—*Ceanothus azureus*.
Blue Buttons—*Scabiosa succisa*.
Blue Cowslip—*Pulmonaria angustifolia*.
Blue Curis—*Trichostema*.
Blue Daisy—*Globularia vulgaris*.
Blue-eyed Grass—*Styrrinchium*.
Blue Eyes—*Veronica Chamædrys*.
Blue Grass, Kentucky—*Poa pratensis*.
Blue Gum—*Eucalyptus globulus*.
Blue Himalayan Poppy—*Mecopis*.
Blue, Indian—*Nymphaea stellata cyanea*.
Blue Innocence—*Houstonia cerulea*.
Blue Jack—*Quercus cinerea*.
Blue Marguerite—*Agathæa celestis (Aster rotundifolius) s.*
Blue Moonflower—*Iponœa Leeri*.
Blue Moonwort—*Soldanella alpina*.
Blue Oak—*Quercus Douglaxii s.*
Blue Palmetto—*Rhapidophyllum Hyptrix*.
Blue Spruce, Rocky Mountain—*Picea pungens s.*
Blue Tangles—*Vaccinium frondosum*.
Blue Vervain—*Verbena hastata*.
Blue Water Hyacinth—*Eichhornia azurea*.
Blue Weed—*Echium vulgare*.
Blues—*Centaurea Cyanus*, *Houstonia cerulea*, *Vaccinium pennsylvanicum angustifolium*.
Blush Roses—*Rosa indica*.
Blushwort—*Aschynanthus*.
Boat-lip Orchid—*Scaphyglottis*.
Bobbin—*Nymphaea alba*.
Bog Arum—*Calla palustris*.
Bog Asphodel—*Narthecium*.
Bog Bean—*Menyanthes trifoliata*.
Bog Berry—*Oxycoccus palustris*.
Bog Moss—*Sphagnum*.
Bog Myrtle—*Myrica Gale*.
Bog Pimpernel—*Anagallis tenella*.
Bog Rhubarb—*Peltandra vulgaris (officinalis) s.*
Bog Trefoll—*Menyanthes trifoliata*.
Bog Violet—*Pinguicula*.
Bois d'Éponge—*Galearia cutispongia*.
Boits—*Trollius europæus*.
Bombarra Ground Nut—*Voandzeia subterranea*.
Bona-Nox—*Iponœa Bona-Nox*.
Bone-seed—*Osteospermum*.
Boodle—*Chrysanthemum segetum*.
Beer-tree—*Sambucus nigra*.
Borage—*Borago officinalis*.
Borage, Ceylon—*Trichodesma zeylanicum*.
Borecole—*Brassica oleracea fibriata*.
Botany Bay Gum—*Xanthorrhœa arborea*.
Botany Bay Tea (and Tree)—*Smilax glycyphylla*.
Bothyn, White—*Chrysanthemum Leucanthemum*.
Bottle Brush—*Callistemon*, *Metrosideros*.
Bottle Gourd—*Lagenaria*.
Bottle Rubber—*Hevea guianensis s.*
Bottle-tree—*Sterculia diversifolia*, *S. rupestris*.
Bottle, White—*Silene inflata*.
Bouncing Bet—*Saponaria officinalis*.
Bourbon Aloe—*Lomatophyllum alatifolium (borbonicum) s.*
Bourbon Lily—*Lilium candidum*.
Bourbon Palm—*Livistona chinensis*.
Bourbon Roses—*Rosa indica Bourboniana*.
Boursault Roses—*Rosa alpina*.
Bowman's Root—*Gilenia trifoliata*.
Bow Wood—*Machura aurantiaca*.
Bowstring Hemp—*Sansevieria*.
Box—*Buxus*.
Box, Bastard—*Polygala Chamæbuxus*.
Box Berry—*Gaultheria procumbens*.
Box Elder—*Negundo (Acer) s.*
Box, False—*Sphaeria frutescens*.
Box, Flowering—*Vaccinium Vitis-Idæa*.
Box Holly—*Ruscus aculeatus*.
Box Jasmine—*Phillyrea*.
Box, Rose—*Cotoneaster*.
Box Thorn—*Lycium*.
Boxwood—*Cornus florida*.
Boy Love—*Artemisia Abrotanum*.
Bracken—*Pteris aquilina*.
Bracken, Australian—*Pteris tremula*.
Brake, Cane—*Arundinaria*.
Brake Fern—*Pteris aquilina*.
Brake Fern, Chinese—*Pteris aquilina*.
Brake Fern, Cliff—*Pellaea*.
Brake, Rock—*Cryptogramme*.
Brake-root—*Polypodium vulgare*.
Bramble, Common—*Rubus fruticosus*.
Bramble, Dog—*Ribes cynosbati*.
Bramble, Mountain—*Rubus Chamæmoris*.
Branching Annual Stock—*Malcolmia maritima*.
Brandy Bottles—*Nuphar lutea*.
Brank—*Fagopyrum esculentum*.
Brasiletto—*Cavallinia*.
Brawllins—*Vaccinium Vitis-Idæa*.
Brazil Nut—*Bertholletia excelsa*.
Brazil Wood—*Casalpinia brasiliensis (Peltophorum Linnei) s.*
Brazilian Rubber—*Hevea guianensis s.*
Brazilian Tea—*Hex paraguayensis*, *Stachytarpheta jamaicensis (indica) s.*
Bread Fruit—*Artocarpus*, *Treculia africana*.
Bread, Hottentot—*Testudinaria Elephantipes*.
Bread, Kafir—*Eucephalartos Caffra (Caffer) s.*
Bread, Monkey—*Adansonia s.*
Bread Nut—*Broussonetia*.
Bread, St. John's—*Crotalaria Siliqua*.
Breakstone—*Saxifraga*.
Breath of Heaven—*Adenandra fragrans*.
Briar—*Rosa*.
Briar, Sensitive—*Schrankia uncinata*.
Bridal Everlasting—*Leontopodium alpinum*.
Bridal Wreath—*Francoa ramosa*, *Spiraea prunifolia*.
Bride's Lace—*Phalaris arundinacea*.
Bringall or Brinjall—*Solanum Melongena (Aubergine)*.
Brisbane Lily—*Eurydes Cunninghamii*.
Bristle Fern—*Trichomanes*.
Brittle Fern—*Cystopteris fragilis*.
Brittle Maidenhair—*Adiantum tenerum*.
Broad Bean—*Faba vulgaris (Vicia Faba) s.*
Broad-leaved China Fir—*Cunninghamia*.
Broad-leaved Garlic—*Allium ursinum*.
Broccoli—*Brassica oleracea botrytis asparagoides*.

- Brompton Stock**—*Mathiola*.
Bronze-leaf, Rodgers'—*Rodgersia polypphylla*.
Brook Bean—*Menyanthes trifoliata*.
Brook-lime—*Veronica Beccabunga*.
Brook-wood—*Saxoflu*.
Broom—*Cytisus scoparius*.
Broom, Butcher's—*Ruscus aculeatus*.
Broom Crowberry—*Carex*.
Broom Hickory—*Carya porcina*.
Broom Palm—*Thrinax argentea*.
Broom Rape—*Orobancha*.
Broom, Rock—*Gentia*.
Broom, Rush—*Spartium junceum*, *Viminaria*.
Broom, Spanish—*Spartium junceum*.
Broom, Sweet—*Scoparia dulcis*.
Broom, Thorn—*Ulex europæus*.
Brotherwort—*Thymus Serpyllum*.
Brown Clover—*Trifolium spadicium*.
Brush Bush—*Euryphia pinnatifolia*.
Brush Cherry—*Trachocarpa laurina*.
Brussels Sprouts—*Brassica oleracea bullata gemmifera*.
Bryony—*Bryonia*.
Bryony, Black—*Tamus communis*.
Buck-bean—*Menyanthes*.
Buckeye—*Pavia*.
Buckler Fern—*Aspidium*, *Nephrodium*.
Buckler Mustard—*Biscutella*.
Buckthorn—*Rhamnus*.
Buckthorn, Sea—*Hippophaë*.
Bucku or Buohu—*Baronia serratifolia*.
Buckwheat—*Fagopyrum esculentum*.
Buckwheat-tree—*Mylocarpum* (*Cliftonia* s).
Buffalo Berry—*Shepherdia argentea*.
Buffalo Clover—*Trifolium reflexum*.
Buffalo Currant—*Ribes aureum*.
Buffalo Grass, Australian—*Stenotaphrum americanum* (*glabrum* s).
Buffalo Nut—*Pyralaria oleifera* (*pubera* s).
Bughane—*Actæa racemosa*, *Cimicifuga*.
Bughane, False—*Troutvetteria palmata*.
Bugle—*Ajuga*.
Bugle Lily—*Watsonia*.
Bugloss, Viper's—*Echium*.
Bugwort—*Cimicifuga*.
Bulbous-rooted Chervil—*Chaerophyllum bulbosum*.
Bullace—*Prunus insititia*, *Vitis vulpina*.
Bullace Plum (of Jamaica)—*Melicocca bijuga*.
Bullock's-eye—*Sempervivum tectorum*.
Bullock's-heart—*Annona reticulata*.
Bull's-head Orchid—*Anguloa Clowesii*.
Bully-tree—*Sapota Achras* (*Achras Sapota* s).
Bulrush—*Scirpus lacustris*, *Typha*.
Bunch Berry—*Cornus canadensis*.
Bunch Flower—*Melanthium virginicum*.
Bunch Grass—*Elymus*.
Bunya-Bunya Pine—*Araucaria Bidwillii*.
Buplever—*Bupleurum*.
Bur—*Centotheca lappacea*.
Bur, Butter—*Petasites vulgaris* (*officinalis* s).
Bur, Clot or Cooke—*Xanthium*.
Bur, Jamaica Paroquet—*Triumfetta*.
Bur, Little—*Echinopspermum Lappula*.
Bur Marigold—*Bidens*.
Bur, New Zealand—*Acrota*.
Bur Reed—*Sparganium*.
Bur-tree—*Sambucus nigra*.
Burgundy Pitch Tree—*Picea excelsa*.
Burmese Rosewood—*Pterocarpus indicus*.
Burn Onion—*Allium Cepa* var.
Burnet—*Poterium Sanguisorba*.
Burnet, Great—*Poterium officinale*.
Burnet Rose—*Rosa epinosissima*.
Burnet Saxifrage—*Pimpinella*.
Burning Bush—*Dictamnus Frazinella*, *Euonymus americanus*, *E. atropurpureus*.
Burnt Weed—*Scelopendrium vulgare*.
Burr Oak—*Quercus macrocarpa*.
Bush Basil—*Ocimum minimum* (*O. Basilicum minimum* s).
Bush Honeysuckle—*Dierilla*.
Bush Pink—*Dianthus ramosissimus*.
Bush Poppy, Californian—*Romneya*.
Butcher, Bloody—*Orchis maculata*.
Butcher's Broom—*Ruscus aculeatus*.
Butter Bean—*Phaseolus vulgaris* var.
Butter, Vegetable—*Bassia butyracea*.
Butter-and-Eggs—*Narcissus incomparabilis aurantius* var.
Butter-and-Tallow Tree—*Pentadema*.
Butter Bur—*Petasites vulgaris* (*officinalis* s).
Buttercup—*Ranunculus*.
Butterfly Cyclamens—*Cyclamen pericium* var.
Butterfly Flower—*Schizanthus*.
Butterfly Orchis—*Habenaria bifolia*, *H. chlorantha*.
Butterfly Pea—*Clitoria*.
Butterfly-plant—*Oncidium Papilio*, *Phalenopsis amabilis*.
Butterfly Tulip—*Calochortus lilacinus*.
Butterfly Weed—*Aclepias tuberosa*, *Calochortus venustus*.
Butter-nut—*Caryocarp nucifera*, *Juglans cinerea*.
Butter-root—*Pinguicula vulgaris*.
Butter-tree, Indian—*Bassia butyracea*.
Butterwood, White—*Trichilia spondiodes*.
Butterwort—*Pinguicula*.
Button Bush—*Cephalanthus*.
Button Flower—*Gomphia*.
Button Snake Root—*Liatris*.
Button-tree—*Cnocarpus*.
Button Weed—*Spermacoe*.
Button-wood—*Cephalanthus*, *Platanus occidentalis*.
Buttons—*Tanacetum vulgare*.
Caa-cuys—*Ilex paraguariensis*.
Caa-mini—*Ilex paraguariensis*.
Caapeba—*Cissampelos Pareira*.
Caapim de Angola—*Panicum spectabile*.
Caa-quasu—*Ilex paraguariensis*.
Cabaret—*Asarum europæum*.
Cabbage—*Brassica oleracea*.
Cabbage, Dog's—*Thelypodium Cynocrambe*.
Cabbage Lettuce—*Lactuca*.
Cabbage, Meadow—*Symlocarpus foetidus*.
Cabbage Palm—*Areca*, *Euterpe oleracea*, *Oreodoxa oleracea*.
Cabbage Palmetto—*Sabal Palmetto*.
Cabbage Roses—*Rosa centifolia*.
Cabbage, St. Patrick's—*Saxifraga umbrosa*.
Cabbage, Skunk—*Symlocarpus foetidus*.
Cabbage-tree—*Andina inermis*, *Euterpe oleracea*, *Livistona australis*.
Cabbage-tree, Bastard—*Genfrea*.
Cacalia, Scarlet—*Emilia sonchifolia* s.
Cacao—*Theobroma Cacao*.
Cactus Dahlia—*Dahlia Juarezii*.
Caffer Bean-tree—*Schottia*.
Caffer Bread—*Encephalartos Caffer* (*Caffer* s).

Casser Lily—*Schisostylis coccinea*.
Casser Tree—*Helicoryum nudifolium*.
Cassia—*Cassia edulis*.
Cashew Nut—*Attalea Cohune*.
Cajan—*Cajanus*.
Cajuput Oil (and Tree)—*Melaleuca Leucadendron minor*.
Calaba-tree—*Calophyllum Calaba*.
Calabash Gourd—*Lagenaria*.
Calabash Nutmeg—*Monodora Myrsitica*.
Calabash, Sweet—*Passiflora maliformis*.
Calabash-tree—*Crescentia Cujete*.
Calabur Tree—*Muntingia Calabura*.
Calamint—*Calamintha*.
Calathian Violet—*Gentiana Pneumonanthe*.
Calf's snout—*Antirrhinum Punctatum*.
Calico-bush—*Kalmia latifolia*.
Californian Asalea—*Rhododendron occidentale*.
Californian Blue Oak—*Quercus Douglasii s.*
Californian Bush Poppy—*Rouneya*.
Californian Evergreen Redwood—*Sequoia sempervirens*.
Californian Fuchsia—*Zauschneria californica*.
Californian Gold Fern—*Gymnogramme triangularis*.
Californian Hemlock Spruce—*Tsuga Pattoniana*.
Californian Lilac—*Ceanothus integerrimus*.
Californian Lip Fern—*Hypolepis californica s.*
Californian Live Oak—*Quercus chrysolepis s.*
Californian Maidenhair Fern—*Adiantum ethiopicum emarginatum*.
Californian Mammoth-tree—*Sequoia gigantea*.
Californian Maybush—*Photinia arbutifolia*.
Californian Nutmeg—*Torreya californica*.
Californian Pepper-tree—*Schinus Molle*.
Californian Poppy—*Eschscholtzia californica, Platystemon californicus*.
Californian Redwood—*Sequoia sempervirens*.
Californian Sassafras—*Umbellularia californica*.
Californian Tulp—*Calochortus*.
Californian Yew—*Taxus brevipolia*.
Calisaya Bark—*Cinchona Calisaya*.
Caltrops—*Tribulus*.
Caltrops, Water—*Trapa natans*.
Calumba, False—*Coccoloba fenestratum*.
Calumba Root—*Jateorrhiza Calumba (J. Columba s.)*.
Calumba Wood—*Coccoloba fenestratum*.
Calvary Clover—*Medicago Echinus*.
Camash—*Camassia esculenta*.
Camby Fruit—*Eugenia*.
Camel's Thorn—*Alhagi camelorum*.
Camemile—*Anthemis nobilis*.
Campeachy Wood—*Hematoxylin campechianum*.
Campernelle—*Narcissus odoratus*.
Camphor-tree—*Camphora officinalis (Cinnamomum Camphora s.) Dryobalanops aromatica (D. Camphora s.)*.
Campion—*Agrostemma, Lychnis, Silene*.
Campion, Evening—*Lychnis alba s.*
Campion, Red—*Lychnis diurna (dintea s.)*.
Campion, Rose—*Agrostemma (Lychnis s.)*.
Campion, White—*Lychnis alba s.*
Camwood—*Baphia*.
Canada Balsam—*Abies balsamea*.
Canada Blueberry—*Vaccinium Myrtilus*.
Canada Rice—*Zizania aquatica*.
Canada Tea—*Gaultheria procumbens*.
Canary-bird Flower—*Tropaeolum peregrinum*.
Canary Creeper—*Tropaeolum peregrinum*.
Canary Grass—*Phalaris canariensis*.

Canary Melon—*Cucumis Dudaim s.*
Cancerwort—*Veronica*.
Candelabrum-tree—*Pandanus Candelabrum*.
Candle Cactus—*Opuntia lurida s.*
Candle-tree—*Parmentiera cerasifera*.
Candleberry Myrtle—*Myrica cerasifera*.
Candleberry-tree—*Aleurites triloba*.
Candlemas Bells—*Galanthus*.
Candlenut-tree—*Aleurites*.
Candlestick, Devil's—*Nepeta Glehonna*.
Candy Carrot—*Athamanta Matthioli*.
Candytuft—*Iberis*.
Cane Brake—*Arundinaria*.
Cannibal's Tomato—*Solanum anthracophagorum (S. Uporo s.)*.
Cannon-ball Tree—*Couroupita guianensis*.
Canterbury Bells—*Campanula Medium, C. Trachelium*.
Cape Aloe—*Aloe ferox*.
Cape Aster—*Agathaea celestis (Aster rotundifolius s.)*.
Cape Chestnut—*Calodendron capensis*.
Cape Cod Water Lily—*Nymphaea odorata rosea*.
Cape Cowslip—*Lachenalia tricolor*.
Cape Crocus—*Gethyllis spiralis*.
Cape Everlasting—*Helicoryum vestitum s.*
Cape Figwort—*Phygelius capensis*.
Cape Forget-me-not—*Anchusa capensis*.
Cape Gooseberry—*Physalis peruviana*.
Cape Gum—*Acacia Karroo or A. capensis*.
Cape Gum-tree—*Widdringtonia juniperoides*.
Cape Honey Flower—*Protea mellifera*.
Cape Honeysuckle—*Tecoma capensis*.
Cape Ivy—*Senecio macroglamus*.
Cape Jasmine—*Gardenia florida (jasminoides s.)*.
Cape Lily—*Crinum capense*.
Cape Phillyrea—*Flaodendron capense*.
Cape Poison Bulb—*Brunsigia toxicaria (Buphan disticha s.)*.
Cape Pond Weed—*Aponogon distachyon*.
Cape Primrose—*Streptocarpus*.
Cape Stock—*Helophila*.
Cape Treasure Flower—*Guzania pavonia*.
Cape Violet—*Ionidium capense*.
Caper, Bean—*Zygophyllum*.
Caper Spurge—*Euphorbia Lathyris s.*
Caper-tree—*Capparis*.
Capevi Balsam—*Copaifera*.
Capolin or Capulinos—*Ceranus Capuli s (Prunus Capollin), Prunus salicifolia (seratina s.)*.
Caraipl—*Moquilea utilis*.
Carajura—*Bignonia Chica*.
Carambola-tree—*Averrhoa Carambola*.
Carana—*Teica*.
Caraway—*Carum Carni*.
Carberry—*Ribes grossularia*.
Cardamoms—*Plantaria (Cardamomum)*.
Cardinal Flower—*Lobelia cardinalis*.
Card-Leaf Tree—*Clusia*.
Cardoon—*Cynara Cardunculus*.
Caricature-plant—*Gnaphalium hortense*.
Carnation—*Dianthus Caryophyllum*.
Carnation, Spanish—*Poinciana pulcherrima*.
Carnauba Palm—*Copernicia cerifera*.
Carnivorous Plants—*Dionaea, Drosera, Nepenthes, Pinguicula, Utricularia, &c.*
Carob-tree—*Ceratonia Siliqua*.
Carolina Allspice—*Calycanthus floridus*.
Carolina Poplar—*Populus monilifera*.
Carolina Water Ash—*Frazinus platycarpa*.

- Carraway**—*Carum Carvi*.
Carrot Flower—*Smilax hederacea*, *Stapelia*.
Carrot—*Daucus Carota*.
Carrot, Candy—*Athamanta Matthioli*.
Carrot, Deadly—*Thapsia*.
Carrot, Book or Tree—*Thapsia edulis*.
Carthaginian Apple—*Punica granatum*.
Carvi—*Carum Carvi*.
Cascarilla Bark—*Croton Eluteria*.
Cashew Nut—*Anacardium occidentale*.
Cassareep—*Manihot*.
Cassava, Sweet—*Manihot (palmata s) Aipi*.
Cassava Wood—*Turpinia occidentalis*.
Cassia, Poet's—*Oxyris*.
Castor-oil Plant—*Ricinus communis*.
Castor Wood—*Magnolia glauca*.
Cat Berry—*Ribes Grossularia*.
Cat Briar—*Smilax*.
Cat Thyme—*Teucrium Marum*.
Cat Whin—*Ulex nanus*.
Catchfly—*Silene*.
Catchfly, German—*Lycchnis Viscaria*.
Catechu—*Arca Catechu*.
Catechu, Gambier—*Uncaria Gambier*.
Caterpillar-plant—*Scorpiurus*.
Catmint—*Nepeta*.
Catnip—*Nepeta*.
Cat-o'-nine-tails—*Typha latifolia*.
Cat's-ear—*Antennaria*.
Cat's-tail—*Typha*.
Cat's-tail Grass—*Phleum*.
Cat-tail Flag—*Typha*.
Catteridge-tree—*Cornus sanguinea*, *Kuonymus eurpæus*.
Caucasian Walnut—*Pterocarya fraxinifolia (caucasica s)*.
Caulliflower—*Brassica oleracea var.*
Cayenne Pepper—*Capsicum*.
Cedar—*Cedrus*.
Cedar, Barbados or Bermudas—*Juniperus bermudiana*.
Cedar, Bastard—*Cedrela, Guazuma*.
Cedar, Incense—*Lilboedrus*.
Cedar, Japan—*Cryptomeria*.
Cedar of Goa—*Cupressus lusitana*.
Cedar, Prickly—*Cyathodes acerua*.
Cedar, Red—*Juniperus virginiana*.
Cedar, Sharp—*Acacia oxycedrus, Juniperus oxycedrus*.
Cedar, Silver—*Juniperus virginiana glauca*.
Cedar, Stinking—*Torreya taxifolia*.
Cedar, White—*Chamaecyparis, Thuya gigantea, T. occidentalis*.
Cedron-tree—*Sinaha Cedron*.
Celandine—*Chelidonium*.
Celandine, Lesser—*Ranunculus Ficaria*.
Celandine Poppy—*Stylophorum diphyllum*.
Celandine, Tree—*Boconia frutescens*.
Celeriac—*Apium graveolens rapaceum*.
Celery—*Apium graveolens*.
Celery-leaved Pine-tree—*Phyllocladus*.
Celery, Turnip-rooted—*Apium graveolens rapaceum*.
Centauray—*Centaura, Erythraea Centaurium*.
Centauray, American—*Sabbatia*.
Century Plant—*Agave americana*.
Ceylon Borage—*Trichodesma zeylanicum*.
Chaco—*Sechium edule*.
Chain Fern—*Woodwardia*.
Chalice Flower—*Narcissus Pseudo-Narcissus*.
Chamisso's Shield Fern—*Aspidium munitum*.
Chamomile—*Anthemis nobilis*.
Champignon—*Marasmius oreades*.
Champion Oak—*Quercus rubra*.
Chandeller Flower—*Brunsvigia Josephina*.
Chandeller-tree—*Pandanus Candelabrum*.
Chantarelle—*Cantharellus cibarius*.
Chaplet Flower, Madagascar—*Stephanotis floribunda*.
Chardoon—*Cynara cardunculus (Cardoon)*.
Charity—*Polemonium cœruleum*.
Charles's Sceptre—*Pedicularis Sceptrum-Carolinum*.
Charlock—*Sinapis arvensis*.
Chaste Tree—*Vitex Agnus-castus*.
Chaw-stick—*Gouania domingensis*.
Chayota—*Sechium edule*.
Cheddar Pink—*Dianthus œsius*.
Cheese Rennet—*Galium verum*.
Chequerberry—*Gaultheria procumbens*.
Cherimoyer—*Annona Cherimolia*.
Cherokee Rose—*Rosa sinica (lævigata s)*.
Cherry—*Cerasus (Prunus)*.
Cherry Apple—*Pyrus baccata*.
Cherry, Barbados—*Malpighia glabra*.
Cherry Birch—*Betula lenta*.
Cherry, Bird—*Cerasus (Prunus) Padus, Pimelea drupacea*.
Cherry, Brush—*Trochocarpa laurina*.
Cherry, Cornelian—*Cornus mas*.
Cherry, Cowhage or Cow Itch—*Malpighia urens*.
Cherry, Ground—*Cerasus (Prunus) Chamaecerasus, Physalis*.
Cherry, Hottentot—*Cassia Maurocena*.
Cherry, Jerusalem—*Solanum Pseudo-capsicum*.
Cherry Laurel—*Cerasus (Prunus) Laurocerasus*.
Cherry Pie—*Epilobium hirtutum, Heliotropium peruvianum*.
Cherry Plum—*Prunus cerasifera*.
Cherry, Winter—*Physalis Alkekengi*.
Chervil, Bulbous-rooted—*Cherophyllum bulbosum*.
Chervil, Common or Garden—*Anthriscus cerefolium*.
Chestnut, Cape—*Castanodendron capensis*.
Chestnut, Horse—*Esculus*.
Chestnut, Moreton Bay—*Castanopernum*.
Chestnut, Oak—*Quercus Prinus*.
Chestnut, Otahelto—*Inocarpus edulis*.
Chestnut, Smooth-fruited Horse—*Pavia*.
Chestnut, Sweet or Spanish—*Castanea sativa*.
Chestnut, Water—*Trapa natans*.
Chico—*Bignonia Chica*.
Chicasaw Plum—*Cerasus (Prunus) Chicasa s*.
Chiochester Elm—*Ulmus glabra vegeta*.
Chick Pea—*Cicer arietinum s*.
Chicken Grape—*Vitis cordifolia*.
Chickling Vetch—*Lathyrus sativus*.
Chickweed, Golden—*Stellaria graminea aurea*.
Chickweed, Mouse-ear—*Cerastium*.
Chickweed Wintergreen—*Trientalis*.
Chicory—*Cichorium Intybus*.
Chili—*Capsicum baccatum*.
Chillian Crocus—*Tecophilæa cyano-crocus*.
Chillian Nettle—*Loasa aurantiaca*.
Chillian Nut—*Guevina (Gevina s) Avellana*.
Chillian Pine—*Arucaria imbricata*.
Chimney Bell-flower—*Campanula pyramidalis*.
China Aster—*Callistephus chinensis*.
Chinaberry-tree—*Nelia Azedarach*.
China Flr, Broad-leaved—*Cunninghamia*.
China Root, American—*Smilax*.
China Roses—*Rosa indica*.
Chinese Artichoke—*Stachys tuberifera (Crosnes)*.
Chinese Asalea—*Azalea sinensis, &c.*

Chinese Bellflower or **Balloon Flower**—*Platycodon grandiflorum*.
Chinese Brake—*Pteris serrulata*.
Chinese Brake Fern—*Pteris serrulata*.
Chinese Cherry, Double—*Cerasus serrulata*.
Chinese Fever Plant—*Pedicularis fœtida*.
Chinese Hawthorn—*Photinia serrulata*.
Chinese Kidney-bean—*Wistaria chinensis*.
Chinese Lantern Plant—*Phymalis Francheti* s.
Chinese Larch—*Pseudolarix*.
Chinese Orange—*Citrus sinensis* s.
Chinese Pagoda-tree—*Sophora japonica*.
Chinese Parasol—*Sterculia platanifolia*.
Chinese Pea-tree—*Caragana*.
Chinese Pepper—*Zanthoxylum piperitum*.
Chinese Pink—*Dianthus chinensis*.
Chinese Primrose—*Primula sinensis*.
Chinese Rice Paper Plant—*Fatsia papyrifera*.
Chinese Rose—*Hibiscus Rosa-sinensis*, *Rosa indica chinensis* s., *R. l. sempervirens*.
Chinese Sacred Lily—*Narcissus Tazetta* var.
China, ♂ Tallow-tree—*Stillingia sebifera*.
Chinese Yam—*Dioscorea Batatax*.
Chinese Yew—*Cephalotaxus*, *Podocarpus chinensis*.
Chinquapin Oak—*Quercus prinoides*.
Chinquapin-tree—*Castanea pumila*.
Chives—*Allium Schœnoprimum*.
Chocho—*Seschium edule*.
Chocolate-nut Tree—*Theobroma Cacao*.
Choke Berry—*Pyrus arbutifolia*.
Choke Cherry—*Cerasus (Prunus) virginiana*.
Chou de Burghley—*Brassica oleracea* var. (Cabbage s).
Christ and the Apostles—*Crinium scabrum*.
Christmas Fern—*Aspidium acrostichoides*.
Christmas Pride—*Ruellia paniculata*.
Christmas Rose—*Helleborus niger*.
Christopher, Herb—*Actæa spicata*.
Christ's Eye—*Lula Oculus-Christi*.
Christ's Hair—*Scelopendrium vulgare*.
Christ's Thorn—*Paliurus aculeatus (Spina-Christi* s), *Zizyphus Spina-Christi*.
Chusan Daisy—*Chrysanthemum sinense*.
Chusan Palm—*Chamaecypis Fortunei*.
Ciboul—*Allium fistulosum*.
Cicely, Sweet—*Myrrhis odorata*.
Cider-tree (of Tasmania)—*Eucalyptus Gunnii*.
Cinnamon—*Cinnamomum*.
Cinnamon, Black—*Pimenta acris*.
Cinquefoil—*Potentilla*.
Cinquefoil, Marsh—*Comarum palustre (Potentilla Comarum* s).
Cistus, Ground—*Rhodothamnus Chamæcistus*.
Cistus, Gum—*Cistus ladaniferus*.
Citron—*Citrus medica*.
Cives—*Allium Schœnoprimum (Chives)*.
Clammy Honeysuckle—*Azalea viscosa*.
Clammy Locust—*Robinia viscosa*.
Clary—*Salvia Sclarea*.
Clary, Wild—*Salvia Verbenaca*.
Clayton's Cliff Brake—*Pellaea atropurpurea*.
Cleveland's Lip Fern—*Cheilanthes Clevelandi*.
Cliff Brake Fern—*Pellaea*.
Climbing Cucumber—*Cyclanthera pedata*.
Climbing Fern—*Lygodium*.
Climbing Fumitory—*Adumia cirræosa*.
Climbing Hempweed—*Mikania scandens*.
Climbin Hydrangea—*Schizophragma hydrangeoides*

Climbing Lily—*Gloriosa superba*.
Climbing Rose—*Rosa setigera*.
Climbing Snail Flower—*Phaseolus Caracalla*.
Clot Bur—*Xanthium*.
Cloth of Gold Crocus—*Crocus susianus*.
Clothed Lip Fern—*Cheilanthes vestita*.
Cloudberry—*Rubus Chamæmorus*.
Cloud Grass—*Agrostis nebula*.
Clove or Clove Pink—*Dianthus Caryophyllus (Carnation)*.
Clove-tree—*Caryophyllus aromaticus (Eugenia caryophyllata* s).
Clove, Wild—*Pimenta acris*.
Clover—*Trifolium*.
Clover, Calvary—*Medicago Kehinus*.
Clover, Prairie—*Petalostemon*.
Clover, Winter—*Mitchella repens*.
Clown's Mustard—*Iberis amara*.
Club Grass—*Scirpus*.
Club Moss—*Lycoepodium*.
Club Moss, Resurrection—*Selaginella lepidophylla*.
Club Palm—*Cordyline*.
Club Rush—*Scirpus, Typha*.
Cluster Cherry—*Cerasus (Prunus) Padus*.
Cluster-flowered Yew—*Cephalotaxus*.
Cluster Moonwort—*Botrychium lunaria*.
Cluster Pine—*Pinus Pinaster*.
Clustered Wax Flower—*Stephanotis floribunda*.
Coast Lily—*Lilium maritimum*.
Cob Nut—*Corylus*.
Coca—*Erythroxylon*.
Coca-plant, Mexican—*Richardsonia scabra (pilosa* s).
Cocaine—*Erythroxylon*.
Cochineal Fig—*Opuntia cochinealifera*.
Cockle Bur—*Xanthium*.
Cockscomb—*Celovia, Erythrina Crista-galli, Rhinanthus Cris-galli, &c.*
Cock's-foot Grass—*Dactylis glomerata*.
Cockspur Flower—*Plectranthus*.
Cockspur Thorn—*Cratægus Crus-galli*.
Cockspur, West Indian—*Pisonia aculeata*.
Coco de Mer—*Lodoicea*.
Cocoa—*Theobroma Cacao*.
Cocoa Plum—*Chrysobalanus Icaou*.
Cocoa Roots—*Caladium bicolor, &c.*
Cocoanut, Double—*Lodoicea*.
Cocoanut Palm—*Cocos nucifera*.
Codlin—*Pyrus*.
Codling—*Pyrus*.
Codlins and Cream—*Epilobium hirsutum*.
Coffee—*Coffea*.
Coffee Pea—*Cicer arietinum*.
Coffee-tree, Kentucky—*Gymnocladus canadensis*.
Colewort—*Brassica oleracea (Cabbage)*.
Colic Root—*Aletris farinosa*.
Collards—*Brassica*.
Collet—*Brassica oleracea*.
Colocynth—*Citrullus Colocynthis*.
Colpoon-tree—*Elæodendrum*.
Coltsfoot—*Tussilago*.
Coltsfoot, Sweet—*Petasites*.
Columbine—*Aquilegia*.
Columbine, Feathered or Tufted—*Thalictrum aquilefolium*.
Comb Fern—*Schizæa*.
Comfrey—*Symphytum*.
Compass-plant—*Silphium laciniatum*.

- Concave Buckler Fern**—*Nephrodium cernuum*.
Condor Vine—*Marsdenia Cundurango*.
Cone Flower—*Rudbeckia*.
Cone Head—*Strobilanthes*.
Congo, Pride of the—*Richardia Lutwychei* s. (*hastata*).
Conifers—*Coniferae*.
Constantinople Hazel—*Corylus Colurna*.
Cool-tankard—*Borago officinalis*.
Copaiba Balsam—*Copaifera officinalis*.
Copai-yé Wood—*Vochisia guianensis*.
Copal—*Rhus Copallina*.
Coquito Palm (of Chili)—*Jubaea*.
Coral Berry—*Symphoricarpos vulgaris* (*orbiculatus* s.).
Coral-bush—*Templetonia retusa*.
Coral Drops—*Besleria elegans*.
Coral-tree—*Erythrina*.
Corfu Lily—*Funkia subcordata*.
Coriander—*Coriandrum*.
Cork-barked Elm—*Ulmus suberosa*.
Cork Oak, Bastard—*Quercus Pseudo-suber*.
Cork-tree—*Quercus Suber*.
Cork-wood—*Anona palustris*.
Corky White Elm—*Ulmus racemosa* s.
Corn Bluebottle—*Centaurea Cyanus*.
Corn Cockle—*Githago Setatum*.
Corn Flag—*Gladiolus*.
Corn Flag, African—*Anthoniza*.
Corn Flower—*Centaurea Cyanus*.
Corn Lily, African—*Leia*.
Corn Marigold—*Chrysanthemum segetum*.
Corn Mustard—*Sinapis arvensis*.
Corn Poppy—*Papaver Rhoeas*.
Corn Salad—*Valerianella altioria*.
Corn Violet—*Speeularia hybrida*.
Cornel, Dwarf—*Cornus canadensis*.
Cornel, Round-leaved—*Cornus circinata*.
Cornelian Cherry—*Cornus mas*.
Cornish Heath—*Erica vagans*.
Cornish Moneywort—*Sibthorpia carapana*.
Coromandel Gooseberry—*Aceroba Caranbola*.
Coronation Plant—*Dianthus Caryophyllus*.
Corsican Pine—*Pinus Laricio*.
Cortean Pine—*Pinus Pinaster minor* s.
Cos Lettuce—*Lactuca*.
Costmary—*Tanacetum* (*Chrysanthemum* s.) *Balsamita*.
Cotton—*Gossypium*.
Cotton Grass—*Eriophorum*.
Cotton, Lavender—*Santolina Chamæcyparissus*.
Cotton Thistle—*Onopordon*.
Cotton-tree—*Plagianthus*.
Cotton-tree, Silk—*Bombax, Eriodendron*.
Cotton Weed—*Dibitis*.
Countryman's Treadle—*Ruta graveolens*.
Courthouse and Matrimony—*Spiraea Utmaria*.
Couve Tronchuda—*Brassica oleracea costata*.
Coventry Bells—*Campanula Medium*.
Cow Bell—*Silene inflata*.
Cow Berry—*Comarum palustre, Vaccinium Vitis-Idea*.
Cow Grass—*Trifolium medium*.
Cow-herb—*Saponaria Vaccaria*.
Cow-itch—*Mucuna*.
Cow-itch Cherry—*Malpighia urens*.
Cow Oak—*Quercus Michauxii* s.
Cow Paigle—*Primula veris*.
Cow Parsley—*Heraclium*.
Cow Parsnip—*Heraclium*.
Cow Pea—*Vigna Costieng.*
Cow Quaker—*Briza media*.
Cow-tree—*Galactodendron utile* (*Bromium Galactodendron* s.).
Cow Vetch—*Vicia Cracca*.
Cow Wheat—*Melanopyrum*.
Cow's Lungwort—*Verbascum Thapsus*.
Cowage—*Mucuna*.
Cowhage—*Mucuna*.
Cowhage Cherry—*Malpighia urens*.
Cowhorn Orchid—*Schomburgkia tibeticus*.
Cowslip—*Primula veris*.
Cowslip, American—*Dodecatheon*.
Cowslip, Blue—*Pulmonaria angustifolia*.
Cowslip, Cape—*Lachenalia tricolor*.
Cowslip, Jerusalem—*Pulmonaria officinalis*.
Cowslip, Virginian—*Mertensia virginica* (*pulmonarioides* s.).
Cowslip-scented Tulip—*Tulipa ilicensis*.
Crab Apple—*Pyrus Malus*.
Crab, Siberian—*Pyrus prunifolia*.
Crab, Sweet-scented—*Pyrus coronaria*.
Crab, Toringo—*Pyrus Toringo*.
Crabwood-tree—*Schefferia frutescens*.
Crack Willow—*Salix fragilis*.
Cracker, Vegetable Fire—*Brodiaea coccinea* (*Brevortia Idamaia* s.).
Crakeberry—*Elytrum nigrum*.
Crakeberry, Portugal—*Corema*.
Cranberry—*Oxycoccus palustris*.
Cranberry, American—*Oxycoccus macrocarpus*.
Cranberry-tree—*Viburnum Opulus*.
Crane's-bill—*Geranium*.
Crape Fern—*Todea*.
Crape Myrtle—*Lagerströmia indica*.
Cream-fruit Tree—*Roupellia grata*.
Cream Nut—*Bertholletia*.
Creeping Charlie—*Lysimachia Nummularia*.
Creeping Jenny—*Lysimachia Nummularia*.
Creeping Sailor—*Saxifraga sarmentosa*.
Creeping Snowberry—*Chiococis* s.
Creeping Water Fern—*Nephrodium Thelypteris*.
Creeping Wintergreen—*Gaultheria procumbens*.
Creosote-plant—*Larrea mexicana*.
Cress, American—*Barbarea præcox*.
Cress, Bastard—*Thlaspi*.
Cress, Belleisle—*Barbarea præcox* (Cress, American).
Cress, Bitter—*Cardamine pratensis*.
Cress, Garden—*Lepidium sativum*.
Cress, Indian—*Tropæolum*.
Cress, Land—*Barbarea præcox*.
Cress, Normandy—*Barbarea præcox*.
Cress, Para—*Spilanthes oleracea* (*S. Arnella* s.).
Cress, Penny—*Thlaspi*.
Cress, Rock—*Arabis, Aubrietia deltoidea purpurea*.
Cress Rocket—*Vella Pseudo-Cytinus*.
Cress, Tooth—*Dentaria bulbifera*.
Cress, Town—*Lepidium sativum*.
Cress, Violet—*Imapsidium* (*Cochlearia* s.) *acule*.
Cress, Wall—*Arabis*.
Cress, Water—*Nasturtium officinale*.
Cress, Winter—*Barbarea*.
Cress, Yellow—*Barbarea præcox* (Cress, American).
Crested Buckler Fern—*Nephrodium cristatum*.
Crested Shield Fern—*Nephrodium cristatum*.
Crested Wood Fern—*Nephrodium cristatum*.
Crimson Clover—*Trifolium incarnatum*.
Crimson Flag—*Schizostylis coccinea*.

Crocus, Cape—*Gethyllis spiralis*.
Crocus, Chilian—*Teocophilea cyano-crocus*.
Crocus, Indian—*Coelogyne* (§ *Pleione*).
Crosnes—*Stachys tuberosa*.
Crossberry—*Ribes Grossularia*.
Cross-leaved Heath—*Erica Tetralix*.
Crosswort—*Crucianella*.
Crow Bells—*Scilla nutans*.
Crowberry—*Empetrum nigrum*.
Crowberry, Broom—*Corema*.
Crowfoot—*Ranunculus*.
Crown Beard—*Verbesina*.
Crown Imperial—*Fritillaria Imperialis*.
Crown of Thorns—*Euphorbia splendens*.
Crown Vetch—*Coronilla*.
Cuba Bast—*Hibiscus elatus*.
Cuban Lily—*Scilla peruviana*.
Cuckold-tree—*Acacia cornigera* s.
Cuckoo Buds—*Ranunculus bulbosus*.
Cuckoo Flower—*Cardamine pratensis*, *Lycnis Flos-cuculi*.
Cuckoo Pint—*Arum maculatum*.
Cucumber—*Cucumis sativus*.
Cucumber, Bitter—*Citrullus Colocynthis*.
Cucumber, Climbing—*Cyclanthera pedata*.
Cucumber, Egyptian—*Cucumis Melo Chate* s.
Cucumber Root—*Medeola virginiana*.
Cucumber Root, Indian—*Medeola virginica*.
Cucumber, Scented—*Cucumis Dudaim* s.
Cucumber, Serpent—*Trichosanthes anguina*.
Cucumber, Squirting—*Echallium Elaterium*.
Cucumber-tree—*Averrhoa Bilimbi*, *Magnolia acuminata*,
M. Fraseri.
Cudweed—*Antennaria (Anaphalis* s) *margaritacea*, *Gnaphalium*.
Culen—*Psoralea glandulosa*.
Cullumbine—*Aquilegia*.
Culverkeys—*Scilla nutans*, &c.
Culver's Physic—*Veronica virginica*.
Cundurango—*Marsdenia Cundurango*.
Cup Flower—*Nierembergia*.
Cup Goldilocks—*Trichomanes radicans*.
Cup-plant—*Silphium perfoliatum*.
Curl Brush Bean—*Pithecolobium*.
Curly Palm—*Howea Belmoreana*.
Currant—*Ribes*.
Currant, Flowering—*Ribes sanguineum*.
Currant, Indian—*Symphoricarpos vulgaris (orbiculatus* s)
Curry-leaf Tree—*Bergera Koenigi*.
Cusha—*Cucurbita mokeha*.
Cushion Fern—*Dicksonia cultata*.
Cushion Pink—*Silene acaulis*.
Custard Apple—*Anona*, *Asimina triloba*.
Cut-finger—*Vinca major*.
Cut-heal—*Valeriana officinalis*.
Cycads—*Cycadacea*.
Cypress—*Cupressus*.
Cypress, African—*Widdringtonia*.
Cypress, Bald or Black—*Taxodium distichum*.
Cypress, Bastard—*Chamaecyparis*.
Cypress Cedar—*Cedrus Libani brevipolia*.
Cypress, Deciduous—*Taxodium*.
Cypress, Dwarf—*Chamaecyparis*.
Cypress, Embossed—*Taxodium (Glyptostrobus* s) *heterophyllum*.
Cypress, Lawson's—*Chamaecyparis Lawsoniana*.
Cypress, Montezuma—*Taxodium mucronatum*.
Cypress Spurge—*Euphorbia Cyparissias*.

Cypress, Strawberry-fruited (of Tasmania)—*Microcoryne tetragona*.
Cypress Vine—*Quamoclit vulgaris*.
Cypress, White—*Taxodium distichum*.
Daffodil—*Narcissus*.
Daffodil, Peruvian—*Ismene (Hymenocallis)*.
Daffodil, Sea—*Pancratium*.
Daffodil, Winter—*Sternbergia lutea*.
Daffadowndilly—*Narcissus Pseudo-Narcissus*.
Dagger-plant—*Yucca gloriosa*.
Daisy—*Bellis*.
Daisy, Blue—*Globularia vulgaris*.
Daisy-bush—*Olearia*.
Daisy, Chusan—*Chrysanthemum sinense*.
Daisy, Dog—*Chrysanthemum Leucanthemum*.
Daisy, Michaelmas—*Aster*.
Daisy, Moon—*Chrysanthemum Leucanthemum*.
Daisy, Oxeye—*Chrysanthemum Leucanthemum*.
Daisy, Paris—*Chrysanthemum frutescens*.
Daisy, Russian—*Pyrethrum Tchihatchewii*.
Daisy Star—*Bellidistram*.
Daisy, Swan River—*Brachycome*.
Dalmatian Cap—*Tolipia Gesneriaca*.
Damask Roses—*Rosa damascena*.
Damask Violet—*Hesperis matronalis*.
Dame's Rocket—*Hesperis matronalis*.
Dame's Violet—*Hesperis matronalis*.
Dammar Pine—*Damanca (Agathis* s)
Dammar, Wax—*Podocarpus neriifolia*.
Damson—*Prunus domestica damascena*.
Damson, Bitter or Mountain—*Sinatruba amara*.
Dancing Girls—*Mantisia saltatoria*.
Dandelion—*Taraxacum*.
Danes' Blood—*Sambucus Ebulus*.
Daneweed—*Sambucus Ebulus*.
Danewort—*Sambucus Ebulus*.
Dangleberry—*Gaylussacia frondosa*.
Darling River Pea—*Swinsonia Greyana*.
Darnel—*Lolium temulentum*.
Date Palm—*Phoenix dactylifera*.
Date Palm, Prickly—*Acanthophoenix*.
Date Palm, Virginian—*Diospyros virginica*.
Date Plum—*Diospyros*.
Date, Wild—*Phoenix sylvestris*.
David's Harp—*Polygonatum multiflorum*.
Day Flower, American—*Cummeolina*.
Day, Flower of a—*Tradescantia virginica (virginiana* s)
Day Lily—*Henrocallis*.
Dead Nettle—*Lamium*.
Dead Men's Bells—*Digitalis purpurea*.
Dead Men's Fingers—*Orechia mascula*.
Deadly Carrot—*Thapsia*.
Deadly Nightshade—*Atropa Belladonna*.
Deadwort—*Sambucus Ebulus*.
Deal, White—*Picea excelsa*.
Deal, Yellow or Red—*Pinus sylvestris*.
Death's Herb—*Atropa Belladonna*.
Decaisne's Yam—*Dioscorea Decaisniana*.
Deciduous Cypress—*Taxodium distichum*.
Deep-out Bladder Fern—*Cyrtopteris fragilis angustata*.
Deer Berry—*Vaccinium stamineum*.
Deer Grass—*Rhexia virginica*.
Deodar Cedar—*Cedrus Deodara*.
Desert Rod—*Bremostachys*.
Devil-in-the-Bush—*Nyctelia*.

- Devil's Apple**—*Mandragora vernalis* (officinarum s).
Devil's Bit—*Scabiosa succisa*.
Devil's Candlestick—*Nepeta Glehuma*.
Devil's Fig—*Argemone mexicana*.
Devil's Flower—*Lychnis distans*.
Devil's Herb—*Plumbago scandens*.
Devil's Leaf—*Urtica urentissima*.
Devil's Spoons—*Potamogeton natans*.
Devil's Trumpet—*Datura Stramonium*.
Devil's Turnip—*Bryonia dioica*.
Devil-tree—*Astonia scholaris*.
Dewberry—*Rubus fruticosus cerasus*.
Dewberry, American—*Rubus canadensis*.
Dew-plant—*Mesembryanthemum glabrum*.
Diamond Flower—*Impatiens* (*Cochlearia* s) *acule*.
Dielytra—*Dicentra*.
Digger's Speedwell—*Veronica perfoliata*.
Dill—*Anethum* (*Prucedantum* s) *graveolens*.
Dittany—*Cunila maritima*, *Dictamnus*.
Dittany, False—*Dictamnus albus*.
Dittany of Amorgos—*Origanum Tournefortii*.
Dittany of Crete—*Origanum Dictamnus*.
Divi-divi—*Cesalpinia variaria*.
Dock—*Rumex*.
Dock, Prairie—*Silphium terribintharum*.
Dockmaokie—*Viburnum acerifolium*.
Dockweed, Tropical—*Pistia Stratiotes*.
Dodder—*Cuscuta*.
Dogbanes—*Apocynaceae*.
Dog Berry—*Cornus sanguinea*.
Dogberry-tree—*Cornus sanguinea*.
Dog Bramble—*Ribes Cynosbati*.
Dog Daisy—*Chrysanthemum Leucanthemum*.
Dog Elder—*Viburnum Opulus*.
Dog Rose—*Rosa canina*.
Dog Rowan-tree—*Viburnum Opulus*.
Dog Violet—*Viola canina*.
Dog's Bane—*Apocynum*.
Dog's Cabbage—*Thelypodium Cynocrambe*.
Dog's Chop—*Mesembryanthemum caninum*.
Dog's Mercury—*Mercurialis perennis*.
Dog's-tooth Violet—*Kythisonium Dens-cantii*.
Dogwood—*Cornus*.
Dogwood, Jamaica—*Piscidia*.
Dogwood, New South Wales—*Jacksonia scoparia*.
Dogwood, Poison—*Rhus venenata*.
Dogwood, Red Osier—*Cornus stolonifera*.
Dogwood, Swamp—*Ptelea tritoliata*.
Dogwood, Victorian—*Prostanthera lasiantha*.
Dolphin Flower—*Delphinium consolida*.
Doom Palm—*Hypbaene*.
Double Balsam Spruce Fir—*Abies Frazeri*.
Double Cocoanut—*Lodoicea*.
Double Tongue—*Ruscus Hypophyllum*.
Douglas Fir—*Pseudotsuga Douglasii*.
Doom Palm—*Hypbaene*.
Dove Flower—*Peristeria elata*.
Dove-plant—*Aquilegia*.
Dovedale Moss—*Saxifraga hypnoides*.
Downton Elm—*Ulmus glabra pendula*.
Dragon—*Dracontium*, *Arum Draconculus* (*Draconculus vulgaris* s).
Dragon, Green—*Arum* (*Arisaema* s) *Dracontium*.
Dragon Gum-tree—*Pterocarpus Draco*.
Dragon's Blood—*Calamus Draco*, *Dracontia Draco*, *D. cinnabarina*, *Pterocarpus Draco*.
Dragon's-eye—*Nephetium Longanum*.
Dragon's Head—*Dracocephalum*.
Dragon's Head, False—*Phytolagria*.
Dragon's-mouth—*Epidendrum macrochilum*.
Dragon-tree—*Dracontia Draco*.
Drias-plant—*Thapsia gargarica*.
Drooping Tulip—*Fritillaria Melegria*.
Drooping Urn Flower—*Urecolina pendula*.
Dropwort—*Spiraea Filipendula*.
Dropwort, Water—*Eleanthe*.
Duckmeat or Duckweed—*Lemna*.
Duck's-foot—*Podophyllum*.
Duloamara—*Solanum Dulcamara*.
Dumb Cane—*Dieffenbachia Seguine*.
Durian—*Durio zibethium*.
Dusty Miller—*Primula Auricula* (*Auricula*), *Lychnis coronaria*.
Dutchman's Breeches—*Dicentra cucullaria*.
Dutchman's Pipe—*Aristolochia Sipho*.
Dwale—*Atrypa Belladonna*.
Dwarf Cypress—*Chamaecyparis*.
Dwarf Elder—*Sambucus Ebulus*.
Dwarf Fan Palm—*Chamerope humilis*.
Dwarf Orchis—*Orchis ustulata*.
Dwarf Palmetto—*Sabal Adansonii*.
Dwarf Raspberry—*Rubus triflorus*.
Dyer's Greenweed—*Genista tinctoria*.
Dyer's Oak—*Quercus tinctoria* (*velutina* s).
Dyer's Rocket, Weed, or Yellow-wood—*Reseda luteola*.
Dyer's Wood—*Isatis tinctoria*, *Reseda luteola*.
Eagle Fern—*Pteris aquilina*.
Eagle Wood—*Aquilaria* s.
Early Orchis—*Orchis mascula*.
Earth Nut—*Arachis hypogaea*.
Earth Pea—*Arachis hypogaea*, *Lathyrus amphicarpon*.
Earth Star—*Geaster*.
East Indian Hawthorn—*Rhaphiolepis* (*Raphiolepis* s).
East Indian Ipecacuanha—*Tylophora asthmatica*.
East Indian Moneywort—*Taccaricia nummularia*.
East Indian Rose Bay—*Tabernaemontana coronaria*.
East Indian Wine Palm—*Phoenix sylvestris*.
Easter Lily—*Lilium longiflorum ezimium*.
Ebony—*Diospyros Ebenus*.
Ebony, Jamaica—*Brya Ebenus*, *Pyrus Ebenus*.
Ebony, Mountain—*Bauhinia*.
Edelweiss—*Leontopodium alpinum*.
Edible Fern (of Tasmania)—*Pteris aquilina esculenta*.
Eel Fern—*Acrostichum Herminieri*.
Eel Grass—*Vallisneria spiralis*.
Egg-bearing Gourd—*Cucurbita Pepo ovifera* (*Vegetable Marrow*).
Egg-plant—*Solanum Melongena orizegum* (*Aubergine*).
Eggs and Bacon—*Linaria vulgaris*, *Narcissus*.
Eglantine—*Lonicera Periclymenum*, *Rosa Eglanteria*, *Rosa rubiginosa*, &c.
Egyptian Bean of Pythagoras—*Nelumbium speciosum*.
Egyptian Cucumber—*Cucumis Melo Chate* s.
Egyptian Lotus—*Nymphaea Lotus*.
Egyptian Paper Reed—*Papyrus antiquorum* (*Cyperus Papyrus* s).
Egyptian Rose—*Scabiosa arvensis*.
Egyptian Sacred Bean—*Nymphaea Lotus*.
Egyptian Thorn—*Acacia vera*.
Egyptian Water-lily—*Nymphaea Lotus*.
Elder—*Sambucus*.
Elder, Box—*Neguudu* (*Acer* s).

Elder, Pepper—*Peperomia*, *Piper*.
Elder, Poison—*Rhus venenata*.
Elder, Rose or Water—*Viburnum Opulus*.
Elecampane—*Inula Heleniun*.
Elm, Gum—*Amyris Plumieri*.
Elephant Hedge Bean-tree—*Scotia latifolia*.
Elephant's Apple—*Feronia Elephantum*.
Elephant's-ear—*Begonia Rex*.
Elephant's-ear Fern—*Acrostichum crinitum*.
Elephant's-foot—*Testudinaria Elephantipes*.
Elk Nut—*Pyrolaria oleifera* (gnibera).
Elk's-horn Fern—*Platynerium*.
Elm—*Ulmus*.
Elm, Spanish—*Cordia Gerascanthus*.
Elm, Water—*Zelkova s.*
Elm, Yoke—*Carpinus Betulus*.
Embossed Cypress—*Taxodium (Glyptostrobus s) heterophyllum*.
Enceno Oak—*Quercus agrifolia*.
Enchanter's Nightshade—*Circcea*.
Endive—*Cichorium Endivia*.
Endive, Wild—*Cichorium Intybus* (Chicory).
English Iris—*Iris xiphoides*.
English Lent Lily—*Narcissus Pseudo-Narcissus*.
English Maidenhair—*Asplenium Trichomanes*.
English Mercury—*Cheopodium Bontus-Henricus*.
English Polypody—*Polypodium vulgare*.
English Yew—*Taxus baccata*.
Equestrian Star—*Hippocastanum*.
Eryngo—*Eryngium*.
Eschalot—*Allium ascalonicum* (Shallot).
Esparto Grass—*Stipa tenacissima*.
European Lotus-tree—*Diospyros Lotus*.
European Palm—*Chameroxys humilis*.
Evening Campion—*Lychnis alba*.
Evening Flower—*Hesperantha*.
Evening Primrose—*Oenothera*.
Ever-blowing Cherry—*Cerasus (Prunus) sempiflorens*.
Evergreen Beech—*Fagus betuloides*.
Evergreen Candytuft—*Iberis sempervirens*.
Evergreen Laburnum—*Piptanthe nepalensis*.
Evergreen Oak—*Quercus Ilex*.
Evergreen Roses—*Rosa sempervirens*.
Evergreen Thorn—*Crataegus Pycnantha*.
Evergreen Wood Fern—*Nephrodium marginale*.
Everlasting Flowers—*Acerolinium (Helipterum s), Ammobium, Anaphalis s, Antennaria, Aphaelix, Gnaphalium, Gomphrena, Helichrysum, Leontopodium, Rhodanthe, Waitzia, Xeranthemum, &c.*
Everlasting Pea—*Lathyrus sylvestris platyphyllus*.
Eve's Cushion—*Saxifraga hypnoides*.
Exeter Elm—*Ulmus montana fastigiata*.
Exeter Oak—*Quercus Cerris Lucombeana*.
Exile Oil-plant—*Thevetia nerifolia*.
Eyebright—*Euphrasia*.

Fair Maids of February—*Galanthus nivalis*.
Fair Maids of France—*Ranunculus acutifolius, Saxifraga granulata*.
Fair Maids of Kent—*Ranunculus acutifolius*.
Fairy Flower—*Narcissus Tazetta* var.
Fairy Lily—*Cooperia pedunculata, Zephyranthes rosea*.
Fairy Primrose—*Primula minima*.
Fairy Rings—*Agaricus campestris, A. gambosus, Marasmius oreades, &c.*
Fairy Rose—*Rosa indica minima*.

Fairy Wallflower—*Eryngium pinnatum*.
Fairy Water-lily—*Linnæanthemum trachyspermum s.*
Falkland Islands Shield Fern—*Aspidium mohrioides*.
False—See also **Bastard**.
False Acacia—*Robinia Pseudacacia*.
False Asphodel—*Tofieldia*.
False Bittersweet—*Celastrus scandens*.
False Box—*Schafferia pubescens*.
False Bugbane—*Trautvetteria palmata*.
False Calumba—*Coccoloba fenestratum*.
False Cherry—*Cerasus (Prunus) Pseudo-cerasus*.
False Cork Oak—*Quercus Pseudo-saber*.
False Dittany—*Dictamnus albus*.
False Dragon's Head—*Phytostegia*.
False Heath, American—*Hudsonia circoides*.
False Kellebore—*Veratrum*.
False Indigo—*Anorpha*.
False Larch—*Pseudolarix*.
False Mitrewort—*Tiarella cordifolia*.
False Rhubarb—*Thalictrum flavum*.
False Sandalwood—*Ximenia americana*.
False Savin—*Juniperus pseudo-Sabina s.*
False Solomon's Seal—*Smilacina*.
False Spikenard—*Smilacina racemosa*.
False Violet—*Dalibarda repens (Rubus Dalibarda)*.
Fame Flower—*Talinum teretifolium*.
Fan Palm—*Chameroxys, Corypha, Sabal Blackburnianum*.
Fan Palm Fern—*Actinopteris*.
Fancy Pansy—*Viola tricolor* vars.
Farkleberry—*Vaccinium arboreum*.
Fat Pork—*Cusia flava*.
Fayberry or Feaberry—*Ribes Grossularia*.
Feather Fern—*Todea superba*.
Feather Grass—*Stipa pennata*.
Feather Hyacinth—*Muscari comosum monstratum*.
Feather Palm, Australian—*Ptychosperma (Archont phenia s)*.
Feathered Columbine—*Thalictrum aquilegifolium*.
Feathered Grape Hyacinth—*Muscari comosum monstratum*.
Featherfew—*Pyrethrum Parthenium*.
Featherfoil—*Hottonia*.
Febrituge Plum—*Prunus Comomilia s.*
Feelerwort—*Catactum*.
Felonwort or Felonwood—*Solanum Dulcamara*.
Felwort—*Swertia*.
Female Buckler Fern—*Nephrodium Thelypteris*.
Female Fern—*Asplenium Filix-farina*.
Female Oak—*Quercus pedunculata*.
Fenberry—*Oxycoceus palustris*.
Fen Rue—*Thalictrum flavum*.
Fennel—*Foeniculum vulgare*.
Fennel Flower—*Nigella*.
Fennel, Giant—*Ferula*.
Fenugreek—*Trigonella Foenum-Graecum*.
Ferns—*Filices*.
Ferns, Filmy—*Hymenophyllum, Todea, Trichomanes*.
Fern-leaved Sumach—*Rhus glabra luciniata*.
Fern Palm, Swan River—*Macrozamia*.
Fescue Grass—*Festuca*.
Fever-bush—*Lindera odorifera*.
Fever-plant, Chinese—*Pæderia fortida*.
Fever-tree—*Pinckneya pubens*.
Fever Twig—*Celastrus scandens*.
Feverfew—*Pyrethrum (Chrysanthemum s) Parthenium*.
Feverfew, Bastard—*Parthenium Hysterophorus*.
Feverwort—*Triosteum*.

- Fiddle Wood** *Citharexylum*.
Fig—*Ficus Carica*.
Fig, Adam's *Musa paradisiaca*.
Fig, Barbary *Opuntia vulgaris*.
Fig, Cochineal *Opuntia cochinealifera*.
Fig, Devil's *Argemone mexicana*.
Fig, Hottentot *Mesembryanthemum edule*.
Fig, Indian *Opuntia*.
Fig Marigold *Mesembryanthemum*.
Fig, Moreton Bay *Ficus macrophylla*.
Fig, Pharaoh's *Sycomorus antiquorum* (*Ficus Sycomorus s.*).
Fig-tree *Ficus*.
Fig-tree, Sycamore—*Sycomorus antiquorum* (*Ficus Sycomorus s.*).
Figwort *Physalis capensis*, *Scrophularia*.
Filbert—*Corylus*.
Filbert, West Indian *Eutada scandens*.
Fillet Fern *Tenitis*.
Filmy Ferns—*Hymenophyllum*, *Todea*, *Trichomanes*.
Fine-cut Stone Fern *Cyrtopteris fragilis*.
Finger Fern *Asplenium Ceterach*.
Finger Flower *Digitalis purpurea*.
Fingers and Thumbs *Latus cuneolatus*.
Fir Strictly, this should be used only of *Abies*, but popularly is applied to *Cunninghamia*, *Dacrydium*, *Ephedra*, *Larix*, *Picea*, *Pinus*, *Prumnopitys*, &c.
Fir Club Moss *Lycopodium Selago*.
Fire Cracker, Floral or Vegetable *Brodiaea coccinea* (*Brevortia Ida-maia s.*).
Fire Pink *Silene virginica*.
Fire Thorn *Crataegus Pyracantha*.
Fire-tree *Nyctia*, *Stenocarpus sinuatus*.
Fire-weed *Epilobium angustifolium*.
First of May *Sarriaga granulata*.
Fish-bone Thistle *Chrysopsis Casabour*.
Fish Poison Tree *Piscidia*.
Five Fingers *Potentilla*, *Synonium auritum*.
Flag *Iris germanica*.
Flag, Cat-tail *Typha*.
Flag, Corn *Gladiolus*.
Flag, Crimson *Schizanthus coccinea*.
Flag, Sweet *Acorus Calamus*.
Flag, Water *Iris Pseudocorus*.
Flag, Yellow *Iris Pseudocorus*.
Flame Flower *Kaiphafia aloides*.
Flame-flowered Nasturtium—*Tropaeolum speciosum*.
Flame Lily *Pyrolirion* (*Zephyranthes*).
Flame Nettle *Coleus Blumei*.
Flamingo Flower *Anthurium Scherzerianum*.
Flannel Plant—*Verbascum Thapsus*.
Fiat Palm *Howea Forsteriana*.
Flat Pea—*Platylobium*.
Flax—*Linum*.
Flax Lily—*Phormium*.
Flax, New Zealand—*Phormium tenax*.
Flax, Toad—*Linaria Cymbalaria*.
Flaxworts *Linum*.
Fleabane—*Conyza*.
Fleabane, African *Tarchoanthus*.
Fleabane, Marsh—*Pluchea*.
Floating Heart—*Limnanthemum*.
Floating Stag's-horn Fern—*Ceratopteris*.
Flora's Paint-brush—*Emilia flammea*.
Floral Fire Cracker—*Brodiaea coccinea* (*Brevortia Ida-maia s.*).
Florence Court Yew—*Taxus baccata fastigiata*.
Florida Blechnum—*Blechnum serrulatum*.
Florida Ribbon Fern—*Vittaria lineata*.
Florida Swamp Lily—*Crisium americanum*.
Florida Wood Fern—*Nephrodium floridanum*.
Flower-de-Luce *Iris*.
Flower Fence—*Poinciana*.
Flower Fence, Peacock—*Adenantha pavonia*.
Flower Gentle—*Anthrathus*.
Flower of a Day—*Tradescantia virginica* (*virginiana s.*).
Flower of an Hour—*Hibiscus Triumum*.
Flower of Jove *Agrostemma* (*Lychnis s.*) *Flos-Jovis*.
Flower of the Gods—*Narcissus Tazetta* var.
Flower of the Holy Spirit—*Peristeria*.
Flower of the West Wind—*Zephyranthes*.
Flower of Tigris *Tigridia Parvina*.
Flowering Ash *Fraxinus Ornus*.
Flowering Box *Vaccinium Vitis-Idea*.
Flowering Currant—*Ribes sanguineum*.
Flowering Dogwood—*Cornus florida*.
Flowering Fern *Helminthostachys*, *Llavea*, *Osmunda*.
Flowering Maple—*Abitilon*.
Flowering Rush—*Butomus umbellatus*.
Fluellen *Veronica officinalis*.
Fly Agaric *Agaricus muscarius*.
Fly Honeysuckle—*Halleria*, *Lonicera Xylostemum*.
Fly Orchis—*Ophrys muscifera*.
Fly-trap, Venus—*Dionaea muscipula*.
Flywort *Myanthes*.
Foam Flower—*Tiarola cordifolia*.
Fog Fruit *Lippia nodiflora*.
Forbidden Fruit—*Citrus decumana*.
Ford's Elm—*Ulmus montana fastigiata*.
Foreign Violet—*Schweiggeria*.
Forget-me-not—*Myosotis palustris*.
Forget-me-not, Cape—*Anchusa capensis*.
Forked Maidenhair—*Asplenium septentrionale*.
Forked Spinewort *Asplenium septentrionale*.
Fountain-plant—*Amarantus salicifolius*.
Fountain-tree—*Cotrus Doodaea*.
Four-o'clock—*Mirabilis Jalapa*.
Four Seasons, Rose of—*Rosa damascena belgica s.*
Foxbane—*Aconitum vulparia*.
Fox-brush Aerides—*Aerides Fieldingii*.
Foxglove—*Digitalis*.
Foxglove, Ladies' *Verbascum Thapsus*.
Foxglove, Mexican—*Tetranema mexicana*.
Fox Grape *Vitis vulpina*.
Foxtail Pine—*Pinus Balfouriana*.
Fragrant Habenaria—*Habenaria esopsea s.*
Fragrant Wood Fern *Nephrodium fragrans*.
Frangipani-plant—*Plumeria tricolor*.
Frankincense Fern—*Mohria*.
Frankincense Juniper—*Juniperus thurifera*.
Frankincense Pine—*Pinus Teda s.*
Fraxinella—*Dietamnus albus*.
French Aster—*Callistephus chinensis*.
French Bean—*Phaseolus vulgaris*.
French Fern—*Asplenium nigrum*.
French Honeysuckle—*Hedysarum*.
French Marigold—*Tagetes patula*.
French Mulberry—*Calliicarpa americana*.
French Roses—*Rosa gallica*.
French Willow—*Epilobium angustifolium*, *Salix triandra*.
Friar's Cowl—*Arisarum vulgare*.
Fringe Flower—*Schizanthus*.
Fringe Lily—*Thysanotus*.

Fringe-tree—*Chionanthus*.
Fringed Violet—*Thysanotus*.
Fringed Water Lilly—*Limnæanthemum nymphaeoides*.
Fritillary—*Fritillaria*.
Frog-bit—*Hydrocharis Morsus-Ranae*.
Frog Orchis—*Habenaria viridis*.
Frost Grape—*Vitis cordifolia*.
Frost-weed—*Helianthemum canadense*.
Fuchsia, Australian—*Correa*.
Fuchsia, Californian—*Zauschneria californica*.
Fuchsia-flowered Gooseberry—*Ribes speciosum*.
Fulham Yew—*Taxus baccata erecta*.
Fuller's Herb—*Saponaria*.
Fuller's Teasel—*Dipsacus Fullonum*.
Fumitory—*Fumaria*.
Fumitory, Climbing—*Adlumia cirrhosa*.
Funereal Cypress—*Cupressus funebris*.
Furze—*Ulex europæus*.
Furze, Needle—*Genista anglica*.
Fustic-tree—*Chlorophora tinctoria s.*

Galangale—*Kaempferia Galanga*.
Galapoo-tree—*Sciadophyllum Brownii*.
Gale, Sweet—*Myrica Gale*.
Galingale—*Cyperus longus*.
Gamass—*Camassia esculenta*.
Gambier Catechu—*Uncaria Gambier*.
Gamboge, American—*Vismia guianensis*.
Ganymedes—*Narcissus triandrus*.
Garden Balsam—*Dianthera pectoralis s.*
Gardener's Garters—*Arundo Donax variegata*, *Phalaris arundinacea variegata*.
Garget—*Phytolacca decandra*.
Garland Flower—*Daphne Cneorum*.
Garland Flower, Indian—*Hedychium*.
Garland Thorn—*Paliurus aculeatus (Spina-Christi s.)*.
Garlic—*Allium sativum*.
Garlic, Broad-leaved—*Allium ursinum*.
Garlic, Honey—*Nectaroscordum*.
Garlic Pear—*Crotava*.
Garlic, Spanish—*Allium Scarodoprastum (Rocambole)*.
Garnet Berry—*Ribes rubrum*.
Gas-plant—*Dietamnus*.
Gaten or Gater Tree—*Cornus sanguinea*.
Gean—*Cerasus (Prunus) Avium*.
Genip-tree—*Genipa*.
Genipap Fruit—*Genipa americana*.
Gentian—*Gentiana*.
Gentian, Horse—*Triosteum*.
Gentianella—*Gentiana acaulis*.
Geranium (of gardens)—*Pelargonium*.
German Aster—*Callistephus chinensis*.
German Catchfly—*Lycobis Viscaria*.
German Iris—*Iris germanica*.
German Ivy—*Senecio mikanioides*.
Germander—*Teucrium*.
Germander, Poly—*Teucrium Polium s.*
Gherkin—*Cucumis sativa var.*
Giant Fennel—*Ferula*.
Giant Hyssop—*Lophanthus*.
Gibraltar Mint—*Mentha Pulegium gibraltaria*.
Gilead, Balm of—*Abies balsamea*, *Cedronella triphylla*, *Populus balsamifera*.
Gilliflower—*Cheiranthus*, *Dianthus Caryophyllus*, *Matthiola*.
Gingelly Oil Plant—*Sesamum indicum*.
Ginger—*Zingiber officinale*.

Ginger Grass—*Andropogon Schœnanthus*.
Ginger, Wild—*Asarum europæum*.
Gingerbread Palm—*Hyphæne*.
Gingerbread Plum—*Parinarium macrophyllum*.
Gingerworts—*Zingiberæ (Scitamineæ)*.
Gingille Oil Plant—*Sesamum indicum*.
Ginseng—*Pinax*.
Gipsies' Rose—*Scabiosa arvensis*.
Gladdon—*Iris fetidissima*.
Gladen—*Iris fetidissima*.
Glader—*Iris fetidissima*.
Gladiole, Water—*Butomus umbellatus*.
Gladwyn, Stinking—*Iris fetidissima*.
Gland Bell-flower—*Adenophora*.
Glasswort—*Salicornia*.
Glastonbury Thorn—*Crataegus Oxyacantha præcox*.
Globe Amaranth—*Gomphrena globosa*.
Globe Artichoke—*Cynara (Cardunculus) Scolymus*.
Globe Flower—*Gomphrena globosa*, *Trillium*.
Globe Mallow—*Sphaeralcea*.
Globe Ranunculus—*Trillium*.
Globe Thistle—*Echinops*.
Glory, Morning—*Lipoma*.
Glory of the Snow—*Chionodoxa Lucilia*.
Glory Pea—*Clianthus*.
Glory-tree—*Clerodendron*.
Glory Vine—*Clianthus*.
Goa, Cedar of—*Cupressus lusitanica*.
Goatbust—*Castela Nicholsoni*.
Goat-scented St. John's Wort—*Hypericum hircinum*.
Goat Willow—*Salix Caprea*.
Goat's-beard—*Spiræa Acucens*, *Tragopogon*.
Goat's-foot—*Oxalis caprina (Pesc-caprae s.)*.
Goat's Rue—*Galega*.
Goat's Thorn, Gategat—*Astragalus Tragacantha*.
God's Eye—*Veronica Chamædrys*.
Gods, Flower of the—*Narcissus Tazetta var.*
Gold Cup—*Ranunculus bulbosus*.
Gold Fern—*Gymnogramme*.
Gold Knots—*Ranunculus acris*.
Gold Thread—*Coptis trifolia*.
Golden Apple—*Egle*, *Spondias litsea*.
Golden Ball—*Trillium europæum*.
Golden Bamboo—*Bambusa (Phyllostachys s.) aurea*.
Golden Chain—*Laburnum vulgare (anagyroides s.)*.
Golden Chickweed—*Stellaria graminea aurea*.
Golden Club—*Oreontium*.
Golden Drop—*Opusma*.
Golden Elder—*Sambucus nigra aurea*.
Golden Feather—*Pyrethrum*.
Golden Hair—*Chrysocoma Coma-aurea*.
Golden Honeysuckle, Japanese—*Lonicera (japonica s.) flexuosa aureo-reticulata*.
Golden Knob—*Caltha palustris*.
Golden Larch—*Pseudolarix*.
Golden Maidenhair—*Notholaena*, *Polypodium vulgare*.
Golden Nasturtium—*Tropæolum s.*
Golden Oak—*Quercus alnifolia s.*
Golden Polypody—*Polypodium aureum*.
Golden-rayed Lily of Japan—*Lilium auratum*.
Golden Rod—*Solidago*.
Golden Saxifrage—*Chrysosplenium*.
Golden Spider Lily—*Lycoris*.
Golden Star Tulip—*Calochortus pulchellus*.
Golden Thistle—*Protea Scolymus*, *Scolymus hispanicus*.
Golden Trefoil—*Anemone Hepatica*.

- Golden Vine**—*Stigmaphyllon ciliatum*.
Golden Willow—*Salix alba vitellina*.
Golden Yew—*Taxus baccata aurea*.
Goides, White—*Chrysanthemum leucanthemum*.
Goldilocks or Goldylocks—*Aster Linosyris* s. *Chrysocoma*,
Helichrysum Stoechas, *Trichomanes radicans*.
Gombo—*Libiscus esculentus* s.
Goober—*Arachis hypogæa*.
Good King Henry—*Chenopodium Bonus-Henricus*.
Good Luck Lilly—*Narcissus tazetta* var.
Gools—*Calendula officinalis*.
Goose and Goslings *Orchis Morio*.
Gooseberry—*Ribes*.
Gooseberry, American or Barbados—*Pereskia aculeata*.
Gooseberry, Cape—*Physalis peruviana*.
Gooseberry, Coromandel *Averrhoa Carambola*.
Gooseberry, Hill—*Rhodomyrtus tomentosa*.
Goosefoot—*Chenopodium*.
Goose-tongue *Achillea Ptarmica*.
Gorse—*Ulex europæus*.
Go-to-Bed-at-Noon—*Trigonogon pratense*.
Goura Nut—*Cola*.
Gourd—*Cucurbitaceæ*.
Gourd, Bottle—*Lagenaria*.
Gourd, Calabash—*Lagenaria*.
Gourd, Common—*Cucurbita*.
Gourd, Egg-bearing—*Cucurbita Pepo orifera* (Vegetable Marrow).
Gourd, Snake—*Trichosanthes anguina*.
Gourd, Sour—*Adansonia digitata*.
Gourd, Viper's—*Trichosanthes anguina*.
Gourd, Warded—*Cucurbita Pepo verrucosa*.
Gouty Geranium—*Pelargonium gibbosum*.
Gowan *Helleborus perennis*, *Calendula*, *Caltha*, *Chrysanthemum segetum*.
Grains of Paradise—*Annonum Granum-Paradisi*, *A. Melanocarpa*.
Gram or Chick Pea—*Cicer arietinum* s.
Granadilla—*Passiflora*.
Granadilla Vine—*Passiflora quadrangularis*.
Grape, Bear's—*Arctostaphylos Uva-ursi*.
Grape, Chicken—*Vitis cordifolia*.
Grape-flower Vine—*Wistaria*.
Grape, Fox—*Vitis vulpina*.
Grape, Frost—*Vitis cordifolia*.
Grape Fruit—*Citrus decumana*.
Grape Hyacinth—*Muscari*.
Grape, Isabella—*Vitis Labrusca*.
Grape Pear—*Amelanchier canadensis*.
Grape, Plum—*Vitis Labrusca*.
Grape, Seaside—*Coccoloba*.
Grape Vine—*Vitis vinifera*.
Grape, Winter—*Vitis cordifolia*.
Grapple-plant—*Harpagophytum procumbens*.
Grasses—*Gramineæ*.
Grass Gum-tree—*Xanthorrhœa*.
Grass of Parnassus—*Parnassia palustris*.
Grass-tree—*Xanthorrhœa*.
Grass Wreck—*Zostera*.
Gray Gum—*Eucalyptus resinifera* s.
Gray Pine—*Pinus Banksiana* s.
Gray Plum—*Parinariæ excoluum*.
Greasewood—*Sarcobatus* s.
Great Apple Rose—*Rosa pomifera* s.
Great Burnet—*Poterium officinale*.
Great Laurel, American—*Rhododendron maximum*.
Great Oxeye—*Pyrethrum uliginosum*.
Great Reed—*Arundo Donax*, *Phragmites* s.
Great Reed-Mace—*Typha latifolia*.
Great Sea Lavender—*Statice latifolia*.
Great Spearwort—*Ranunculus Lingua*.
Grecian Holly—*Ilex Aquifolium contata*.
Greek Valerian—*Polemonium caeruleum*.
Greenbriar—*Smilax*.
Green Dragon—*Arum (Arisæma)* s. *Dracontium*.
Green Man Orchis—*Aceras anthropophora*.
Green Mint—*Mentha viridis*.
Green Pine—*Fragaria collina*.
Green Spleenwort—*Asplenium viride*.
Green-winged Orchis—*Orchis Morio*.
Greengage—*Prunus (Plum)*.
Greenheart (of British Guiana)—*Nectandra Rodiei*.
Greenweed—*Genista pilosa*, *G. tinctoria*.
Grey Gum—*Eucalyptus resinifera* s.
Grey Pine—*Pinus Banksiana* s.
Grey Plum—*Parinariæ excoluum*.
Grey Poplar—*Populus canadensis* s.
Gromwell—*Lithospermum*.
Ground Cherry—*Cerasus (Prunus) Chamæcerasus*, *Physalis*.
Ground Cistus—*Rhodothamnus Chamæcistus*.
Ground Hele—*Veronica officinalis*.
Ground Hemlock—*Taxus canadensis*.
Ground Ivy—*Nepeta Glechoma*.
Ground Laurel—*Epigæa repens*.
Ground Nut—*Apios tuberosa*, *Arachis hypogæa*, *Voandzeia subterranea*.
Ground Pink—*Phlox subulata*.
Ground Rattan Cane—*Rhapis stabelliformis*.
Groundsel—*Senecio*.
Groundsel-tree—*Baccharis halimifolia*.
Guava—*Psidium*.
Guava, Indian Hill—*Rhodomyrtus tomentosa*.
Guelder Rose—*Viburnum Opulus*.
Guernsey Lilly—*Nerine sarniensis*.
Guinea-hen Flower—*Fritillaria Meleagris*.
Guinea-hen Weed—*Petiveria alliacea*.
Guinea Peach—*Sarcocarpus*.
Guinea Plum—*Parinariæ excoluum*.
Guinea Wheat—*Zea Mays*.
Gum Ammoniac—*Dorema Ammoniacum*.
Gum Arabic—*Acacia arabica*, *A. vera*.
Gum, Blue—*Eucalyptus globulus*.
Gum, Botany Bay—*Xanthorrhœa arborea*.
Gum, Cape—*Acacia Karroo* or *A. capensis*.
Gum Cistus—*Cistus*.
Gum Elemi—*Amyris Plumieri*.
Gum, Grey—*Eucalyptus resinifera* s.
Gum Guaiacum—*Guaiacum officinale*.
Gum, Manna—*Eucalyptus viminalis* s.
Gum, Red—*Eucalyptus resinifera* s.
Gum Sandarach—*Callitris quadrivalvis (Tetraclinis articulata)* s.
Gum Senegal—*Acacia Senegal*.
Gum, Sweet—*Liquidambar styraciflua*.
Gum Tragacanth—*Astragalus Tragacantha*.
Gum, White—*Eucalyptus leucocylon* s. *E. viminalis* s.
Gum-tree—*Acacia*, *Eucalyptus*.
Gum-tree, Cape—*Widdringtonia juniperoides*.
Gum-tree, Dragon—*Pterocarpus Draco*.
Gum-tree, Grass—*Xanthorrhœa*.
Gum-tree, Hog—*Moronobea coccinea*.
Gum-tree, Water—*Tristania verticillata*.

Gutta Gum Tree—*Vimba guianensis*.
Gutta-percha Tree—*Isanandra (Dichapix s.) Gutta*.
Hackberry, American—*Celtis crassifolia*.
Hackmatack—*Larix americana*.
Hagberry—*Cercnus (Prunus) Padus*.
Hag Taper—*Verbascum Thapsus*.
Hair Grass—*Aira, Deschampsia s.*
Hair Orchid—*Trichosma swavis*.
Hair-Trigger Flower—*Stylidium graminifolium*.
Hair, Vegetable—*Tillandsia usneoides*.
Hairbell—See **Harebell**.
Halberd Weed—*Neurolepa*.
Hamburgh Parsley—*Carum Petroselinum var. (Parsley)*.
Hand-plant—*Cheirostemon*.
Hard Fern—*Lomaria Spicant*.
Hard Shield Fern—*Aspidium aculeatum*.
Hardhack—*Spiraea tomentosa*.
Harebell—*Campanula rotundifolia, Scilla nutans (festalis s.)*.
Harebell, African—*Roellia ciliata*.
Harebell, Australian—*Wahlenbergia gracilis*.
Hare's-beard—*Verbascum Thapsus*.
Hare's-ear—*Bupleurum*.
Hare's-ears, Bastard—*Phyllis Nobla*.
Hare's-foot—*Ochroma Lagopus*.
Hare's-foot Fern—*Davallia canariensis*.
Hare's-tail—*Lagurus ovatus*.
Harioot Bean—*Phaseolus*.
Harlequin Flower—*Sparaxis grandiflora*.
Hart's Elder—*Sambucus racemosa*.
Hart's-tongue—*Scolopendrium*.
Hartwort—*Tordylium*.
Harvest Bells—*Gentiana Pneumonanthe*.
Hassagay-tree—*Curtisia jaginea*.
Hatchet Cactus—*Pelecypora*.
Hatchet Vetch—*Securigera Coronilla*.
Hautbois or Hautboy—*Fragaria elatior*.
Haw—*Crataegus Oxyacantha*.
Haw, American Black—*Viburnum prunifolium*.
Hawkbit—*Leontodon*.
Hawkbeard—*Crepis*.
Hawkweed—*Hieracium*.
Hawkweed, Yellow Garden—*Tolpis barbata*.
Hawthorn—*Crataegus*.
Hawthorn, Chinese—*Photinia serrulata*.
Hawthorn, East Indian—*Rhaphiolepis (Raphiolepis s.)*.
Hawthorn, Indian—*Rhaphiolepis*.
Hawthorn, Japanese—*Raphiolepis ovata s.*
Hawthorn, Winter—*Aponogeton distachyon*.
Haymaids—*Nepeta Glechoma*.
Hay-scented Buckler Fern—*Nephrodium ovatum*.
Hazel—*Corylus Avellana*.
Hazel, Victorian—*Pomaderris apetala*.
Hazel, Witch—*Hamanelis*.
Headache-tree—*Prunna integrifolia*.
Heart-flowered Orchis—*Serapias cordigera*.
Heart Pea or Heartseed—*Cardiospermum Halicacabum s.*
Heartsease—*Viola tricolor*.
Heath—*Erica*.
Heath, American False—*Hudsonia ericoides*.
Heath Honeysuckle—*Banksia marginata*.
Heath, Irish—*Daboecia polifolia*.
Heath, Prickly—*Pernettya mucronata*.
Heath, St. Dabeoc's—*Daboecia polifolia*.
Heath, Sea—*Frankenia*.
Heather—*Calluna vulgaris*.

Heathworts—*Ericaceae*.
Heaven, Balm of—*Umbellularia californica*.
Heaven, Rose of—*Agrostemma (Lepomis s.) Celi-rosa*.
Heaven, Tree of—*Ailanthus*.
Hedgeberry—*Cercnus (Prunus) Arium*.
Hedge Hyssop—*Gratiola, Scutellaria minor*.
Hedge Mustard—*Erygium, Siumbrium*.
Hedge Nettle—*Stachys*.
Hedgehog Cactus—*Echinocactus*.
Hedgehog Holly—*Ilex Aquifolium ferax*.
Hedgehog Thistle—*Echinocactus*.
Hele, Ground—*Veronica officinalis*.
Heliotrope—*Heliotropium*.
Heliotrope, Summer—*Tournefortia heliotropoides (Heliotropium anchlussifolium s.)*.
Heliotrope, Winter—*Petasites fragrans*.
Hellebore—*Alleborus*.
Hellebore, False—*Veratrum*.
Hellebore, White—*Veratrum*.
Helleborine—*Epipactis, Serapias*.
Helmet Flower—*Aconitum, Coryanthes, Scutellaria*.
Hemlock—*Conium*.
Hemlock Fir—*Tsuga*.
Hemlock, Ground—*Taxus canadensis*.
Hemlock Spleenwort—*Asplenium cicutarium*.
Hemlock Spruce—*Tsuga canadensis*.
Hemp—*Cannabis sativa*.
Hemp, African—*Sparmannia africana*.
Hemp Agrimony—*Eupatorium cannabinum*.
Hemp, Bowstring—*Sansiveria*.
Hemp, Manila—*Musa textilis s.*
Hemp-tree—*Vitex Agnus-castus*.
Hempweed, Climbing—*Mikania scandens*.
Hen-and-Chickens—*Bellis perennis var.*
Hen-and-Chickens Houseleek—*Sempervivum (globiferum s.) soboliferum*.
Hen-and-Chickens Marigold—*Calendula officinalis prolifera*.
Henbane—*Hyoscyamus*.
Henna-plant—*Larsonia alba*.
Hep—*Rosa canina, &c.*
Hepatica—*Anemone Hepatica*.
Herb Christopher—*Actaea spicata*.
Herb Lily—*Abstronera*.
Herb of Grace—*Ruta graveolens (Rue)*.
Herb Paris—*Paris quadrifolia*.
Herb Patience—*Rumex Patientia (Patience)*.
Herb Robert—*Geranium Robertianum*.
Hercules' Club—*Zanthoxylum clava-Herculis*.
Hercules' Woundwort—*Heracleum*.
Heron's Bill—*Erodium, Geranium*.
Hickory—*Carya*.
Hickory Pine—*Pinus Balfouriana*.
Hig Taper—*Verbascum Thapsus*.
High Blackberry, American—*Rubus villosus*.
Hill Gooseberry—*Rhodomyrtus tomentosa*.
Himalayan Aster—*Aster diplocephaloides*.
Himalayan Beam-tree—*Parus vestita s.*
Himalayan Honeysuckle—*Leycesteria formosa*.
Himalayan Larch—*Larix Griffithii*.
Himalayan Poppy, Blue—*Meconopsis*.
Himalayan Primrose—*Primula nikkinensis*.
Hindberry—*Rubus Idæus*.
Hip—*Rosa*.
Hipwort—*Cotyledon Umbilicus*.
Hoary Pea, North American—*Tephrosia*.
Hoary Willow—*Salix candida*.

- Hobble-bush**—*Viburnum lantanoides*.
Hookerbush—*Althæa*.
Hog Gum-tree—*Moronebea coccinea*.
Hog Nut—*Carya porcina*.
Hog Pea Nut—*Amphicarpæa monnina*.
Hog Plum—*Spoutias*, *Ximenia americana*.
Hog's Palm—*Hyospathe*.
Hogweed, Poisonous—*Aristolochia gigas*.
Holly—*Ilex*.
Holly, Box—*Ruscus aculeatus*.
Holly Fern—*Aspidium Lonchitis*.
Holly Knee—*Ruscus aculeatus*.
Holly, Mountain—*Nemopanthus*.
Holly Oak—*Quercus Ilex*.
Holly Rose—*Helianthemum*.
Holly, Sea—*Eryngium maritimum*.
Holly, West Indian—*Tournefortia ulmifolia*.
Hollyhock—*Althæa rosea*.
Hollyhock, Antwerp—*Althæa scifolia*.
Helm—*Ilex Aquifolium*.
Helm Oak—*Quercus Ilex*.
Holy Ghost Flower—*Peristeria elata*.
Holy Grass—*Hierochloa*.
Holy Herb—*Verbena officinalis*.
Holy Spirit, Flower of the—*Peristeria*.
Holy Thistle—*Silybium Marianum*.
Honesty—*Lunaria*.
Honey Garlic—*Armillaria mellea*.
Honey Balm—*Melittis meliampyllum*.
Honey Berry—*Melicocca bijuga*.
Honey Flower—*Melianthus*.
Honey Flower, Cape—*Protea mellifera*.
Honey Garlic—*Neotarascondium*.
Honey Locust—*Gleditschia triacanthos*.
Honey-plant—*Hoya*.
Honeysuckle—*Lonicera*.
Honeysuckle, African—*Halleria lucida*.
Honeysuckle, Bush—*Dierilla*.
Honeysuckle, Cape—*Tecoma capensis*.
Honeysuckle, Clammy—*Azalea viscosa*.
Honeysuckle, Fly—*Halleria*.
Honeysuckle, French—*Hedysarum*.
Honeysuckle, Heath—*Banksia marginata*.
Honeysuckle, Himalayan—*Lycopersia formosa*.
Honeysuckle, Jamaica—*Passiiflora laurifolia*.
Honeywort—*Cerinthe*.
looded Water Milfoil—*Utricularia*.
Hoop Ash—*Celtis crassifolia*.
Hoop Petticoat—*Narcissus Bulbocodium*.
Hoop Withy—*Ricina*.
Hop—*Humulus Lupulus*.
Hop Hornbeam—*Ostrya*.
Hop-tree—*Ptelea trifoliata*.
Horehound—*Marrubium vulgare*.
Horn of Plenty—*Fedia Cornuopiepi*.
Hornbeam—*Carpinus Betulus*.
Hornbeam, Hop—*Ostrya*.
Horned Maidenhair—*Asplenium septentrionale*.
Horned Pondweed—*Zannichellia*.
Horned Poppy—*Glaucium*, *Bacmeria hybrida*.
Horned Rampion—*Phyteuma*.
Horse Bean—*Canavalia ensiformis*, *Faba vulgaris equina* (*Vicia Faba* var. β).
Horse Chestnut—*Faculus*.
Horse Chestnut, Smooth-fruited—*Paria*.
Horse Gentian—*Triosteum*.
Horse Grape—*Vitis candelans β .
Horse Mint—*Monarda*.
Horse Mushroom—*Agaricus*.
Horse Radish—*Cochlearia Armoracia*.
Horse Radish Tree—*Moringa pterygosperma (oleifera β).
Horse Sugar—*Symplocos tinctoria*.
Horse Thistle—*Cnicus*.
Horsehair, Vegetable—*Chamærops humilis*.
Horsehoof—*Tussilago Farfara*.
Horsepipe—*Equisetum*.
Horseshoe Geranium—*Pelargonium zonale*.
Horseshoe Vetch—*Hippocrepis*.
Horsetail—*Equisetum*.
Hose-in-Hose Polyanthus—*Primula hybrid*.
Hottentot Bread—*Testudinaria Elephantipes*.
Hottentot Cherry—*Cassine Marrocoëna*.
Hottentot Fig—*Mesembryanthemum edule*.
Hottentot's Head—*Stangeria paradoxa*.
Hound Berry—*Solanum nigrum*.
Hound's-tongue—*Cynoglossum*.
Houseleek—*Sempervivum*.
Houseleek, Hen-and-Chickens—*Sempervivum (globiferum β *subuliferum*).
Huckberry—*Celtis crassifolia*.
Huckleberry—*Gaylussacia*, *Vaccinium*.
Humble-bee Orchis—*Ophrys bombylifera (bombyliflora β).
Humble-plant—*Mimosa pudica*.
Humming-bird's Trumpet—*Zauschneria californica*.
Hungarian Lotus—*Nymphaea thermalis (N. Lotus thermalis β).
Hungarian Oak—*Quercus conferta*.
Hungarian Speedwell—*Veronica Teucrium*.
Huntingdon Elm—*Ulmus glabra vegeta*.
Huntingdon Willow—*Salix alba*.
Huntsman's Cup—*Sarracenia purpurea*.
Hurtleberry (Hurts)—*Vaccinium Myrtillus*.
Hurtsiokle—*Centaurea Cyanus*.
Hyacinth—*Hyacinthus*.
Hyacinth, Blue Water—*Eichhornia azurea*.
Hyacinth, Feather—*Muscari comosum monstrosum*.
Hyacinth, Grape—*Muscari*.
Hyacinth, Mis'souri—*Heperosecondium*.
Hyacinth, Musk—*Muscari moschatum*.
Hyacinth of America—*Cumassia esculenta*.
Hyacinth, Star—*Scilla amara*.
Hyacinth, Starch—*Muscari racemosum*.
Hyacinth, Tassel—*Muscari comosum*.
Hyacinth, Water—*Eichhornia*.
Hyacinth, Wild—*Scilla nutans (festalis β).
Hybrid Perpetual Roses—*Rosa* hybrids (perpetual-flowering).
Hydrangea, Climbing—*Schizophragma hydrangeoides*.
Hyssop—*Hyssopus officinalis*.
Hyssop, Anise—*Lophanthus anisatus*.
Hyssop, Giant—*Lophanthus*.
Hyssop, Hedge—*Gratiola*, *Scutellaria minor*.
Hyssop (of Scripture)—*Capparis spinosa*.
Hyssop, Wild—*Verbena hastata*.
Ice-land Poppy—*Papaver nudicaule*.
Ice-plant—*Mesembryanthemum crystallinum*.
Ice Vine—*Cissampelos Pareira*.
Illawarra Palm—*Ptychosperma Cunninghamiana (Archontopharix Cunninghamii β).
Illawarra Pine—*Podocarpus spinulosa*.
Immortal Flower or Immortelle—*Acroclitium (Helip-terium β), *Antennaria*, *Aphelaxis*, *Gnaphalium*, *Gomphrena*, *Helichrysum*, *Rhodanthe*, *Waitzia*, *Xeranthemum*, &c.********

Incas, Lily of the—*Alströméria Pelegrina alba*.
Incense Cedar—*Libocedrus*.
Indian Arrowroot—*Maranta arundinacea*.
Indian Azalea—*Azalea indica*, *A. sinensis*, &c.
Indian Berry—*Randia aculeata*.
Indian Blue—*Nymphaea stellata cyanra*.
Indian Butter-tree—*Bassia butyracea*.
Indian Cedar—*Cedrus Deodara*.
Indian Corn—*Zea Mays*.
Indian Cress—*Tropæolum*.
Indian Crocus—*Cologyne* (§ *Pleuris*).
Indian Cucumber-root—*Medeola virginiana*.
Indian Cup—*Sarracenia*.
Indian Currant—*Symphoricarpos vulgaris* (orbiculatus ♀).
Indian Fig—*Opuntia*.
Indian Flowering Fern—*Helminthostachys*.
Indian Garland Flower—*Hedychium*.
Indian Grass—*Arundo*.
Indian Hawthorn—*Rhaphiolepis* (*Raphiolepis* ♀).
Indian Hill Guava—*Rhodomyrtus tomentosa*.
Indian Lotus—*Nymphaea Lotus*.
Indian Mallow—*Sida*, *Urena*.
Indian Moneywort—*Taverniera nummularia*.
Indian Mulberry—*Morinda*.
Indian Physic—*Magnolia Fraxeri*.
Indian Pink—*Dianthus chinensis*, *Spigelia marilandica*.
Indian Reed—*Canna indica*.
Indian Rice—*Zizania*.
Indian Shamrock—*Trillium*.
Indian Shot—*Canna*.
Indian Teak-tree—*Tectona grandis*.
Indian Turnip—*Arisæna triphyllum* (*atrorubens* ♀).
Indian Walnut-tree—*Aleurites triloba*.
Indian Wayfaring-tree—*Viburnum cassinifolium*.
Indian Wild Pepper—*Vitex trifolia*.
Indiarubber-plant—*Ficus elastica*. See also **Rubber**.
Indigo—*Indigofera*.
Indigo, Bastard—*Amorpha*.
Indigo Berry—*Randia aculeata*.
Indigo, False—*Baylisia*.
Indigo-plant, Pala—*Wrightia tinctoria*.
Inkberry—*Hex glabra*.
Intermediate Stock—*Mathiola*.
Ipecacuanha—*Cephaelis Ipecacuanha*.
Ipecacuanha, East Indian—*Typhlocha asthmatica*.
Ipecacuanha, White—*Richardsonia scabra* (*pilosa* ♀).
Iris, Peacock—*Vicinia*.
Iris, Snakeshead—*Hemodactylus* (*Iris* ♀) *tuberosus*.
Iris, Tiger—*Tigridia*.
Iris-root—*Iris florentina* (Orris-root).
Irish Furze—*Ulex europæus strictus*.
Irish Heath—*Daboecia pulchra*.
Irish Ivy—*Hedera Helix canariensis*.
Irish Juniper—*Juniperus communis hibernica*.
Irish Polypody—*Polypodium vulgare semilacerum*.
Irish Yew—*Taxus baccata fastigiata*.
Irishman, Wild—*Discaria Toumatou*.
Iron-bark—*Eucalyptus leucocylon* ♀.
Iron-shrub—*Sauvagesia crecta*.
Iron-tree—*Parrotia persica*.
Iron-weed—*Vernonia*.
Iron-wood—*Argania Sideroxylon*, *Carpinus americana*, *Metrosideros*, *Onrya virginica*, &c.
Iron-wood, Bastard—*Trichilia hirta*, *Zanthoxylum Pterota*.
Ironwort—*Sideritis*.
Isabella Grape—*Vitis Labruca*.

Italian May—*Spirea hypericifolia*.
Italian Oak—*Quercus Eaculus*.
Italian Rye Grass—*Lolium italicum*.
Italian Starwort—*Amellus Lychuitis*.
Ithuriel's Spear—*Triteleia laxa*.
Ivory-nut Palm (Vegetable Ivory)—*Phytelephas macrocarpa*.
Ivory Thistle—*Eryngium giganteum*.
Ivory-tree—*Wrightia*.
Ivy—*Hedera*.
Ivy, American—*Ampelopsis* (*Vitis*) *hederacea*.
Ivy, Cape—*Senecio macroloxus*.
Ivy, German—*Senecio mikanioides*.
Ivy, Ground—*Nepeta Glechoma*.
Ivy, Kenilworth—*Linaria Cymbalaria*.
Ivy-leaved Fern—*Hemionitis*.
Ivy-leaved Pelargonium—*Pelargonium peltatum*.
Ivy-leaved Toadflax—*Linaria Cymbalaria*.
Ivy, Parlour—*Mikania scandens*.
Ivy, Poison—*Rhus Toxicodendron*.
Ivy, Prickly—*Smilax aspera*.
Jaborandi—*Pilocarpus pennatifolius* (*P. Jaborandi* ♀).
Jaca—*Artocarpus integrifolia*.
Jack-in-a-Box—*Hernandia*.
Jack-in-the-Pulpit—*Arisæna triphylla*.
Jack Oak—*Quercus marilandica* ♀.
Jack-of-the-Buttery—*Sedum acre*.
Jack-tree—*Artocarpus integrifolia*.
Jacoba Lily—*Sprekelia formosissima*.
Jacob's Ladder—*Polemonium œrædeum*.
Jacob's Staff—*Verbascum Thapsus*.
Jalap-plant—*Ipomœa Purga*.
Jamaica Bullace Plum—*Melicocca bijuga*.
Jamaica Dogwood—*Piscidia*.
Jamaica Ebony—*Brya Ebenus*, *Pyrus Ebenus*.
Jamaica Honeysuckle—*Passiflora lavrifolia*.
Jamaica Horse Bean—*Canavalia ensiformis*.
Jamaica Paroquet Bur—*Triumfetta*.
Jamaica Pepper—*Pimenta officinalis*.
Jamaica Plum—*Spondias lutea*.
Jamaica Rose—*Blakea trinervis*, *Meriania*.
Japan Cedar—*Cryptomeria*.
Japan Lacquer or **Varnish-tree**—*Rhus vernicifera*.
Japan Medlar—*Photinia* (*Eriobotrya* ♀) *japonica*.
Japan Quince—*Photinia* (*Eriobotrya* ♀) *japonica*.
Japan Wax—*Rhus succedanea*.
Japanese Artichoke—*Stachys tuberosa* ♀ (*Crosnes*).
Japanese Banana—*Musa Basjou* ♀.
Japanese Bramble—*Rubus pharicodaxius*.
Japanese Golden Honeysuckle—*Lonicera (japonica* ♀) *jezuica aureo-reticulata*.
Japanese Golden-rayed Lily—*Lilium auratum*.
Japanese Hawthorn—*Raphiolepis ovata* ♀.
Japanese Hemlock Fir—*Tsuga Sieboldii*.
Japanese Iris—*Iris lævigata*.
Japanese Laroh—*Larix lentolepis*.
Japanese Maple—*Acer palmatum* vars.
Japanese Oak—*Quercus glabra*.
Japanese Pagoda-tree—*Sophora japonica*.
Japanese Pepper—*Zanthoxylum piperitum*.
Japanese Primrose—*Primula oortusoides*, *P. japonica*.
Japanese Raisin-tree—*Hovenia dulcis*.
Japanese Rose—*Camellia*.
Japanese Silkworm Oak—*Quercus serrata*.
Japanese Snowball Tree—*Viburnum plicatum*.

Japanese Toad Lily—*Tricyrtis hirta*.
Japanese Wineberry—*Rubus phænicolaxius*.
Japanese Witch Hazel—*Hamamelis arborea*.
Japanese Yew—*Cephalotaxus pedunculata fastigiata*.
Jasmine—*Jasminum*.
Jasmine, American—*Ipomœa coccinea* s.
Jasmine, Box—*Phillyrea*.
Jasmine, Cape—*Gardenia florida (jasminoides s)*.
Jasmine, Madagascar—*Stephanotis floribunda*.
Jasmine, Rock—*Androsace*.
Jaundice Berry—*Berberis vulgaris*.
Jericho, Rose of—*Anastatica Hierochuntina*.
Jersey Pine—*Pinus inops* s.
Jerusalem Artichoke—*Helianthus tuberosus*.
Jerusalem Cherry—*Solanum Pseudo-capsicum*.
Jerusalem Cowslip—*Pulmonaria officinalis*.
Jerusalem Cross—*Lycnis chalcidonica*.
Jerusalem Pine—*Pinus halepensis*.
Jerusalem Sage—*Phlomis frutescens*.
Jerusalem Star of—*Tragopogon pratensis*.
Jerusalem Thorn—*Parkinsonia aculeata*.
Jessamine—See **Jasmine**.
Jesuit's Nut—*Trapa natans*.
Jew-bush—*Pedilanthus tithymaloides*.
Jewel Weed—*Impatiens*.
Jew's Apple—*Solanum Melongena* (Aubergine).
Jew's Mallow—*Kerria japonica*.
Jew's Myrtle—*Ruscus aculeatus*.
Joan Silver-Pin—*Papaver somniferum*.
Job's Tears—*Coix lacryma, Staphylea pinnata*.
Joe Pye Weed—*Eupatorium purpureum*.
Joint Fir—*Ephedra*.
Jointed Yew—*Athrotaxis*.
Jonquill—*Narcissus Jonquilla*.
Joseph's Coat—*Amarantus splendens* s.
Joss Flower—*Narcissus Tazetta* var.
Jove, Flower of—*Aprostemna (Lycnis s) Flos-Jovis*.
Jove's Fruit—*Limnæa meliœoefolia*.
Judas-tree—*Cercis*.
Jujube Lotus—*Zizyphus Lotus*.
Jujube-tree—*Zizyphus Jujuba*.
June Berry—*Amelanchier*.
Juniper—*Juniperus*.
Juniper Myrtle—*Verticordia*.
Juno's Rose—*Lilium candidum*.
Juno's Tears—*Verbena officinalis*.
Jupiter's Beard—*Anthyllis Barba-Jovis, Centranthus ruber, Sempervivum tectorum*.
Jupiter's Distaff—*Salvia glutinosa*.
Jute-plant—*Corchorus capsularis*.

Kafir Bean-tree—*Schotia*.
Kafir Bread—*Encephalartos Caffra (Caffer s)*.
Kafir Lily—*Schizostylis coccinea*.
Kafir Tea—*Helichrysum nudiflorum*.
Kahikatea—*Podocarpus dacrydioides*.
Kaki—*Diospyros Kaki*.
Kale—*Brassica oleracea Aubriata* (Borecole).
Kale, Sea—*Crambe maritima*.
Kambala-tree—*Sonneratia apetala*.
Kangaroo Apple—*Solanum aviculare*.
Kangaroo Vine—*Vitis antartica*.
Kangaroo's Foot—*Mateupidia fumosa* s.
Katherine's Flower—*Nigella damascena*.
Kauri Pine—*Dammara (Agathis s) australis*.
Kenilworth Ivy—*Liuaria Cymbalaria*.

Kentish Cob Nut—*Corylus tubulosa*.
Kentucky Blue Grass—*Poa pratensis*.
Kentucky Coffee-tree—*Gymnocladia canadensis*.
Kermes Oak—*Quercus coccifera*.
Kerria, White—*Rhodotypos kerrioides*.
Ketmia, Bladder—*Hibiscus Trionum*.
Khât—*Catha edulis*.
Kidbrook Elm—*Ulmus campestris virens*.
Kidney Bean—*Phaseolus multiflorus, P. vulgaris*.
Kidney Bean (of Malacca)—*Senecarpus Anacardium*.
Kidney Bean Tree, American—*Wistaria frutescens*.
Kidney Bean Tree, Chinese—*Wistaria chinensis*.
Kidney Fern, New Zealand—*Trichomanes reniforme*.
Kidney Vetch—*Anthyllis*.
Kiknel Oil-plant—*Salvadora persica*.
Killarney Fern—*Trichomanes radicans*.
Kilmarnock Weeping Willow—*Salix Caprea pendula*.
Kingoup—*Caltha palustris, Ranunculus bulbosus*.
King Henry, Good—*Cheopodium Bonus-Henricus*.
King Nut—*Carya sulcata*.
King of the Woods—*Anacetochilus regalis*.
King of the Woods, Striped—*Zreuzine regia*.
King-plant—*Anacetochilus regalis*.
King's Feather—*Saxifraga umbrosa*.
Knapwee—*Centaurea*.
Knawel—*Sceleranthus*.
Knee Pine—*Pinus Mughus nana*.
Knight's Spurs—*Delphinium*.
Knight's Star—*Hippastrum*.
Knitback—*Synphatum officinale*.
Knol-Kohl—*Brassica oleracea Caulo-rapa (Kohl-rabi)*.
Knot Grass or Weed—*Polygonum*.
Knotted Marjoram—*Origanum Marjorana*.
Kohl-rabi—*Brassica oleracea Caulo-rapa*.
Kola-nut Tree—*Cola*.
Kowhai—*Sophora tetraptera grandiflora*.
Kudzu Vine—*Pueraria Thunbergiana*.
Kumquat—*Citrus japonica*.
Kurroo—*Picrorhiza Kuroo*.
Kurrung Oil-plant—*Pongamia glabra*.

Labaria-plant of Demerara—*Dracontium polyphyllum*.
Lablab Bean—*Dolichos Lablab*.
Labrador Tea or Tree—*Ledum*.
Laburnum, Evergreen—*Piptanthus nepalensis*.
Laburnum, Natal—*Calpurnia lasiogyne* s.
Laburnum, New Zealand—*Sophora tetraptera microphylla*.
Lace Bark—*Lagetta lutearia*.
Lace Bark Pine—*Pinus Bungeana*.
Lace Fern—*Cheilanthes acrostichoides*.
Lace-leaf Plant—*Oncocladia (Apongeton s) fenestralis*.
Laohusa de Pastor—*Sonchus Jacquinii (congestus s)*.
Laoquer-tree, Japan—*Rhus vernicifera*.
Ladder Fern—*Nephrolepis*.
Lad's Love—*Artemisia Abrotanum*.
Ladies' Foxglove—*Verbascum Thapsus*.
Lady Fern—*Asplenium Filix-fermina*.
Lady Tulip—*Tulipa Clusiana*.
Lady's Bedstraw—*Galium verum*.
Lady's Bower—*Clematis Vitalba*.
Lady's Garters—*Phalaris arundinacea* var.
Lady's Laces—*Arundo*.
Lady's Looking-glass—*Specularia Speculum*.
Lady's Mantle—*Alchemilla*.
Lady's Pinoushion—*Armeria maritima*.
Lady's Seal—*Polygonatum multiflorum, Tamus communis*.

Lady's Slipper—*Cypripedium*.
Lady's Slipper, South American—*Selenipedium*.
Lady's Smock—*Cardamine*.
Lady's Thimble—*Campanula rotundifolia*.
Lady's Tresses—*Neottia Spiranthes*.
Lambert's Filbert—*Corylus tubulosa*.
Lambkill *Kalmia angustifolia*.
Lamb's Lettuce—*Valerianella oleria* (Corn Salad).
Lamb's Quarters *Trillium erectum*.
Lamp-wick—*Phlomis Lychnitis*.
Lancaster and York Roses—*Rosa centifolia*.
Lancewood—*Guatteria*.
Land Cress—*Barbarea pravor*.
Langwort—*Veratrum album*.
Larch—*Larix*.
Larch, Chinese—*Pseudolarix*.
Larch, False—*Pseudolarix*.
Larch, Golden—*Pseudolarix*.
Laricio—*Pinus Laricio*.
Larkheel—*Delphinium*.
Larkspur—*Delphinium*.
Larkspur, Yellow *Tropeolum*.
Lattice-leaf Plant *Ouvirandra (Apongeton s) fenestralis*.
Laurel—*Laurus*.
Laurel, Alexandrian *Ruscus racemosus (Dance Laurus s)*.
Laurel, American *Kalmia*.
Laurel, Cherry—*Cerasus (Prunus) Laurocerasus*.
Laurel, Ground—*Epigaea repens*.
Laurel, Mountain—*Kalmia latifolia*.
Laurel Oak—*Quercus imbricaria*.
Laurel, Poet's—*Laurus nobilis*.
Laurel, Portugal—*Cerasus (Prunus) lusitanica*.
Laurel, Seaside *Phyllanthus latifolius*.
Laurel, Sheep—*Kalmia angustifolia*.
Laurel, Spurge—*Daphne Laureola*.
Laurel, Swamp—*Magnolia glauca*.
Laurel, Variegated—*Aucuba*.
Laurel, Victor's *Laurus nobilis*.
Laurel, Versailles—*Cerasus (Prunus) Laurocerasus* var.
Laurel, Wood—*Daphne Laureola*.
Laurel-leaved Tulip-tree—*Magnolia*.
Laurustinus—*Viburnum Tinus*.
Lavender—*Lavandula*.
Lavender Cotton—*Santolina Chamæcyparissus*.
Lavender, Sea—*Statice*.
Lawson's Cypress—*Chamaecyparis Lawsoniana*.
Lawyers, Penang *Licuala acutifida*.
Lea's Oak—*Quercus Leana s*.
Lead-plant—*Amorpha canescens*.
Leadwort—*Plumbago*.
Leaf Cup—*Polynnia*.
Leather Flower—*Clematis Florna*.
Leather Jacket—*Eucalyptus resinifera s*.
Leather-wood—*Dicra palustris*.
Lebanon, Cedar of—*Cedrus Libani*.
Lee Chee or Litchi—*Nephelium Litchi*.
Leek—*Allium Porrum*.
Leek, Sand—*Allium Scorodoprasum (Rocambole)*.
Lemon—*Citrus (medica s) Limonum*.
Lemon Bergamotte—*Citrus (medica s) Limetta*.
Lemon, Bijou—*Citrus medica Riverai s*.
Lemon Grass—*Andropogon*.
Lemon-plant—*Aloysia (Lippia) citriodora*.
Lemon-scented Verbena—*Aloysia (Lippia) citriodora*.
Lemon, Sweet—*Citrus Lumia s*.
Lemon Thyme—*Thymus Serpyllum vulgaris (citriodorus s)*.

Lemon, Water—*Passiflora foetida, P. laurifolia*.
Lent Lily—*Narcissus Pseudo-Narcissus*.
Lenten Rose—*Helleborus*.
Lentils—*Lens esculenta*.
Lentils, Water—*Lenina*.
Leopard's Bane—*Doronicum*.
Leopard's Flower—*Pardanthus chinensis*.
Lesser Celandine—*Ranunculus Ficaria*.
Lesser Marsh Fern—*Nephrodium Thelypteris*.
Lesser Spearwort—*Ranunculus Flammula*.
Lettuce—*Lactuca sativa*.
Lettuce, Lamb's—*Valerianella oleria* (Corn Salad).
Lettuce, Pastor's—*Sonchus Jacquini (congestus s)*.
Lettuce, Water—*Pistia Stratiotes*.
Lever-wood—*Ostrya virginica*.
Lid Flower—*Calyptranthes*.
Life, Tree of—*Thuja*.
Lignum Vitæ—*Guaiacum officinale*.
Lilac—*Syringa*.
Lilac, Californian—*Ceanothus integerrimus*.
Lily—*Lilium*.
Lily, African—*Agapanthus*.
Lily, African Corn—*Ixia*.
Lily, Amazon—*Eucharis amazonica*.
Lily, Arum—*Richardia africana*.
Lily, Atamasco—*Zephyranthes Atamasco*.
Lily, Barbados—*Hippeastrum equestre*.
Lily, Blackberry—*Pardanthus chinensis s*.
Lily, Belladonna—*Amaryllis Belladonna*.
Lily, Brisbane—*Euryelea Cunninghamii*.
Lily, Bugle—*Watsonia*.
Lily, Cape—*Crinum capense*.
Lily, Chinese Sacred—*Narcissus Pseudo-Narcissus* var.
Lily, Climbing—*Gloriosa superba*.
Lily, Corfu—*Funkia subcordata*.
Lily, Corn—*Ixia*.
Lily, Cuban—*Scilla peruviana*.
Lily, Day—*Hemerocallis*.
Lily, Egyptian Lotus—*Nymphaea Lotus*.
Lily, Fairy—*Casperia pedunculata, Zephyranthes rosea*.
Lily, Flame—*Pyrolidion (Zephyranthes)*.
Lily, Flax—*Phormium*.
Lily, Florida Swamp—*Crinum americanum*.
Lily, Fringe—*Thysanotus*.
Lily, Golden Spider—*Lycoris*.
Lily, Good Luck—*Narcissus Tazetta* var.
Lily, Guernsey—*Nerine sarniensis*.
Lily, Herb—*Abstrimeria*.
Lily, Jacobea—*Sprekela formosissima*.
Lily, Japanese Toad—*Tricyrtis hirta*.
Lily, Kaffr—*Schizanthus coccinea*.
Lily, Lent—*Narcissus Pseudo-Narcissus*.
Lily, Mariposa—*Calochortus*.
Lily, Mexican—*Hippeastrum Regium s*.
Lily, Mound—*Yucca gloriosa*.
Lily, Mount Etna—*Sternbergia*.
Lily of the Field—*Sternbergia*.
Lily of the Incas—*Abstrimeria Pelegrina alba*.
Lily of the Nile—*Richardia africana*.
Lily of the Palace—*Hippeastrum alicium*.
Lily of the Valley—*Convallaria majalis*.
Lily of the Valley, Star-flowered—*Smilacina stellata*.
Lily, Peruvian—*Abstrimeria*.
Lily, Peruvian Swamp—*Zephyranthes candida*.
Lily, Pink—*Aphyllanthes*.
Lily, Plantain—*Funkia*.

- Lily, Pond** *Nuphar advena*.
Lily, Prairie *Mentzelia ornata*.
Lily, Queen *Phedranassa*.
Lily, Rush *Sisyrinchium*.
Lily, Sacred *Narcissus Tazetta* var.
Lily, Scarborough *Vallota purpurea*.
Lily, Spider *Lycoris*.
Lily, Spire *Gallonia candidans*.
Lily, St. Bernard's *Anthericum Liliago*.
Lily, St. Bruno's *Anthericum (Paradisia s) Liliastrium*.
Lily, St. James's *Sprekbia formosissima*.
Lily, St. James's Cross *Sprekbia formosissima s.*
Lily, St. Joseph's *Lilium candidum*.
Lily, Swamp *Crinum americanum, Zephyranthes candida*.
Lily, Sword *Gladiolus*.
Lily Thorn *Catesbaia*.
Lily, Toad *Tricyrtis hirta*.
Lily, Toad-cup *Mariaea carulea*.
Lily, Torch *Kniphofia*.
Lily, Triplet *Triteleia*.
Lily, Trumpet *Richardia africana*.
Lily, Water *Euryale, Limnæanthemum, Nuphar, Nymphaea, Victoria, Villarsia*.
Lily, White Arum *Richardia africana*.
Lily, Wood *Pyrola minor, Trillium*.
Lime *Citrus medica acida*.
Lime, Ogechee *Nyssa capitata*.
Lime, Sweet *Citrus Limetta*.
Lime Berry Tree (of Manila) *Triplasia trifoliata (T. Aurantiola s)*.
Lime-tree *Tilia*.
Limestone Polyopdy *Polypodium Dryopteris Robertianum*.
Lin-tree *Tilia vulgaris*.
Linden-tree *Tilia*.
Line-tree *Tilia vulgaris*.
Ling *Calluna, Trapa natans*.
Lion's-ear *Leonotis*.
Lion's-foot *Leontopodium*.
Lion's-mouth *Antirrhinum majus*.
Lion's-tail *Leonotis Leonurus*.
Lion's Turnip *Leontice Leontopetalum*.
Lip Fern *Cheilanthes*.
Lip Fern, Californian *Hypolepis californica s.*
Liquid Storax *Liquidambar imberbe*.
Liquorice *Glycyrrhiza*.
Liquorice Vetch *Astragalus glycyphyllos*.
Liquorice, Wild *Abrus*.
Litchi or Lee Chee *Nephelium Litchi*.
Little Millet *Panicum miliaceum*.
Live for Ever *Sedum*.
Live Oak *Quercus chrysolepis s, Q. Hex, Q. cireus (virginiana), &c.*
Lizard Orchis *Orchis hircina*.
Lizard's-tail *Saururus*.
Loblolly Bay *Gordonia Lasianthus*.
Loblolly Pine *Pinus Taeda s.*
Locust, African *Parkia africana*.
Locust, Clammy *Robinia viscosa*.
Locust, Honey *Gleditschia triacanthos*.
Locust-tree *Ceratonia Siliqua, Hymenoclea, Robinia*.
Locust-tree, Swamp or Water *Gleditschia monosperma*.
Lodewort *Ranunculus aquatilis*.
Loganberry *Rubus*.
Logwood *Hæmatoxylin*.
Lombardy Poplar *Populus nigra pyramidalis*.
London Pride *Saxifraga umbrosa*.
Long-leaved Cucumber-tree *Magnolia Fraseri*.
Long Moss *Tillandsia usneoides*.
Long-podded Bean *Faba vulgaris (Vicia Faba s)*.
Long Purples *Lythrum salicaria, Orchis maculata, O. Morio*.
Loofah *Luffa*.
Looking-glass Tree *Heritiera*.
Looking-glass, Venus *Speularia perfoliata, S. Speculum*.
Loosestrife *Lymnæchia, Lythrum*.
Lopez Root *Toddalia aculeata*.
Lopseed *Phryma*.
Loquat *Photinia japonica*.
Lord Aberdeen's Pine *Pinus Pinaster Hamiltoni*.
Lord Anson's Pea *Lathyrus magellanicus (Cerconus s)*.
Lord Harrington's Yew *Cephalotaxus pedunculata*.
Lord Penzance's Hybrid Sweetbriars *Rosa rubiginosa hybrids*.
Lords and Ladies *Arum maculatum*.
Lote *Zizyphus Lotus*.
Lotus, African *Zizyphus Lotus*.
Lotus, Egyptian or Indian *Nymphaea Lotus*.
Lotus, Hungarian *Nymphaea thermalis (N. Lotus thermalis s)*.
Lotus, Jujube *Zizyphus Lotus*.
Lotus, Sacred *Nelumbium*.
Lotus-tree, European *Diospyros Lotus*.
Lousewort *Pedicularis*.
Lovage *Ligusticum scoticum*.
Love Apple *Lycopersicum esculentum (Tomato)*.
Love Flower *Agapanthus*.
Love Grass *Eragrostis*.
Love-in-a-Mist *Nigella*.
Love-in-a-Puzzle *Nigella damascena*.
Love-in-Idleness *Viola tricolor*.
Love-lies-Bleeding *Amaranthus caudatus*.
Love-tree *Cercis Siliquastrum*.
Low Blackberry *Rubus canadensis*.
Lucern *Medicago*.
Lungwort *Pulmonaria*.
Lungwort, Cow's *Verbasicum Thapsus*.
Lupine *Lupinus*.
Lupine, Bastard *Trifolium Lupinaster*.
Lynwort *Veratrum album*.
Lynxflower *Stanhopea tigrina*.
Macartney Roses *Rosa bracteata*.
Mad Apple *Solanum Melongena (Aubergine)*.
Madagascar Chaplet Flower *Stephanotis floribunda*.
Madagascar Jasmine *Stephanotis floribunda*.
Madagascar Nutmeg *Agathophyllum (Ravensara s)*.
Madagascar Periwinkle *Vinea rosea*.
Madagascar Potato *Solanum indicum*.
Madder *Rubia tinctorium*.
Madeira Vine *Boussingaultia baselloides*.
Madonna Lily *Lilium candidum*.
Madwort *Alyssum*.
Mahaleb *Cerasus (Prunus) Mahaleb*.
Mahoe *Thecopsis populnea*.
Mahogany Pine *Podocarpus Totara*.
Mahogany, Red *Eucalyptus resinifera s.*
Mahogany-tree *Sycetonia Mahagoni*.
Mahwah-tree (of Bengal) *Bamia latifolia*.
Maid of the Meadow *Spiraea Ulnaria*.
Maiden Pink *Dianthus deltoides*.
Maiden Plum *Conocladia*.
Maidenhair *Adiantum*.
Maidenhair, Annual *Gymnogramme leptophylla*.

Maidenhair, English—*Asplenium Trichomanes*.
Maidenhair, Forked—*Asplenium septentrionale*.
Maidenhair, Gold—*Notholaena*, *Polypodium vulgare*.
Maidenhair, Horned—*Asplenium septentrionale*.
Maidenhair, Rue—*Asplenium Ruta-muraria*.
Maidenhair, Silver—*Notholaena*.
Maidenhair Spleenwort—*Asplenium Trichomanes*.
Maidenhair Spleenwort, Black—*Asplenium Adiantum-nigrum*.
Maidenhair-tree—*Ginkgo biloba*.
Maize—*Zea Mays*.
Maize, Water—*Victoria regia*.
Maki—*Podocarpus macrophyllus*.
Malabar Almond-tree—*Terminalia Catappa*.
Malabar Leaf—*Cinnamomum Malabathrum*.
Malabar Nightshade—*Besella alba (rubra) s.*
Malay Apple—*Eugenia Jambos*, &c.
Malay Rice Paper Plant—*Securata Koenigii*.
Male Fern—*Nephradium Filix-mas*.
Male Oak—*Quercus sessiliflora*.
Mallet Flower—*Tupistra*.
Mallow *Malva*.
Mallow, Globe—*Sphaeralcea*.
Mallow, Indian—*Sida, Urena*.
Mallow, Jew's—*Kerria japonica*.
Mallow, Marsh—*Althaea*.
Mallow, Poppy—*Callitriche*.
Mallow, Rose—*Hibiscus*.
Mallow, Tree—*Lavatera arborea*.
Mallow-wort—*Malope, Malvaceae*.
Malmaison Carnations—*Dianthus Caryophyllus var.*
Mammee-tree—*Mammea americana*.
Mammoth-tree—*Sequoia gigantea*.
Man of the Earth—*Ipomoea pandurata*.
Man Orchis—*Aceras anthopophora*.
Manchineel-tree—*Hippomane Mancinella*.
Mandarin Orange—*Citrus nobilis*.
Mandrake—*Mandragora*.
Mandrake, American—*Podophyllum peltatum*.
Mangel Wurzel—*Beta vulgaris macrocariza*.
Mangosteen—*Garcinia Mangostana*.
Mango-tree—*Mangifera indica*.
Mangrove—*Rhizophora*.
Manilla Hemp—*Musa textilis s.*
Manioc—*Manihot utilissima*.
Manna Ash—*Fraxinus Ornus*.
Manna Gum—*Eucalyptus riminalis s.*
Manna-tree—*Alhagi*.
Maple—*Acer*.
Maple, Flowering—*Abutilon*.
Maraja Palm—*Bactris Maraja*.
Maranhao Nut—*Bertholletia ezorba*.
Mare's-tail—*Hippuris vulgaris*.
Marguerite—*Chrysanthemum frutescens*.
Marguerite, Blue—*Agathaea coelestis (Aster rotundifolius)*.
Marigold—*Calendula officinalis*.
Marigold, African—*Tagetes erecta*.
Marigold, Bur—*Bidens*.
Marigold, Corn—*Chrysanthemum segetum*.
Marigold, Fig—*Mecombryanthemum*.
Marigold, French—*Tagetes patula*.
Marigold, Marsh—*Calltha*.
Marigold, Pot—*Calendula officinalis*.
Marigold, Striped Mexican—*Tagetes signata*.
Marigold, Sweet-scented Mexican—*Tagetes lucida*.
Mariposa Lily—*Calochortus*.

Mariposa Tulip—*Calochortus*.
Marjoram—*Origanum*.
Marmalade Plum—*Lucuma mammosa*.
Marrom Grass—*Panicum arenaria (Ammophila arundinacea)*.
Marrow, Vegetable—*Cucurbita Pepo arifera*.
Marsh Beetle—*Typha latifolia*.
Marsh Cinquefoil—*Comarum palustre (Potentilla palustris s.)*.
Marsh Elder—*Viburnum Opulus*.
Marsh Felwort—*Sweetia perennis*.
Marsh Fern, Lesser—*Nephradium Thelypteris*.
Marsh Fleabane—*Pluchea*.
Marsh Flower—*Limnanthemum*.
Marsh Mallow—*Althaea*.
Marsh Marigold—*Calltha*.
Marsh Orchis—*Orchis latifolia*.
Marsh Potentil—*Comarum palustre (Potentilla palustris s.)*.
Marsh Rosemary—*Andromeda polifolia*.
Marsh Sapphire—*Salicornia*.
Marsh Shield Fern—*Nephradium Thelypteris*.
Marsh Trefoil—*Menyanthes trifoliata*.
Marsh Valerian—*Valeriana dioica*.
Martagon Lily—*Lilium Martagon*, &c.
Marvel of Peru—*Mirabilis Jalapa*.
Marybuds—*Calendula officinalis (Marigold)*.
Marygold—*See Marigold*.
Mask Flower—*Aloum*.
Mast—Fruits of *Fagus*.
Mastio-tree, Peruvian—*Schinus Molle*.
Mastioh-tree—*Pistacia Lentiscus*.
Mastwort—*Corylaceae*.
Matal—*Prunopitys spicata*.
Maté—*Ilex concarpa s.*
Matrimony Vine—*Lycium*.
Maudlin, Sweet—*Achillea Agetatum*.
Maul Oak—*Quercus chrysolepis*.
Mauritius Plantain-tree—*Musa rosacea*.
May—*Crataegus Oxyacantha*.
May Apple—*Passiflora incarnata, Podophyllum peltatum*.
May, First of—*Saxifraga granulata*.
May, Italian—*Spiraea hypericifolia*.
Maybush, Californian—*Photinia arbutifolia*.
Mayflower—*Crataegus Oxyacantha*.
Mayflower, American—*Ephedra repens und Hepatica*.
Mayl—*Prunopitys spicata s.*
Maypole, West Indian—*Spathelia simplex*.
Meadow Beauty—*Rhexia virginica*.
Meadow Cabbage—*Symlocarpus fetidus*.
Meadow Grass—*Poa*.
Meadow Pink—*Dianthus deltoides*.
Meadow Rue—*Thalictrum*.
Meadow Saffron—*Colchicum*.
Meadow Saxifrage—*Saxifraga granulata, Sewli, Silaus pratensis*.
Meadowsweet—*Spiraea Ulmaria*.
Meadows, Queen of the—*Spiraea Ulmaria*.
Mealles—*Zea Mays*.
Median Apple—*Citrus medica*.
Medick—*Medicago*.
Medick Vetch—*Oenobrychis*.
Mediterranean Heath—*Erica carnea*.
Medlar—*Mespilus (Pyrus s) germanica*.
Medlar, Japan—*Photinia (Eriobotrya s) japonica*.
Medusa's Head—*Euphorbia Caput Meduse*.
Melancholy Gentleman—*Heperis tristis*.
Melilot—*Melilotus*.
Melon—*Cucumis Melo*.

- Melon Cactus**—*Melocactus communis*.
Melon, Canary—*Cucumis Dudaim* s.
Melon, Musk—*Cucurbita moschata*.
Melon Pumpkin—*Cucurbita Pepo*.
Melon Thistle—*Melocactus*.
Melon, Water—*Citrullus vulgaris*.
Mercury—*Chenopodium Bonus Henricus, Mercurialis*.
Mercury's Violet—*Campanula Medium*.
Mermaid Weed—*Proserpinaca*.
Mexican Coca Plant—*Richardsonia scabra (pilosa) s.*
Mexican Flowering Fern—*Ilavea*.
Mexican Foxglove—*Tetranema mexicanum*.
Mexican Lily—*Hippeastrum Regium* s.
Mexican Marigold—*Tagetes lucida, T. signata*.
Mexican Orangeflower—*Choisya ternata*.
Mexican Poppy—*Argemone*.
Mexican Tea—*Chenopodium ambrosioides*.
Mexican Thistle—*Cnicus conspicuus*.
Mexican Tiger Flower—*Tigridia*.
Mexican Yew—*Taxus globosa*.
Mezereon—*Daphne Mezereon*.
Michaelmas Daisy—*Aster*.
Midnapore Creeper—*Rivea hypocotyleformis*.
Mignonette—*Ressia odorata*.
Milfoil—*Achillea*.
Milfoil, Water—*Muriophyllum, Utricularia*.
Military Orchis—*Orchis militaris*.
Milk-bush, African—*Synadenium*.
Milk Thistle, Our Lady's—*Silybum Marianum*.
Milk Trefoll—*Cytisus*.
Milk Vetch—*Astragalus*.
Milk Vine—*Periploca græca*.
Milkweed—*Asclepias*.
Milkwort—*Polygala*.
Milkwort, Sea—*Glaux maritima*.
Millet, African—*Sorghum vulgare*.
Millet Grass—*Paspalum, Sorghum*.
Millet, Little, or Broom-coorn—*Panicum miliaceum*.
Miltwaste—*Asplenium Ceterach*.
Mint—*Mentha*.
Mint, Cat—*Nepeta*.
Mint, Horse—*Monarda*.
Mint, Mountain—*Pycnanthemum* s.
Mint-bush or Mint-tree, Australian—*Prostanthera*.
Miraculous Berry—*Sideroxylon dulcificum*.
Miro, The—*Podocarpus ferrugineus*.
Missouri Hyacinth—*Hesperisocordium*.
Mistletoe—*Viscum album*.
Mistletoe Cactus—*Rhipsalis*.
Mitrewort—*Mitella*.
Mitrewort, False—*Tiarella*.
Moccaain Flower—*Cypripedium*.
Mock Orange—*Philadelphus coronarius*.
Mock Privet—*Phillyrea*.
Mocker Nut—*Carpa tomentosa*.
Molucca Balm—*Moluccella lrevis*.
Moly—*Allium Moly*.
Moneywort—*Lysimachia Nummularia*.
Moneywort, Cornish—*Sibthorpia europæa*.
Moneywort, East Indian—*Taverniera Nummularia*.
Monk's-cowl Orchid—*Pterogydium*.
Monk's-hood—*Aconitum*.
Monk's Pepper-tree—*Vitex Agnus-castus*.
Monkey Apple—*Clusia flava*.
Monkey Bread—*Adansonia* s.
Monkey Flower—*Mimulus*.
Monkey Nut—*Arachis hypogæa*.
Monkey Puzzle—*Araucaria imbricata*.
Monkey's Comb—*Pithecolobium*.
Monkey's Earring—*Pithecolobium*.
Mont Cenis Violet—*Viola cenisia* s.
Monterey Cypress—*Cupressus macrocarpa*.
Monterey Pine—*Pinus insignis (radiata) s.*
Montesuma Cypress—*Tazodium mucronatum*.
Monthly Roses—*Rosa indica*.
Montmorency Cherry—*Cerasus acida (Prunus Cerasus)*.
Moon Creeper—*Iponoea Bona-nox*.
Moon Daisy—*Chrysanthemum Leucanthemum*.
Moon Trefoll—*Medicago arborea*.
Moonflower—*Aneione nemorosa, Chrysanthemum Leucanthemum, Iponoea, Stellaria Holostea*.
Moonflower, Blue—*Iponoea Leary*.
Moonsed—*Menispermum*.
Moonwort—*Botrychium*.
Moonwort, Blue—*Soldanella alpina*.
Morel—*Morchella*.
Moreton Bay Chestnut—*Castanospermum*.
Moreton Bay Pine—*Araucaria Bidwillii*.
Morning Glory—*Iponoea*.
Morocco, Red—*Adonis autumnalis*.
Moss Musci.
Moss, Bog—*Sphagnum*.
Moss Campion—*Silene acaulis*.
Moss, Club—*Lycopodium, Selaginella*.
Moss, Dovedale—*Saxifraga hypnoides*.
Moss, Long—*Tillandsia usneoides*.
Moss Pink—*Phlox subulata*.
Moss Roses—*Rosa centifolia muscosa*.
Moss, Spanish—*Tillandsia usneoides*.
Mossy-cupped Oak—*Quercus Cerris, Q. macrocarpa*.
Moth Mullein—*Verbascum Blattaria*.
Moth Orchid—*Phalænopsis*.
Mother of Thousands—*Bellis perennis prolifera, Linaria Cymbalaria, Saxifraga sarmentosa*.
Motherwort—*Leonitis*.
Mound Lily—*Yucca gloriosa*.
Mount Etna Lily—*Sterbergia*.
Mountain Ash—*Pyrus Aucuparia, P. occidentalis* s.
Mountain Ash, American—*Pyrus americana*.
Mountain Avens—*Dryas octopetala*.
Mountain Bladder Fern—*Cyrtopteris montana*.
Mountain Bramble—*Rubus Chamaemorus*.
Mountain Buckler Fern—*Nephrodium montanum*.
Mountain Currant, Tasteless—*Ribes alpinum*.
Mountain Damson—*Sinara baucara*.
Mountain Ebony—*Bauhinia*.
Mountain Green, West Indian—*Spathelia simplex*.
Mountain Holly—*Neomantles*.
Mountain Laurel—*Kalmia latifolia*.
Mountain Mint—*Pycnanthemum* s.
Mountain Parsley Fern—*Cryptogramme*.
Mountain Plum—*Ximenia americana*.
Mountain Pride, West Indian—*Spathelia simplex*.
Mountain Spiderwort—*Lloydia serotina*.
Mountain Spinach—*Atriplex hortensis*.
Mountain Tobacco—*Arnica montana*.
Mountain Violet—*Viola tricolor lutea*.
Mountain White Oak—*Quercus Douglasi* s.
Mournful Widow—*Scabiosa atropurpurea*.
Mourning Bride—*Scabiosa atropurpurea*.
Mouse-ear Chickweed—*Cerastium*.
Monstache-plant—*Caryopteris Mastacanthus*.

Moutan Peony—*Paeonia Moutan*.
Moving Plant—*Desmodium gyrans*.
Mud Plantain—*Heteranthera reniformis*.
Mudar-plant—*Calotropis gigantea*.
Mugwort—*Artemisia vulgaris*.
Mugwort, West Indian—*Parthenium Hysteraphorus*.
Mulberry—*Morus*.
Mulberry, French—*Callicarpa americana*.
Mulberry, Indian—*Morinda*.
Mulberry, Paper—*Broussonetia papyrifera*.
Mule's Fern—*Scelopendrium Hemionitis*.
Mullein—*Verbascum*.
Mullein Pink—*Lycnis coronaria*.
Mullein, Rosette—*Ranondia pyrenaica*.
Mundi Root—*Chlorocodon s.*
Murrain Berries—*Tamus communis*.
Muscadine—*Vitis vulpina*.
Mushrooms—Popularly restricted to Edible *Fungi*.
Musk—*Mimulus moschatus*.
Musk Hyacinth—*Muscari moschatum*.
Musk Mallow—*Malva moschata*.
Musk Melon—*Cucurbita moschata*.
Musk Orohis—*Hernimium*.
Musk Roses—*Rosa moschata*.
Mustang Grape—*Vitis californicus s.*
Mustard—*Sinapis alba*.
Mustard, Buckler—*Biscutella*.
Mustard, Clown's—*Iberis amara*.
Mustard, Hedge—*Erysimum, Sisymbrium*.
Mustard-tree (of Scripture)—*Salvadora persica*.
Myrobalan Plum—*Prunus cerasifera*.
Myrobalan-tree—*Terminalia*.
Myrrh (British)—*Myrrhis*.
Myrtle—*Myrtus communis*.
Myrtle, Bog—*Myrica Gal.*
Myrtle, Candleberry—*Myrica cerifera*.
Myrtle, Grape—*Lagerströmia indica*.
Myrtle, Jew's—*Ruscus aculeatus*.
Myrtle, Juniper—*Verticordia*.
Myrtle, Otaheite—*Securineja turissima*.
Myrtle, Peach—*Hypocypnema robusta*.
Myrtle, Sand—*Leiphyllum*.
Myrtle, Tulip-bearing—*Dacrydium macrostegia*.
Myrtle, Wax—*Myrica cerifera*.

Nagi—*Podocarpus Nagia*.
Nailwort—*Paronychia*.
Naked Ladies—*Colchicum autumnale*.
Naked Stone Fern—*Asplenium septentrionale*.
Nancy Pretty—*Saxifraga umbrosa*.
Napoleon's Weeping Willow—*Salix babylonica Napoleona*.
Nard—*Nardostachys*.
Nasturtium (of gardens)—*Tropaeolum*.
Natal Laburnum—*Calpurnia laxigone s.*
Navelwort—*Cotyledon Umbilicus*.
Navelwort, Venus'—*Omphalodes linifolia*.
Navet or Navew—*Brassica Napus (Rape)*.
Neapolitan Violet—*Viola odorata pallida-plena*.
Necklace Poplar—*Populus monilifera*.
Necklace-tree—*Ormosia*.
Neckweed—*Cannabis sativa*.
Nectarine—*Persica vulgaris (Prunus Persica) larvis*.
Needle Furze—*Genista anglica*.
Negro Peach—*Sarcoccephalus esculentus*.
Negro's-head—*Phytelphas macerocarpa*.
Negroes' Olive-tree—*Terminalia Chabota*.

Nest Fern—*Asplenium Nidus*.
Nettle—*Urtica*.
Nettle, Chilian—*Loasa aurantiaca*.
Nettle, Dead—*Lamium*.
Nettle, Flame—*Coleus Blumei*.
Nettle, Hedge—*Stachys*.
Nettle, Stingless—*Pilea*.
Nettle-leaved Mullein—*Verbascum Chairii*.
Nettle-tree—*Celtis*.
New Holland Pitcher-plant—*Cephalotus follicularis*.
New Jersey Tea—*Ceanothus americanus*.
New York Shield Fern—*Nephrodium norceboracense*.
New Zealand Bluebell—*Wahlenbergia saxicola*.
New Zealand Bur—*Acena*.
New Zealand Filmy Fern—*Todea superba*.
New Zealand Flax—*Phormium tenax*.
New Zealand Kidney Fern—*Trichomanes reniforme*.
New Zealand Laburnum—*Sophora tetraptera microphylla*.
New Zealand Spinach—*Tetragonia expansa*.
New Zealand Teak-tree—*Vitex littoralis*.
New Zealand Water-lily—*Ranunculus Lyallii*.
Nicker-tree—*Cestipinia (Guilandina section)*.
Nightflower—*Nyctanthus*.
Night-scented Stock—*Hesperis tristis, Mathiola odoratissima, &c.*
Nightshade—*Solanum*.
Nightshade, Deadly—*Atropa Belladonna*.
Nightshade, Echanter's—*Ciccoea*.
Nightshade, Malabar—*Besella alba (rubra s.)*.
Nightshade, Three-leaved—*Trillium*.
Nightshade, Woody—*Solanum Dulcamara*.
Nile, Lily of the—*Richardia africana*.
Nipple Cactus—*Mammillaria*.
Nitta-tree—*Parkia africana*.
Nohl-Kohl—*Brassica oleracea Caulo rapa (Kohl-Rabi)*.
Noisette Roses—*Rosa indica Noisettiana*.
Noli-me-tangere—*Impatiens Noli-me-tangere (Noli-tangere s)*.
None-so-pretty—*Saxifraga umbrosa*.
Noonflower—*Tragopogon pratense*.
Norfolk Island Pine—*Artocarpus excelsa*.
Normandy Cress—*Barbarea prava (Cress, American)*.
North American Grass—*Viola latifolia*.
North American Hoary Pea—*Tephrosia*.
North American Nettle-tree—*Celtis occidentalis*.
North American Thorn—*Crataegus coccinea*.
Northern Rock Cress—*Arabis petraea*.
Northern Scrub Pine—*Pinus Banksiana s.*
Norway Maple—*Acer platanoides*.
Norway Spruce—*Picea excelsa*.
Nottingham Catchfly—*Silene nutans*.
Nut, Barcelona—*Corylus Avellana grandis*.
Nut, Bladder—*Rugosa lucida, Staphylea*.
Nut, Bombarra Ground—*Vandazsia subterranea*.
Nut, Brazil—*Bertholletia excelsa*.
Nut, Bread—*Brosimum*.
Nut, Buffalo—*Pyrdaria oleifera (pubera s.)*.
Nut, Butter—*Caryocarp usiferum*.
Nut, Cahoun—*Attalea Cohune*.
Nut, Cashew—*Anacardium occidentale*.
Nut, Chilian—*Guenina (Gerruina s) Avellana*.
Nut, Chocolate—*Theobroma Cacao*.
Nut, Cob—*Corylus*.
Nut, Common—*Corylus*.
Nut, Cream—*Bertholletia*.
Nut, Earth—*Arachis hypogaea*.
Nut, Elk—*Pyrdaria oleifera (pubera s.)*.

- Nut, Goara** - *Cola*.
- Nut, Ground** - *Apios tuberosa*, *Arachis hypogæa*, *Voandzeia subterranea*.
- Nut, Hog** - *Carya porcina*.
- Nut, Hog Pea** - *Amphicarpæa monnina*.
- Nut, Jesuit's** - *Trapa natans*.
- Nut, Kola** - *Cola*.
- Nut, Maranhao** - *Bertholletia excelsa*.
- Nut, Mocker** - *Carya tomentosa*.
- Nut, Monkey** - *Arachis hypogæa*.
- Nut, Oil** - *Pyralaria oleifera* (pubera s.), *Ricinus communis*.
- Nut, Ordeal** - *Tanghinia venenifera* (Cerbera Tanghin s.).
- Nut, Para** - *Bertholletia excelsa*.
- Nut, Pecan** - *Carya oliviformis*.
- Nut, Physic** - *Jatropha*.
- Nut, Pig** - *Carya porcina*.
- Nut, Pistachio** - *Pistacia vera*.
- Nut, Poison** - *Strychnos Nux-vomica*.
- Nut, Portia** - *Thespesia populnea*.
- Nut Rush** - *Scleria*.
- Nut, St. Anthony's** - *Staphylea pinnata*.
- Nut, Saouari, Souari, or Suwarrow** - *Caryocarp nuciferum*, *Juglans cinerea*.
- Nut, Singhara** - *Trapa bispinosa*.
- Nut, Welsh** - *Juglans regia* (Walnut).
- Nut, Wood** - *Corylus Avellana*.
- Nutmeg** - *Myristica fragrans*.
- Nutmeg, Calabash** - *Mouhoba Myristica*.
- Nutmeg, Californian** - *Torreya californica*.
- Nutmeg, Madagascar** - *Anthophyllum* (Ravensara s.).
- Nutmeg, Plum** - *somo Montiniæcer*.
- Nutmeg-scented Geranium** - *Pelargonium fragrans*.
- Oak** - *Quercus*.
- Oak, African** - *Olufoldia africana*.
- Oak Fern** - *Polypodium Dryopteris*.
- Oak, Poison** - *Rhus Toxicodendron*.
- Oak, Scrub** - *Quercus Catesbei*, *Q. ilicifolia*, *Q. undulata* s., &c.
- Oak, Scrubby** - *Lophira africana* (alata s.).
- Oak, She** - *Casuarina stricta*.
- Oak, Silky** - *Grevillea robusta*.
- Oak, Victoria Swamp** - *Viminaria denudata*.
- Oak-leaf Geranium** - *Pelargonium quercifolium*.
- Oat** - *Avena*.
- Oblionker-tree** - *Esculus Hippocastanum*.
- Oca** - *Oxalis tuberosa*.
- Ogechee Lime** - *Nypsa capitata*.
- Oil Nut** - *Pyralaria oleifera* (pubera s.), *Ricinus communis*.
- Oil Palm** - *Elæis guineensis*.
- Oily Grain** - *Sesamum indicum*.
- Okra** - *Hibiscus esculentus* s.
- Okwa-tree** - *Treeculia africana*.
- Old Age and Youth** - *Zinnia*.
- Old-field Pine** - *Pinus Taeda* s.
- Old Maid** - *Vinca rosea*.
- Old Man** - *Artemisia Abrotanum*, *Rosmarinus officinalis*.
- Old Man Cactus** - *Pilocereus senilis*.
- Old Man's Beard** - *Clematis Vitalba*, *Saxifraga sarmentosa*, *Tillandsia usneoides*.
- Old Man's Head** - *Pilocereus senilis*.
- Oleander** - *Nerium Oleander*.
- Oleaster** - *Eleagnus*.
- Olibanum-tree** - *Boswellia*.
- Olive** - *Olea*.
- Olive-bark Tree** - *Terminalia Catappa*.
- Olive, Spurge** - *Cucurum tricoecum*, *Daphne Mezereum*.
- Olive-tree, Negroes** - *Terminalia Chebula*.
- Olive, Wild** - *Eleagnus*, *Olea europæa*.
- Olive Wood** - *Elæodendron*.
- Onime Root** - *Plectranthus ternatus*.
- Onion** - *Allium Cepa*.
- Onion, Sea** - *Scilla verna*, *Urginea maritima*.
- Onion, Spring or Welsh** - *Allium fistulosum* s.
- Onker-tree** - *Esculus Hippocastanum*.
- Opera Girls** - *Mantisia saltatoria*.
- Opium Poppy** - *Papaver somniferum*.
- Opopanax** - *Malahalla Opopanax* (Opopanax Chironium s.).
- Orach** - *Atriplex hortensis*.
- Orange** - *Citrus Aurantium*, *C. sinensis* s., &c.
- Orange Ball Tree** - *Buddleia globosa*.
- Orange Flower, Mexican** - *Choisya ternata*.
- Orange Gourd** - *Cucurbita Pepo aurantia*.
- Orange, Mandarin** - *Citrus nobilis*.
- Orange, Mook** - *Philadelphus coronarius*.
- Orange, Osage** - *Maclura aurantiaca*.
- Orange Root** - *Hydrastis canadense*.
- Orange, Seville** - *Citrus vulgaris*.
- Orange Thorn** - *Citriobatus* s.
- Orchids, Queen of the** - *Grammatophyllum speciosum*.
- Orchis, Bee** - *Ophrys apifera*.
- Orchis, Butterfly** - *Habenaria bifolia*, *H. chlorantha*.
- Orchis, Dwarf** - *Orchis ustulata*.
- Orchis, Early** - *Orchis mascula*.
- Orchis, Fly** - *Ophrys muscifera*.
- Orchis, Frog** - *Habenaria*.
- Orchis, Green Man** - *Aceras anthropophora*.
- Orchis, Green-winged** - *Orchis Morio*.
- Orchis, Heart-flowered** - *Serapias cordigera*.
- Orchis, Humble-bee** - *Ophrys bombilifera* (bombyliflora s.).
- Orchis, Lizard** - *Orchis hircina*.
- Orchis, Man** - *Aceras anthropophora*.
- Orchis, Marsh** - *Orchis latifolia*.
- Orchis, Military** - *Orchis militaris*.
- Orchis, Musk** - *Hermidium*.
- Orchis, Snake's-mouth** - *Pogonia ophioglossoides*.
- Orchis, Spider** - *Ophrys aranifera*.
- Orchis, Three Birds** - *Pogonia pendula*.
- Orchis, Tongue-flowered** - *Serapias Lingua*.
- Ordeal Bean** (of old Calabar) - *Phytoligma*.
- Ordeal Nut or Tree** - *Tanghinia venenifera* (Cerbera Tanghin s.).
- Orpine** - *Sedum*, *Telephium*.
- Orris Root** - *Iris florentina*.
- Osage Apple or Orange** - *Maclura aurantiaca*.
- Osier** - *Salix*.
- Osoberry** - *Nuttallia cerasiformis*.
- Ostrich Fern** - *Owelia germanica*.
- Oswego Tea** - *Manarda didyma*.
- Otaheite Apple** - *Spondias*.
- Otaheite Chestnut** - *Inocarpus edulis*.
- Otaheite Myrtle** - *Securinega durissima*.
- Otaheite Salap-plant** - *Tacca pinnatifida*.
- Our Lady's Milk Thistle** - *Silybum Marianum*.
- Over-cup Oak** - *Quercus lyrata*.
- Owl-headed Clover** - *Trifolium alpestre*.
- Oxeys** - *Buphtalmum*.
- Oxeys Daisy** - *Chrysanthemum Leucanthemum*.
- Oxeys, Great** - *Pyrethrum uliginosum*.
- Ox-heel** - *Helleborus foetidus*.
- Oxlip** - *Primula elatior*.
- Oyamel** - *Abies religiosa*.
- Oyster-plant** - *Mertensia maritima*.

- Oyster-plant, Spanish**—*Scolymus hispanicus*.
Oyster, Vegetable—*Tragopogon porrifolius*.
- Pachouli**—*Pogostemon Patchouli* (*Heptaneus* s).
Padus—*Cerasus* (*Prunus*) *Padus*.
Paeony—*Paeonia*.
Pagoda-tree—*Ficus indica*, *Plumeria alba*, *Sophora japonica*.
Pagle or Paigle—*Primula veris* (Cowslip).
Paint-brush, Flora's—*Emilia flammula*.
Painted Cup—*Castilleja*.
Painted Grass—*Aruado*.
Painted Wood Lily—*Trillium erythrocarpum*.
Pala Indigo-plant—*Wrightia tinctoria*.
Palay-tree—*Wrightia*.
Pale Flax—*Linum angustifolium*.
Palm, Australian Feather—*Ptychosperma* (*Archontophœnix* s).
Palm, Bourbon—*Livistona chinensis*.
Palm, Cabbage—*Areca*, *Euterpe oleracea*, *Oreodoxa oleracea*.
Palm, Carnauba—*Copernicia cerifera*.
Palm, Chusan—*Chamærops Fuctowei*.
Palm, Club—*Cordylina*.
Palm, Coconut—*Cocos nucifera*.
Palm, Coquito (of Chili)—*Jubea*.
Palm, Curly—*Howea Belmoreana*.
Palm, Date—*Acanthophœnix*, *Diospyros virginica*, *Phoenix dactylifera*.
Palm, Doom or Doum—*Hyphæne thebaica*.
Palm, Dwarf Fan—*Chamærops humilis*.
Palm, East Indian Wine—*Phoenix sylvestris*.
Palm, European—*Chamærops humilis*.
Palm, Fan—*Chamærops*, *Corypha*, *Sabal Blackburniana*.
Palm, Feather—*Ptychosperma* (*Archontophœnix* s).
Palm, Fern—*Macrozamia*.
Palm, Flat—*Howea Forsteriana*.
Palm, Gingerbread—*Hyphæne thebaica*.
Palm, Hog's—*Hypoxyphe*.
Palm, Illawarra—*Ptychosperma Cunninghamiana* (*Archontophœnix Cunninghamii* s).
Palm, Ivory-nut—*Phytolapha macrocarpa*.
Palm, Maraja—*Bactris Maraja*.
Palm, Oil—*Bactris guineensis*.
Palm, Palmetto—*Sabal Palmetto*, *Thrinax parviflora*.
Palm, Parlour—*Aspidistra*.
Palm, Patana—*Enneacarpus Batava*.
Palm, Piassaba—*Attalea funifera*.
Palm, Prickly Date—*Acanthophœnix*.
Palm, Raffia or Boffa—*Raphia*.
Palm, Royal Palmetto—*Thrinax parviflora*.
Palm, Sago—*Metroxylon*.
Palm, Savana—*Sabal mauritiformis*.
Palm, Swan River Fern—*Macrozamia*.
Palm, Talipot—*Corypha umbraculifera*.
Palm, Thatoh—*Euterpe*, *Howea*, *Sabal*, *Thrinax*, &c.
Palm, Toddy—*Caryota urens*.
Palm, Umbrella—*Hedyosmum Canterburyana*.
Palm, Virginian Date—*Diospyros virginica*.
Palm, Wax (of Brazil)—*Copernicia cerifera*.
Palm, Wine—*Phoenix sylvestris*.
Palm, Zanona—*Socratea ezorhiza*.
Palma-Christi—*Ricinus communis*.
Palmetto, Blue—*Rhaphidophyllum Hystriz*.
Palmetto, Cabbage—*Sabal Palmetto*.
Palmetto, Dwarf—*Sabal Adansonii*.
Palmetto Palm—*Sabal Palmetto*, *Thrinax parviflora*.
Palmetto, Saw—*Serenoa serrulata*.
- Palmetto, Thatoh**—*Thrinax parviflora*.
Palmito Rouge—*Dictyosperma rubrum*.
Palmito Bush—*Prionium Palmita*.
Palmyra-tree—*Borassus flabelliformis*.
Palo de Vaca—*Galactodendron utile* (*Brosimum Galactodendron* s).
Palsywort—*Primula officinalis*.
Pampas Grass—*Cynèrium* (*Cortaderia* s) *argenteum*.
Panax, Tree—*Dendropanax*.
Panick Grass—*Panicum*.
Pansy—*Viola tricolor*.
Papaw—*Carica papaya*.
Papaw (of the United States)—*Asimina triloba*.
Paper Mulberry—*Broussonetia papyrifera*.
Paper-plant, Rice—*Fatsia papyrifera*, *Severola Kunigii*.
Paper Reed or Rush—*Papyrus antiquorum* (*Cyperus Papyrus* s).
Paper-tree—*Streblus asper*.
Paper-white Narcissus—*Narcissus Tazetta papyraceus*.
Para Cress—*Spilanthes oleracea* (*S. Acnelia* s).
Para Nut—*Bertholletia excelsa*.
Para Rubber—*Hevea brasiliensis*.
Paradise Apple—*Pyrus Malus paradisica*.
Paradise, Grains of—*Annonum Granum Paradisi*, *A. Melgueta*.
Paraguay Tea—*Ilex concocarpa* s, *I. paraguayensis*.
Parasol, Chinese—*Sterculia plataniifolia*.
Parasol Fir—*Sciadopitys verticillata*.
Parasol Mushroom—*Agaricus procerus*.
Parasol Pine—*Pinus Pinea*.
Parchment Bark—*Pittosporum crassifolium*.
Pareira Brava Root—*Cissampelos*.
Paris Daisy—*Chrysanthemum frutescens*.
Parlour Ivy—*Mikania scandens*.
Parlour Palm—*Aspidistra*.
Parnassus, Grass of—*Parnassia palustris*.
Paroquet Bur, Jamaican—*Triumfetta*.
Parrot-beak Plant—*Cianthus*.
Parrot Tulip—*Tulipa* var.
Parrot's-bill—*Cianthus puniceus*.
Parrot's Feather—*Myriophyllum proserpinacoides*.
Parrot's Plantain—*Heliconia pittacorum*.
Parsley—*Carum Petroselinum*.
Parsley, Black—*Thapsia decipiens*.
Parsley, Cow—*Heracleum*.
Parsley Fern—*Cryptogramme*.
Parsley-leaved Elder—*Sambucus nigra laciniata*.
Parasip—*Peucedanum sativum*.
Parasip, Cow—*Heracleum*.
Parasip, Water—*Sium*.
Partridge Berry—*Gaultheria procumbens*, *Mitchella repens*.
Partridge Breast Aloe—*Aloe variegata*.
Partridge Pea—*Heisteria*.
Pasque Flower—*Anemone Pulsatilla*.
Passion Flower—*Passiflora*, *Taconia*.
Pastor's Lettuce—*Sonchus Jacquinii* (*angustis* s).
Patana Palm—*Enneacarpus Batava*.
Patchouli—*Pogostemon Patchouli* (*Heptaneus* s).
Patience—*Rumex Patientia*.
Pea—*Pisum sativum*, *Papilionaceæ* generally.
Pea, Butterfly—*Clitoria*.
Pea, Chick—*Cicer arictinum* s.
Pea, Coffee—*Cicer arictinum*.
Pea, Cow—*Vigna Catjang*.
Pea, Darling River—*Sesamona Greyana*.
Pea, Earth—*Arachis hypogæa*, *Lathyrus amphicarpus*.
Pea, Everlasting—*Lathyrus sylvestris platyphyllus*.

- Pea, Flat**—*Platylobium*.
Pea, Glory—*Clinanthus Dampieri*.
Pea, Gram—*Cicer arretinum* s.
Pea, Heart—*Cardiospermum Halicacabum* s.
Pea, Lord Anson's—*Lathyrus magellanicus* (nervous s).
Pea, North American Hoary—*Tephrosia*.
Pea Nut, Hog—*Amphicarapa monoica*.
Pea, Partridge—*Heisteria*.
Pea, Pigeon—*Cajanus indicus*.
Pea, Poison—*Swinsonia Gregaria*.
Pea, Sourfy—*Psoralea*.
Pea, Shamrock—*Parochetus communis*.
Pea, Sugar—*Pisum sativum* var.
Pea, Sweet—*Lathyrus odoratus*.
Pea, Tangier—*Lathyrus tingitanus*.
Pea-tree—*Sebania*.
Pea-tree, Chinese—*Caragana*.
Pea-tree, Siberian—*Caragana*.
Peach—*Persica vulgaris* (*Prunus Persica*).
Peach, Guinea, Negro, or Sierra Leone—*Sarcocephalus excelsatus*.
Peach, Myrtle—*Hippocalyptina robustum*.
Peach-coloured Trumpet Flower—*Solantra grandiflora*.
Peacock Flower—*Poinciana regia*.
Peacock Flower Fence—*Adecanthera parvina*.
Peacock Iris—*Viciaeazia*.
Peacock Tiger Flower—*Tiroidia Paronia*.
Peaflower—*Centrosema, Clitoria*.
Peagle—*Primula officinalis*.
Pear—*Pyrus communis*.
Pear, Alligator—*Persca gratissima*.
Pear, Anchovy—*Griax cauliflora*.
Pear, Avocado—*Persca gratissima*.
Pear, Garlic—*Catara*.
Pear, Grape—*Amelechier canadensis*.
Pear, Prickly—*Opuntia*.
Pear, Sandy—*Pyrus sinensis*.
Pear, Snow—*Pyrus sinensis*.
Pearl-bush—*Erochorda grandiflora* s.
Pearl Cudweed—*Antennaria (Anaphalis s) margaritacea*.
Pearl Fruit—*Margyricarpus*.
Pearl-plant—*Lithospermum officinale*.
Pearl Weed or Wort—*Sagina*.
Pearly Everlasting—*Antennaria (Anaphalis s) margaritacea*.
Pecan Nut-tree—*Carya oliviformis*.
Peepul-tree—*Ficus religiosa*.
Pegwood—*Cornus sanguinea, Eonymus europæus*.
Pelican Flower—*Aristolochia grandiflora (gigas s)*.
Pellitory—*Pyrethrum Parthenium*.
Pelu-tree—*Sophora tetraptera*.
Penang Lawyers—*Laenfa acutifida*.
Pencil Flower—*Stylosanthes*.
Penny Grass—*Rhinanthus crista-galli*.
Penny Pies—*Cotyledon Umbilicus*.
Pennyroyal—*Mentha Pulegium*.
Pennywort or Pennyleaf—*Cotyledon Umbilicus, Hydrocotyle vulgaris, Linaria Cymbalaria, Salthorpia europæa*.
Peony—*Pœonia*.
Pepper—*Piper, &c*.
Pepper, Bell—*Capsicum grossum*.
Pepper, Bird—*Capsicum baccatum*.
Pepper-bush—*Leucothoe racemosa*.
Pepper, Cayenne—*Capsicum annuum*.
Pepper, Chinese—*Zanthoxyllum piperitum*.
Pepper Elder—*Peperomia, Piper*.
Pepper, Indian Wild—*Vitex trifolia*.
Pepper, Jamaica—*Pimenta officinalis*.
Pepper, Japanese—*Zanthoxyllum piperitum*.
Pepper, Red—*Capsicum*.
Pepper, Red—*Capsicum annuum*.
Pepper Saxifrage—*Silene pratensis*.
Pepper-tree, Australian or Californian—*Schinus Molle*.
Pepper-tree, Monk's—*Vitex Agnus-castus*.
Pepper Vine—*Ampelopsis (Vitis) bipinnata*.
Pepper, Wall—*Sedum acre*.
Pepperidge—*Nyssa multiflora*.
Peppermint—*Mentha piperita* (Mint).
Peppermint-tree—*Eucalyptus*.
Pepperwort—*Lepidium*.
Perennial Aster—*Michaelmas Daisy* species and varieties of *Aster*.
Periwinkle—*Vinea*.
Perpetual Rose—*Rosa damascena portlandica* s.
Persian Lilac—*Syringa dubia*.
Persian Ranunculus—*Ranunculus asiaticus vulgaris*.
Persian Sun's-eye—*Tulipa Oculus-solis*.
Persimmon—*Diospyros virginiana*.
Peru Balsam-tree—*Myrsocylon peruvianum*.
Peru, Marvel of—*Mirabilis Jalapa*.
Peruvian Apple—*Necandra physaloides*.
Peruvian Bark Tree—*Cinchona*.
Peruvian Daffodil—*Ismene (Hymenocallis)*.
Peruvian Lily—*Abstrœmeria*.
Peruvian Mastic Tree—*Schinus Molle*.
Peruvian Nasturtium—*Tropœolum tuberosum*.
Peruvian Swamp Lily—*Zephyranthes candida*.
Peruvian Trumpet Flower—*Broomansia saxicola*.
Petticoat, Hoop—*Narcissus Bulbosodium*.
Pettigree or Pettigree—*Ruscus aculeatus*.
Pettywhin—*Genista anglica, Ononis arvensis*.
Pharaoh's Fig—*Sycomoros Antiquorum (Ficus Sycomoros s)*.
Pheasant's-eye—*Adonis vernalis, A. autumnalis, Dianthus plumarius*.
Pheasant's-eye Narcissus—*Narcissus poeticus*.
Phillyrea, Cape—*Elæodendron capense*.
Physic, Indian—*Magnolia Fraseri*.
Physic Nut—*Jatropha*.
Piassaba Palm—*Attalea funifera*.
Pickeral Weed—*Pontederia*.
Picotee—*Dianthus Caryophyllus*.
Pig Nut—*Carya porcina*.
Pig Root—*Sisyrinchium*.
Pigeon Berry—*Phytolacca decandra*.
Pigeon Pea—*Cajanus indicus*.
Pigeon's Grass—*Verbena officinalis*.
Pilewort—*Ranunculus Ficaria*.
Pillwort—*Pilularia*.
Pilot Weed—*Silphium laciniatum*.
Pimento-bush—*Pimenta officinalis*.
Pimpernel—*Anagallis, Poterium Sanguisorba, Prunella (Brunella s) vulgaris*.
Pin Oak—*Quercus palustris*.
Pin Pillar—*Opuntia curassavica*.
Pinaster—*Pinus Pinaster*.
Pin cushion Flower—*Scabiosa*.
Pine—*Pinus* and other Coniferous genera.
Pine, Adventure Bay—*Phyllocladus rhomboidalis*.
Pine, Amboyna—*Dammara orientalis (Agathis branthifolia s)*.
Pine, Bishop's—*Pinus muricata*.
Pine, Black—*Pinus (Laricio s) austriaca, Prumnopitys picata s*.
Pine, Bunya-Bunya—*Araucaria Bidwillii*.
Pine, Celery-leaved—*Phyllocladus*.

Pine, Chilean—*Araucaria imbricata*.
Pine, Dammar—*Dammara*.
Pine, Green—*Fragaria collina*.
Pine, Illawarra—*Podocarpus spinulosa*.
Pine, Kauri—*Dammara (Agathis s) australis*.
Pine, Mahogany—*Podocarpus Totara*.
Pine, Moreton Bay—*Araucaria Bidwillii*.
Pine, Norfolk Island—*Araucaria excelsa*.
Pine, Screw—*Pandanus*.
Pine, Strawberry—*Fragaria chilensis grandiflora*.
Pine, Totaro—*Podocarpus Totara*.
Pine, Umbrella—*Sciadopitys verticillata*.
Pine-apple—*Ananas sativus s*.
Pine-apple Flower—*Eucemis punctata*.
Pine-apple-scented Sage—*Salvia rutilans*.
Pine-barren Beauty—*Pyxidantha barbata*.
Pink—*Dianthus*.
Pink, American Wild—*Silene (Melandryum s) pennsylvanica*.
Pink, Cushion—*Silene acaulis*.
Pink, Fire—*Silene virginica*.
Pink, Ground—*Phlox subulata*.
Pink, Indian—*Dianthus chinensis, Spigelia marilandica*.
Pink, Moss—*Phlox subulata*.
Pink, Mullein—*Lycalis coronaria*.
Pink-of-my-John—*Viola tricolor*.
Pink Root—*Spigelia Anthelmia, S. marilandica*.
Pink, Rose—*Sabbatia angularis*.
Pink, Sea—*Armeria*.
Piony—*Paeonia*.
Pipe-tree—*Syringa*.
Pipe Vine—*Aristolochia Sipho*.
Piperidge, Pipperidge, or Piprage—*Berberis vulgaris*.
Pipewort—*Eriocaulon*.
Pipil Boqui—*Campsidium chilense (Tecoma valdiviana s)*.
Pippul Tree—*Ficus religiosa*.
Pishanin, Sweet—*Cappadocianus*.
Pistachio Nut-tree—*Pistacia vera*.
Pistol-plant—*Pilea microphylla*.
Pitch Pine—*Pinus australis (palustris s), P. rigida*.
Pitch Pine, Western—*Pinus ponderosa*.
Pitch-tree, Burgundy—*Picea excelsa*.
Pitcher-plant—*Cephalotus, Darlingtonia, Nepenthes, Sarracenia*.
Plane-tree—*Platanus*.
Plane-tree, Scotch—*Acer pseudo-platanus*.
Planer-tree—*Planera aquatica*.
Plank-plant—*Bossia scolopendria*.
Plantain—*Plantago*.
Plantain Lily—*Fraxia*.
Plantain, Mud—*Heteranthera reniformis*.
Plantain, Parrot's—*Heliconia psittacorum*.
Plantain, Water—*Alisma Plantago*.
Plantain-tree—*Musa*.
Plenty, Horn of—*Folia Cornucopie*.
Ploughman's Spikenard—*Baccharis*.
Plum—*Prunus*.
Plum, Black—*Vitex Doniana*.
Plum, Bullaoe (of Jamaica)—*Melicocca bijuga*.
Plum, Chicaw—*Ceranus (Prunus) Chicaw s*.
Plum, Cocoa—*Chrysalidanus Icaeo*.
Plum, Date—*Diospyros*.
Plum Fir—*Podocarpus andina (Prumnopitys elegans s)*.
Plum, Gingerbread—*Parinarium macrophyllum*.
Plum Grape—*Vitis Labrusca*.
Plum, Gray—*Parinarium excelsum*.
Plum, Guinea—*Parinarium excelsum*.
Plum, Hog—*Spondias, Ximenia americana*.

Plum, Jamaica—*Spondias lutes*.
Plum, Maiden—*Comocladia*.
Plum, Marmalade—*Lucuma mammosa*.
Plum, Mountain—*Ximenia americana*.
Plum Nutmegs—some *Mouiniaceae*.
Plum, Sapodilla or Sapotilla—*Sapota Achras (Achras Sapota s)*.
Plum, Seaside—*Ximenia americana*.
Plume Aster—*Callistephus s*.
Plume Poppy—*Baccania cordata*.
Plumed Thistle—*Cnicus*.
Plumier's Lip Fern—*Cheilanthes microphylla*.
Poet's Cassia—*Osyris*.
Poet's Laurel—*Laurus nobilis*.
Poet's Narcissus—*Narcissus poeticus*.
Pois Perdrix—*Heisteria*.
Poison Ash—*Chionanthus virginica*.
Poison Berry—*Cestrum*.
Poison Bulb, Asiatic—*Crinum asiaticum*.
Poison Bulb, Cape—*Brunsvigia toxicaria (Buphan disticha s)*.
Poison Dogwood—*Rhus venenata*.
Poison Elder—*Rhus venenata*.
Poison Ivy—*Rhus Toxicodendron*.
Poison Nut—*Stegelinus Nux-vomica*.
Poison Oak—*Rhus Toxicodendron*.
Poison Pea—*Scaevola Grayana*.
Poison Sumach—*Rhus venenata*.
Poison Vine—*Rhus Toxicodendron*.
Poisonous Hogweed—*Aristolochia gigas*.
Poke or Pokeweed—*Phytolacca*.
Poker-plant—*Kaliphofa aloides*.
Polar Plant—*Silphium laciniatum*.
Polish Juniper—*Juniperus communis cretica*.
Poly—*Tracium*.
Polyantha Roses—*Rosa polyantha*.
Polyanthus—*Primula hybrid*.
Polyanthus Narcissus—*Narcissus Tazetta*.
Polypod—*Polypodium*.
Pomegranate—*Punica granatum*.
Pommelo—*Citrus decumana*.
Pompion—*Cucurbita*.
Pompono Rose—*Rosa centifolia pomponia*.
Pond Lily—*Nuphar advenat*.
Pondweed—*Potamogeton*.
Pondweed, Cape—*Aponogeton distachyon*.
Pondweed, Horned—*Zannichellia*.
Poonga Oil-plant—*Pongamia glabra*.
Popcorn—*Zea Mays var.*
Pope's Head—*Melocactus communis*.
Poplar—*Populus*.
Poppy—*Papaver*.
Poppy Anemone—*Anemone coronaria*.
Poppy, Blue Himalayan—*Mecconopsis*.
Poppy, Californian—*Platystemon californicus*.
Poppy, Californian Bush—*Romneya*.
Poppy, Celandine—*Stylophorum diphyllum*.
Poppy, Horned—*Glaucium*.
Poppy Mallow—*Callirhoe*.
Poppy, Mexican—*Argemone*.
Poppy, Plume—*Baccania cordata*.
Poppy, Prickly—*Argemone mexicana*.
Poppy, Seaside—*Glaucium flavum*.
Poppy, Tree—*Dendromecon rigida*.
Poppy, Water—*Hydrocleys Comarostomi*.
Poppy, Welsh—*Mecconopsis cambrica*.
Portia Nut Oil-plant—*Thepesia populnea*.

Portland Rose—*Rosa damascena portlandica* s.
Portugal Crakeberry—*Cornus*.
Portugal Laurel—*Cerasus* (*Prunus*) *lusitanica*.
Portugal Quince—*Cydonia vulgaris* (*Pyrus Cydonia* s.) *lusitanica*.
Portuguese Furze—*Ulex genistoides*.
Post Oak—*Quercus stellata*.
Pot Marigold—*Calendula officinalis*.
Potato—*Solanum tuberosum*.
Potato, Madagascar—*Solanum indicum*.
Potato Onion—*Allium Cepa aggregatum*.
Potato, Spanish or Sweet—*Datata edulis* (*Ipomoea batatas*).
Potato-tree—*Solanum crispum*.
Potato Vine—*Ipomoea purpurata*.
Potentill, Marsh—*Potentilla Comarum (palustris)* s.
Pottery-tree (of Para)—*Miquilea utilis*.
Prairie Clover—*Petalostemon*.
Prairie Dock—*Silphium terebinthaceum*.
Prairie Lily—*Mentzelia orata*.
Prairie, Queen of the—*Spiraea lobata*.
Prairie Rose—*Rosa setigera*.
Pretty Face—*Callipora lutea*.
Prickly Ash—*Zanthoxylum*.
Prickly Cedar—*Cyathodes acerosa*.
Prickly Comfrey—*Symphylitum asperimum*.
Prickly Date Palm—*Acanthophrasin*.
Prickly Heath—*Peruetya mucronata*.
Prickly Ivy—*Smilax aspera*.
Prickly Pear—*Opuntia*.
Prickly Poppy—*Argemone mexicana*.
Prickly Rhubarb—*Gunnera*.
Prickly Shield Fern—*Nephrodium*.
Prickly Thrift—*Acantholimon*.
Prickwood—*Cornus sanguinea*, *Euonymus europæus*.
Pride of the Congo—*Richardia Lutwychei (hastata)*.
Primrose—*Primula*.
Primrose, Abyssinian—*Primula Boreana (verticillata)* s.
Primrose, Cape—*Streptocarpus*.
Primrose, Evening—*Eleocharis*.
Prince Albert's Yew—*Saxegotha conspicua*.
Prince of Wales's Feather Fern—*Todea superba*.
Prince's Feather—*Anacanthus hypochondriacus*.
Privet—*Ligustrum vulgare*.
Privet, Mock—*Phillyrea*.
Procession Flower—*Polygala vulgaris*.
Prophet Flower—*Arnebia echioides*.
Provence Roses—*Rosa centifolia*.
Public-house Plant—*Asarum europæum*.
Puocoon, Red—*Sanguinaria*.
Pucha-Pat—*Popostemon Patchouli (Heyneanus)* s.
Puchero—*Talinum patens*.
Pudding Berries—*Cornus canadensis*.
Puff-ball—*Lycoperdon*.
Pulsatilla—*Anemone Pulsatilla*.
Pumpkin—*Cucurbita*.
Purification Flower—*Galanthus nivalis*.
Purple Beech—*Fagus sylvatica purpurea*.
Purple-flowering Raspberry—*Rubus odoratus*.
Purple Large-leaved Saxifrage—*Saxifraga purpurascens*.
Purple Loosestrife—*Lythrum Salicaria*.
Purple Lucern or Medick—*Medicago sativa*.
Purple Osier—*Salix purpurea*.
Purple Wreath—*Petræa vulbilis*.
Purple Wreathwort—*Orchis mascula*.
Purslane—*Claytonia*, *Portulaca oleracea*.

Purslane, Sea—*Atriplex hortensis* (Orach), *Scævium Portulacastrum*.
Purslane-tree—*Portulacaria afra*.
Quaking Grass—*Briza*.
Quamaah—*Canavalia exculenta*.
Quebec Oak—*Quercus alba*.
Queen Lily—*Phe'dranassa*.
Queen of the Meadows—*Spiræa Ulmaria*.
Queen of the Orchids—*Grammatophyllum speciosum*.
Queen of the Prairie—*Spiræa lobata*.
Queen Victoria's Water-lily—*Victoria regia*.
Quercitron—*Quercus tinctoria (velutina)* s.
Quick or Quickthorn—*Cratægus Oxyacantha*.
Quillala-tree—*Quillaja saponaria*.
Quillwort—*Isoetes* s.
Quina, Quino, or Quinquina—*Cinchona*.
Quince—*Cydonia vulgaris (Pyrus Cydonia)* s.
Quince, Bastard—*Pyrus Chamæmespilus*.
Quince, Bengal—*Ægle Marmelos*.
Quince, Japan—*Photinia (Eriobotrya)* s. *japonica*.
Quinine-plants—*Cinchona*, *Remijia pedunculata* s.
Quinsy Berry—*Ribes nigrum*.
Quiver-tree—*Aloe dichotoma*.
Rabbit Berry—*Shepherdia argentea*.
Radish—*Raphanus sativus*.
Radish, Horse—*Cochlearia armoracia*.
Rafia Palm—*Raphia*.
Ragged Robin—*Lychnis Flos-cuculi*.
Ragweed—*Senecio*.
Ragwort—*Othoma*, *Senecio Jacobæa*.
Ragwort, Barbary—*Othonopsis cheirifolia*.
Ragwort, Sea—*Cineraria maritima (Senecio Cineraria)* s.
Rain Berry—*Rhamnus catharticus*.
Rainbow Flower—*Iris*.
Raisin-tree, Japanese—*Hovenia dulcis*.
Ramanas Roses—*Rosa rugosa*.
Ramoon-tree—*Trophis*.
Rampion—*Campanula Rapunculul*.
Rampion, Horned—*Phyteuma*.
Ram's-foot—*Ranunculus aquatilis*.
Ram's-head—*Cypripedium arietinum*.
Ram's-horns—*Orchis mascula*.
Ramsons—*Allium ursinum*.
Rangoon Creeper—*Quisqualis indica*.
Ranry—*Pyrus Aucuparia*.
Ranunculus, Globe—*Trollius*.
Rape—*Brassica campestris Napus*.
Rape, Broom—*Orphanæche*.
Raspberry—*Rubus Idaeus*.
Raspberry, American Wild Red—*Rubus strigosus*.
Raspberry, Black—*Rubus occidentalis*.
Raspberry, Dwarf—*Rubus triflorus*.
Raspberry, Purple-flowering—*Rubus odoratus*.
Raspberry, Virginian—*Rubus occidentalis*.
Raspis—*Rubus Idaeus* (Raspberry).
Rat's-tail Cactus—*Cereus flagelliformis*.
Rattan Cane—*Calamus (Dacronorops)* s. *Draco*.
Rattan Cane, Ground—*Rhapis flabelliformis*.
Rattle, Red—*Pedicularis sylvatica*.
Rattle, Yellow—*Rhinanthus Crista-galli*.
Rattlesnake Fern—*Botrychium virginianum*.
Rattlesnake Orchid—*Pholidota*.
Ray Pod—*Actinocarpus Damascenium (Damascenium stellatum)* s.

- Red Bay**—*Persea carolinensis* s.
Red Berry, Australian—*Rhagodia*.
Red Birch—*Betula nigra*.
Red Buckeye—*Pavia rubra*.
Red Bud—*Cercis canadensis*.
Red Campion—*Lychnis diurna* (*divica* s.).
Red Cedar—*Juniperus virginiana*.
Red Currant—*Ribes rubrum*.
Red Deal—*Pinus sylvestris*.
Red Elm—*Ulmus falva*.
Red English Elm—*Ulmus campestris stricta*.
Red Gum—*Eucalyptus resinifera* s.
Red-head—*Asclepias curawavica*.
Red-hot Poker—*Kniphofia aloides*.
Red Ink Plant—*Phytolacca decandra*.
Red Lac Sumach—*Rhus succedanea*.
Red Larch—*Larix americana* (*pendula* s.).
Red Legs—*Polygonum bistorta*.
Red Lychnis—*Lychnis diurna* (*divica* s.).
Red Mahogany—*Eucalyptus resinifera* s.
Red Morocco—*Adonis autumnalis*.
Red Oak—*Quercus rubra*, *Q. texana* s.
Red Osier Dogwood—*Cornus stolonifera*.
Red Pepper—*Capicum annuum*.
Red Pine—*Pinus resinosa* s.
Red Puccoon—*Sanguinaria*.
Red Rattle—*Pedicularis sylvatica*.
Red Root—*Ceanothus americanus*, *Lachnanthes*.
Red Rot—*Drosera rotundifolia*.
Red-stalked Bladder Fern—*Cyrtopteris fragilis angustata*.
Red Valerian—*Centranthus ruber*.
Red Water-tree—*Erythrophloeum*.
Red Weed—*Papaver Rhoeas*.
Redwood-tree—*Ceanothus*, *Pterocarpus*, *Sequoia sempervirens*.
Reed—*Arundo*.
Reed, Bur—*Sparganium*.
Reed, Common or Great—*Phragmites* s.
Reed Grass—*Arundo conspicua*.
Reed, Indian—*Canna indica*.
Reed Mace—*Typha latifolia*.
Reed, Paper—*Papyrus antiquorum* (*Cyperus Papyrus* s.).
Reed, Small—*Calamagrostis*.
Reed, Water—*Arundo*.
Rennet, Cheese—*Galium verum*.
Resin, Anime—*Hymenaea Courbaril*.
Resin-plant—*Bursera gummiifera*, *Dammara australis*, *Guaiacum officinale*, *Pistacia Lentiscus*, *Silphium*, &c.
Rest-harrow—*Ononis*.
Resurrection Club Moss—*Selaginella lepidophylla*.
Resurrection-plant—*Anastatica Hierochontina*.
Rhatany Root—*Krameria triandra*.
Rhea—*Bohemeria nivea*.
Rheumatism Root—*Jeffersonia diphylla* (*binata* s.).
Rhine Berry—*Rhamnus catharticus*.
Rhodod-tree—*Pyrus Aucuparia*.
Rhodes Wood—*Amgris toxifera*.
Rhubarb—*Rheum*.
Rhubarb, Bog—*Petasites vulgaris* (*officinalis* s.).
Rhubarb, False—*Thalictrum flavum*.
Rhubarb, Prickly—*Gunnera*.
Rib Grass—*Plantago lanceolata*.
Ribbon Grass—*Phalaris arundinacea variegata*.
Ribbon Fern—*Vittaria, Arvenis*.
Ribbon-tree—*Plagianthus*.
Rice—*Oryza*.
Rice, Canada—*Zizania aquatica*.
Rice Flower—*Pinellia*.
Rice, Indian—*Zizania*.
Rice Paper-plant, Chinese—*Fatsia papyrifera*.
Rice Paper-plant, Malay—*Scaevola Koenigii*.
Rice, Water—*Zizania*.
Rigid Wood Fern—*Nephrodium rigidum*.
Ringworm Root—*Rhinacanthus communis*.
Roan-tree—*Pyrus Aucuparia*.
Roast-beef Plant—*Iris fetidissima*.
Robert, Herb—*Geranium Robertianum*.
Robin, Ragged—*Lychnis Flos-cuculi*.
Rocamboles—*Allium Scourtopaxum*.
Rock Beauty—*Draba pyrenaica*.
Rock Brake—*Cryptogramme*.
Rock Broom—*Genista*.
Rock Carrot—*Thapsia edulis*.
Rock Cress—*Arabis*.
Rock Cress, Purple—*Aubrieta deltoidea purpurea*.
Rock Jasmine—*Androsace*.
Rock Lychnis—*Lychnis Viscaria*.
Rock Pink—*Dianthus petraeus*.
Rock Potentil—*Potentilla palustris*.
Rock Rose—*Cistus*.
Rock Soapwort—*Saponaria ocynoides*.
Rock Tobacco—*Primulina Tabacum* s.
Rocket—*Hesperis matronalis*.
Rocket Candytuft—*Iberis coronaria*.
Rocket, Cress—*Vella Pseudo-Cytisus*.
Rocket, Dame's—*Hesperis matronalis*.
Rocket, Double Yellow—*Barbarea vulgaris*.
Rocket, Dyer's—*Reseda Lutola*.
Rocket Larkspur—*Delphinium Ajacis*.
Rocket, Sea—*Cakile*.
Rocket, White—*Hesperis matronalis*.
Rocket, Yellow—*Barbarea vulgaris*.
Rockfoil—*Saxifraga*.
Rockspray—*Cotoneaster*.
Rocky Mountain Blue Spruce—*Picea pungens* s.
Roddon-tree—*Pyrus Aucuparia*.
Rodgers' Bronze-leaf—*Rodgersia polyphylla*.
Roffa Palm—*Raphia*.
Rogation Flower—*Polygala vulgaris*.
Roman Cypress—*Cupressus sempervirens*.
Roman Hyacinth (of bulb growers) —*Hyacinthus orientalis albulus*.
Roman Squill—*Bellevalia (Hyacinthus) romanus*.
Roof-foil—*Sempervivum tectorum*.
Room Plant—*Ruellia tinctoria*.
Root of Scarcity—*Beta vulgaris macrohiza* (Mangel Wurzel).
Rope Grass—*Redia*.
Rose—*Rosa*.
Rose Acacia—*Robinia hispida*.
Rose, Alpine—*Rhododendrum ferrugineum*, *R. hirsutum*.
Rose Apple—*Eugenia Jambos*.
Rose Bay—*Epilobium angustifolium*, *Nerium Oleander*, *Tabernaemontana coronaria*.
Rose Box—*Cotoneaster*.
Rose Campion—*Agrostemma (Lychnis) s.*
Rose, Chinese—*Hibiscus Rosa-sinensis*.
Rose, Christmas—*Helleborus niger*.
Rose, Egyptian—*Scabiosa arvensis*.
Rose Elder—*Viburnum Opulus*.
Rose, Gipsies'—*Scabiosa arvensis*.
Rose, Guelder—*Viburnum Opulus*.
Rose, Holly—*Helianthemum*.

- Rose, Jamaica**—*Blakea trinervis*, *Meriania*.
Rose, Japanese—*Camellia*.
Rose, Juno's—*Lilium candidum*.
Rose, Lenten—*Helleborus*.
Rose Mallow—*Hibiscus*.
Rose Pink—*Sabbatia angularis*.
Rose, Rock—*Cistus*.
Rose Root—*Sedum Rhodiola*.
Rose, Sage—*Cistus*, *Turnera ulmifolia*.
Rose, Sun—*Helianthemum*.
Rose Vervain—*Verbena Aubletia*.
Rose, Willow—*Salix rubra Helix*.
Rose, Wind—*Papaver Rhoeas*, *Ranuncula hybrida*.
Rose of Heaven—*Agrostemma (Lycbhis s) Cali-rocea*.
Rose of Jericho—*Anastatica Hierochuntina*.
Rose of Sharon—*Hypericum calycinum*.
Rosemary—*Rosmarinus officinalis*.
Rosemary, Marsh or Wild—*Andromeda polifolia*.
Rosemary, Victorian—*Westringia rosmarinifolia*.
Rosette Mullein—*Ranondia pyrenaica*.
Rosewood, Burmese—*Pterocarpus indicus*.
Rosewood-tree—*Dalbergia*, &c.
Resin-plant See **Resin-plant**.
Rouen Lilac—*Syringa chinensis*.
Rouge-plant—*Rivina humilis*.
Round-eared Willow—*Salix aurita*.
Round-leaved Cornel—*Cornus circinata*.
Round Zedoary—*Curcuma Zedoaria*.
Rounded Shield Fern—*Nephrodium unitum glabrum*.
Rowan-tree—*Pyrus Aucuparia*.
Rowan-tree, Dog—*Viburnum Opulus*.
Royal Bay—*Laurus nobilis*.
Royal Catchfly—*Silene regia*.
Royal Fern—*Osmunda regalis*.
Royal Palmetto Palm—*Thrinax parviflora*.
Royal Peacock Flower—*Poinciana regia*.
Royal Water-lily—*Victoria regia*.
Rubber, Bottle or Brazilian—*Hevea guianensis s.*
Rubber, Para—*Hevea brasiliensis*.
Rubber-plant, East Indian—*Ficus elastica*.
Rubber-tree, African—*Landolphia*.
Ruddles—*Calendula*, &c. (Marigolds).
Rue—*Ruta graveolens*.
Rue Anemone—*Thalictrum anemonoides*.
Rue, Fon—*Thalictrum flavum*.
Rue, Goat's—*Galega*.
Rue Maldenhair—*Asplenium Ruta-muraria*.
Rue, Meadow—*Thalictrum*.
Rue, Stone—*Asplenium Ruta-muraria*.
Rue, Wall—*Asplenium Ruta-muraria*.
Runner Bean—*Phaseolus vulgaris multiflorus*.
Running Oak—*Quercus prinus s.*
Rupture-wort—*Herniaria glabra*.
Rush—*Juncus*.
Rush, Broom—*Spartium junceum*, *Viminaria*.
Rush, Club—*Scirpus Typha*.
Rush Fern—*Schizaa*, *Monogramme*.
Rush, Flowering—*Butomus umbellatus*.
Rush Lily—*Sisyrinchium*.
Rush, Nut—*Scleria*.
Rush, Paper—*Papyrus antiquorum* (*Cyperus Papyrus s.*)
Russian Daisy—*Pyrethrum Tchihatchewii*.
Russian Larch—*Larix Ledebourii* (*europaea sibirica s.*)
Russian Mulberry—*Morus alba tatarica s.*
Russian Violet—*Viola (odorata s) suavis*.
Rye Grass, Italian—*Lolium italicum*.
Sacred Bean—*Nelumbium*, *Nymphæa Lotus*.
Sacred Cedar—*Cedrus Deodara*.
Sacred Lily, Chinese—*Narcissus Tazetta* var.
Sacred Lotus—*Nelumbium*.
Saddle-tree—*Liriodendron tulipifera*.
Sadness, Tree of—*Nyctanthes Arbor-tristis*.
Safflower—*Carthamus*.
Saffron—*Crocus sativus*.
Saffron, Meadow—*Colchicum*.
Saffron Thistle—*Carthamus tinctorius*.
Sage—*Salvia officinalis*.
Sage, Bastard Wood—*Teucrium Pseudo-scorodonia*.
Sage Bush—*Artemisia*.
Sage, Jerusalem—*Phlomis fruticosa*.
Sage of Bethlehem—*Pulmonaria officinalis*.
Sage Rose—*Cistus*, *Turnera ulmifolia*.
Sage Vervain—*Salvia Verbenæa*.
Sago Palm—*Metroxylon*.
Sago-tree, Jamaica—*Zamia furfuracea*, *Z. integrifolia*.
Sailor, Creeping—*Saxifraga sarmentosa*.
Sainfoin or Sainfoin—*Onobrychis sativa (vicifolia s)*.
St. Andrew's Cross—*Ascyrum Cruz-Andree*.
St. Anthony's Nut—*Staphylea pinnata*.
St. Anthony's Turnip—*Ranunculus bulbosus*.
St. Barbara's Heath—*Barbarea vulgaris*.
St. Bernard's Lily—*Anthericum Liliago*.
St. Brigid's Anemone—*Anemone coronaria* var.
St. Bruno's Lily—*Anthericum (Paradisica s) Liliastrum*.
St. Dabec's Heath—*Dabecia polifolia*.
St. George's Herb—*Valeriana officinalis*.
St. George's Mushroom—*Agaricus gambosus*.
St. James' Cross Lily—*Sprekelia formosissima s.*
St. James's Lily—*Sprekelia formosissima*.
St. John's Bread—*Cerastium Siliqua*.
St. John's Wort—*Hypericum bircinum*, *H. perforatum*,
Symphoricarpos vulgaris (orbiculatus s).
St. Joseph's Lily—*Lilium candidum*.
St. Julian Plum—*Prunus juliana*.
St. Martin's Flower—*Abronia pulchra*.
St. Martin's Herb—*Sauvagesia erecta*.
St. Mary's Wood—*Catophyllum inophyllum*.
St. Patrick's Cabbage—*Saxifraga umbrosa*.
St. Peter's Wort—*Ascyrum stans*, *Hypericum Ascyron*,
Primula officinalis, *Symphoricarpos*.
Salad Burnet—*Poterium Sanguisorba*.
Salad, Corn—*Valerianella olitoria*.
Salal or Sallon Shrub—*Gaultheria Shallon*.
Salap-plant, Otahelte—*Tacca pinnatifida*.
Salgot—*Trapa*.
Sallow—*Salix*.
Sallow Thorn—*Hippophaë*.
Salmon Berry—*Rubus spectabilis*.
Salsafy—*Tragopogon porrifolium*.
Salt-tree—*Halimodendron*.
Saltwort—*Salsola*.
Saltwort, Black—*Glaux maritima*.
Sambul-plant—*Ferula Sambal*.
Sapphire—*Crithmum maritimum*.
Sapphire, Marsh—*Salicornia*.
Sapphire, West Indian—*Sesuvium Portulacastrum*.
Sand Blackberry—*Rubus cuneifolius*.
Sand Leek—*Allium Scorodoprasum*.
Sand Myrtle—*Leiophyllum*.
Sand Pear—*Pyrus sinensis*.
Sand Verbena—*Abronia*.
Sandal-tree—*Sandoricum*.

Sandal Wood—*Santalum album*.
Sandal Wood, False—*Xylocia americana*.
Sandarach Gum-tree—*Calitris quadrivalvis* (*Tetractis articulata* s).
Sandbar-tree—*Hura*.
Sandfly-bush—*Zieria Smithii*.
Sandwort—*Arenaria*.
Sandy Pear—*Pyrus sinensis*.
Sanguinaire-plant—*Paronychia argentea*.
Saniola, Bear's-ear—*Cortusa*.
Saouari Nut—*Caryocarp uiferum*.
Sapodilla or Sapotilla Plum—*Sapota Achras* (*Achras Sapota* s).
Sapota, White—*Casimiroa edulis*.
Sappan Wood—*Caesalpinia Sappan*.
Sarsaparilla—*Smilax*, &c.
Sassafras, Australian—*Doryphora Sassafras* s.
Sassafras, Californian—*Umbellularia californica*.
Sassafras, Swamp—*Magnolia glauca*.
Sassafras, Tasmanian—*Atherosperma moschata*.
Sassafras-tree—*Sassafras officinale*.
Satin-bush, African—*Podalyria sericea*.
Satin Flower—*Sisyrinchium*, *Stellaria Holostea*.
Satin Leaf—*Heuchera Richardsonii*.
Satinwood-tree—*Chloroxylon Suietiana*.
Savannah Palm—*Sabal mauritiformis*.
Savin-tree—*Juniperus Sabina*.
Savin-tree, False—*Juniperus pseudo-Sabina* s.
Savory, Summer—*Satureia hortensis*.
Savory, Winter—*Satureia montana*.
Savoury Akee-tree—*Cupania spida*.
Savoy Cabbage—*Brassica oleracea bullata major*.
Saw Palmetto—*Serenoa serrulata*.
Saw-leaved Speedwell—*Veronica Trucium*.
Saw-wort—*Saussurea*, *Serratula*.
Saxifrage—*Saxifraga*.
Saxifrage, Burnet—*Pimpinella*.
Saxifrage, Golden—*Chrysosplenium*.
Saxifrage, Meadow—*Saxifraga granulata*, *Seseli*, *Silau pratensis*.
Saxifrage, Pepper—*Silau pratensis*.
Scabious—*Scabiosa*.
Scabious, Sheep's-bit—*Jasione montana*.
Scabwort—*Imula Helenium*.
Scale or Scaly Fern—*Asplenium Ceterach*.
Scallion—*Allium acatonense majus*.
Scalloped Tube-tongue—*Salpiglossis sinuata*.
Scaly Spleenwort—*Asplenium Ceterach*.
Scammony-plant—*Convolvulus Scammonia*.
Scarborough Lily—*Vallota purpurea*.
Scarcity, Root of—*Beta vulgaris macrorrhiza* (Mangel or Mangold Wurzel).
Scarlet-berried Elder—*Sambucus racemosa*.
Scarlet Cacalia—*Emilia sonchifolia* s.
Scarlet Maple—*Acer rubrum*.
Scarlet Runner Bean—*Phaseolus vulgaris multiflorus*.
Scarlet Strawberry—*Fragaria virginiana*.
Scented Cucumber—*Cucumis Dudaim* s.
Scented Polypody—*Polypodium pustulatum*.
Scented Trefoil—*Melilotus*.
Scented Verbena—*Aloysia (Lippia) citriodora*.
Scimitar Pods—*Entada scandens*.
Scorpion Grass—*Nyctotis*.
Scorpion Senna—*Coranilla Emerus*.
Scotch Asphodel—*Tofieldia palustris*.
Scotch Bonnets—*Nararius oreades*.

Scotch Elm—*Ulmus montana*.
Scotch Fir—*Pinus sylvestris*.
Scotch Heath or Heather—*Erica cinerea*.
Scotch Kale—*Brassica oleracea subriata* (Borecole).
Scotch Laburnum—*Laburnum alpinum*.
Scotch Lilac—*Syringa vulgaris violacea*.
Scotch Pine—*Pinus sylvestris*.
Scotch Plane-tree—*Acer Pseudo-platanus*.
Scotch Primrose—*Primula (farinosa* s) scotica.
Scotch Roses—*Rosa spinosissima*.
Scotch Thistle—*Onopordum acanthium*.
Screw Pine—*Pandanus*.
Screw-tree—*Helicteres*.
Scrofula Leaf or Weed—*Goodyera pubescens*.
Scrub Oak—*Quercus Catesbaei*, *Q. ilicifolia*, *Q. undulata* s, and other species.
Scrub Pine—*Pinus Banksiana* s, *P. inops* s, &c.
Scrubby Oak—*Lophira africana (ata)* s).
Sourfy Pla—*Puralea*.
Sourvy Grass—*Cochlearia officinalis*.
Sea Beet—*Beta maritima*.
Sea Bells—*Calyptegia Soldanella*.
Sea Berry, Australian—*Ragodia*.
Sea Buckthorn—*Hippophae*.
Sea Daffodil—*Panarratium*.
Sea Heath—*Frankenia*.
Sea Holly—*Eryngium maritimum*.
Sea Kale—*Crambe maritima*.
Sea Lavender—*Statice*.
Sea Milkwort—*Glaux maritima*.
Sea Onion—*Scilla verna*, *Urginea maritima*.
Sea Pink—*Armeria*.
Sea Purslane—*Atriplex hortensis* (Orach), *Securinum Portulacastrum*.
Sea Ragwort—*Cineraria maritima* (*Senecio Cineraria* s).
Sea Rocket—*Cakile*.
Sea Scirpus—*Scirpus maritimus* s.
Sea Spleenwort—*Asplenium marinum*.
Sea Starwort—*Aster Tripodium*.
Seal Flower—*Dicentra spectabilis*.
Seaside Balsam—*Croton Eluteria*.
Seaside Beech—*Excoecma caribaeum*.
Seaside Grape—*Coccoloba*.
Seaside Laurel—*Phyllanthus latifolius*.
Seaside Plum—*Ximelia americana*.
Seaside Poppy—*Glaucium flavum*.
Sebastens—*Cordia Myxa*.
Sedge—*Carex*.
Sedge, Sweet—*Acorus Calamus*.
Sego—*Calochortus Nuttallii*.
Self-heal—*Prunella vulgaris*.
Seneca, Senega, or Seneka Snake-root—*Polygala Senega*.
Senegal Gum—*Acacia Senegal*.
Sengreen—*Saxifraga nitidis*, *Sempervivum tectorum*.
Senna—*Cassia*.
Senna, Bladder—*Colutea, Sutherlandia frutescens*.
Senna, Scorpion—*Coranilla Emerus*.
Sensitive Briar—*Schrankia uncinata*.
Sensitive Fern—*Osmunda sensibilis*.
Sensitive Plant—*Mimosa*.
Sensitive Plant, Water—*Neptunia plena*.
Septfoil—*Potentilla Tormentilla*.
Serpent Cucumber—*Trichomanthes anguina*.
Serpent Withe—*Aristolochia odoratissima*.
Serpent Wood—*Ameiwolfia serpentina*.
Service Berry—*Amelanchier canadensis*.

Service-tree—*Pyrus domestica* (*P. Sorbus* ♀), *P. torminalis*.
Sesame—*Sesamum indicum*.
Sesban—*Sesbania egyptiaca*.
Setterwort—*Helleborus fatidus*.
Seville Orange—*Citrus vulgaris* (*C. Aurantium Bigaradia* ♀).
Shad-bush—*Amelanchier canadensis*.
Shaddock—*Citrus decumana*.
Shaggy Cap Mushroom—*Coprinus comatus* ♀.
Shaking Grass—*Briza media*.
Shallon-bush—*Gautheria Shallon*.
Shallot—*Allium ascalonicum*.
Shamrock—*Oxalis Acetosella*, *Trifolium fliflorum*, *T. repens*.
Shamrock, Indian—*Trillium*.
Shamrock Pea—*Parochetus communis*.
Sharewort—*Aster Tripolium*.
Sharon, Rose of—*Hypericum calycinum*.
Sharp Cedar—*Acacia Oxycedrus*, *Juniperus Oxycedrus*.
She Oak—*Casuarina stricta*.
Sheep Berry—*Viburnum Lentago*.
Sheep Laurel—*Kalmia angustifolia*.
Sheep's-beard—*Urospermum*.
Sheep's-bit Scabious—*Jasione montana*.
Sheep's Fescue—*Festuca ovina* ♀.
Shekin—*Primulina Tabacum* ♀.
Shell-bark Hickory—*Carya alba*.
Shell Flower—*Alpinia*, *Chelone*, *Moluccella laevis*.
Shepherd's Beard—*Urospermum*.
Shepherd's Clock—*Tragopogon pratensis*.
Shepherd's Club—*Verbascum Thapsus*.
Shepherd's Knot—*Potentilla Tormentilla*.
Shield Fern—*Aspidium*, *Nephradium nemadense* ♀.
Shield Flower—*Aspidistra*.
Shin Oak—*Quercus Gambellii* ♀, *Q. undulata* ♀.
Shingle Oak—*Quercus imbricaria*.
Shingle-plant—*Monstera acuminata* ♀.
Shirley Poppy—*Papaver Rhoeas*.
Shoe Flower or Shoeblack-plant—*Hibiscus rosa-sinensis*.
Sholah-plant—*Eschymumene aspera*.
Shooting Star—*Doleratheum Mordia*.
Short-leaved Pine—*Pinus mitis* ♀.
Shot, Indian—*Canna*.
Shrubby Grass—*Thamnochortus*.
Shrubby Pink—*Dianthus frutescens*.
Shrubby Trefoll—*Jasminum frutescens*, *Ptelea trifoliata*.
Siberian Cherry—*Cerasus* (*Prunus*) *Chanaccerasus*.
Siberian Crab—*Pyrus prunifolia*.
Siberian Elm—*Zelkova crenata* ♀.
Siberian Pea-tree—*Caragana*.
Siberian Water-lily—*Nymphaea nitida*.
Sickle Pod—*Drepanocarpus*.
Sicklewort—*Prunella* (*Brumella* ♀) *vulgaris*.
Side-Saddle Flower—*Sarcocolla*.
Sierra Leone Peach—*Streoccephalus exculentus*.
Sierra Leone Tallow-tree—*Pentadennia butyracea*.
Sierra Shield Fern—*Nephradium nemadense* ♀.
Sikkim Larch—*Larix Griffithii*.
Silk Cotton Tree—*Bombax*, *Eriodendron*.
Silk Fruit—*Sericocarpus conyzoides*.
Silk Grass—*Yucca filamentosa*.
Silk-tree—*Albizia Julibrissin*.
Silk Vine (Virginian Silk)—*Periploca græca*.
Silken Sassy—*Aclepias*.
Silkwood-tree—*Muntingia Calabura*.
Silkworm Oak, Japanese—*Quercus serrata*.
Silky Oak—*Grevillea robusta*.
Silver Bell Tree—*Halesia*.

Silver Berry—*Elaagnus argentea*.
Silver Birch—*Betula alba*.
Silver Braots—*Cotyledon Pachyphytum*.
Silver Bush—*Anthyllis Barba-Jovis*.
Silver Cedar—*Juniperus virginiana glauca*.
Silver Ferns—*Gymnogramme*.
Silver Fir—*Abies pectinata*, *A. Pinapo*, *Picea*.
Silver Lime—*Tilia argentea*.
Silver Maidenhair—*Nothochlorea*.
Silver Maple—*Acer dasycarpa*.
Silver Rod—*Asphodelus ramosus*.
Silver Thatch—*Thrinax argentea*.
Silver-tree—*Elaagnus*, *Leucalendrum argenteum*.
Silver Tree Fern—*Cyathea dealbata*.
Silver Vine—*Scindapsus argyrea* (pietus ♀).
Silver Wattle—*Acacia dealbata*.
Silver Weed—*Argyria*.
Simpler's Joy—*Verbena hastata*, *V. officinalis*.
Singhara Nut—*Trapa bispinosa*.
Sissoc-tree—*Dalbergia Sissoo*.
Sitka Water-leaf—*Roumizofia sitchensis*.
Skewer-wood—*Cornus sanguinea*, *Eryonimus europæus*.
Skirret or Skirwort—*Sium Siatrum*.
Skull-cap—*Scutellaria*.
Skunk Cabbage or Weed—*Symplocarpus fetidus*.
Slipper Flower—*Caleolaria*.
Slipper, Lady's—*Cypripedium Selenipedium*.
Slipper Spurs—*Pedilanthus*.
Slipperwort—*Caleolaria*.
Slippery Elm—*Ulmus fulva*.
Sloe—*Prunus spinosa*.
Slow-match Tree—*Careya arborea*.
Small Flax Lily—*Phormium Cookianum*.
Smallreed—*Calamagrostis*.
Smith's Polypody—*Polypodium Robertianum*.
Smoke-plant—*Rhus Cotinus*.
Smoke Wood—*Clematis Vitalba*.
Smooth Flower—*Leianthus longifolius*, &c.
Smooth-fruited Horse Chestnut—*Paria*.
Snail-Flower, Climbing—*Phacelus Caracalla*.
Snake Gourd—*Trichosanthes anguina*.
Snake-plant—*Dracunculus vulgaris*.
Snake Root—*Liatris*, *Polygala Scœrga*.
Snake Weed—*Polygonum bistorta*.
Snake-wood—*Cecropia*, *Strychnus colubrina*.
Snake's-beard—*Ophiopogon*.
Snake's-head—*Fritillaria Meleagris*, *Iris tuberosa* (*Hermudac tylus tuberosus* ♀).
Snakeshead Iris—*Hermudactylus* (*Iris* ♀) *tuberosus*.
Snake's-mouth Orchis—*Pogonia ophioglossoides*.
Snake's-tongue—*Ophioglossum*.
Snapdragon—*Antirrhinum*.
Snapweed—*Impatiens*.
Sneezewort—*Achillea Ptarmica*.
Sneezewort, Autumn—*Helianthemum*.
Snowball-tree—*Viburnum Opulus*, *V. plicatum*.
Snowball Wild—*Ceanothus americanus*.
Snowberry—*Chiococca*, *Symphoricarpos racemosus*.
Snowberry, Creeping—*Chioigenes* ♀.
Snowberry-tree—*Symphoricarpos*.
Snowdrop—*Galanthus nivalis*.
Snowdrop-tree—*Halesia*.
Snowdrop-tree, African—*Royena lucida*.
Snowdrop Windflower—*Anemone sylvestris*.
Snow Flower—*Chionanthus*.
Snow Glory—*Chionodoxa Lucille*.

Snow in Summer—*Cerastium tomentosum*.
Snow Pear—*Pyrus sinensis*.
Snow-tree—*Pyrus nivalis*.
Snowflake—*Leucoium*.
Snowflake, Water—*Limnanthemum indicum*.
Soap Bark Tree—*Quillaja Saponaria*.
Soap Berry Tree—*Sapindus*.
Soap Bulb—*Chlorogalum pomeridianum*.
Soap-plant—*Chlorogalum pomeridianum*.
Soap Pods—*Casalpinia*.
Soap-tree—*Gymnocladus chinensis* s.
Soapwort—*Saponaria*.
Soda, Alicant—*Salsola*.
Soft Grass—*Holcus*.
Soft Shield Fern—*Aspidium angulare*.
Solah-plant—*Eschynomene aspera*.
Soldier, Water—*Stratiotes aloides*.
Soldiers' Fleas—*Lycinus Flos-cuculi*.
Solomon's Seal—*Polygonatum multiflorum*.
Solomon's Seal, False—*Smilacina*.
Sop, Sour—*Annona muricata*.
Sop, Sweet—*Annona squamosa*.
Sops in Wine—*Dianthus Caryophyllus*.
Sorrel—*Rumex*.
Sorrel-tree—*Oxydendron arboreum*.
Sorrel, Wood—*Oxalis Acetosella*.
Sorrowful Tree—*Nyctanthes Arbor-tristis*.
Souari Nut-tree—*Carpocarpus nuciferum*.
Sour Gourd—*Adansonia digitata*.
Sour Sop—*Annona muricata*.
South African Yellow Wood—*Podocarpus elongata*.
South Sea Arrowroot-plant—*Tacca pinnatifida*.
Southern Prickly Ash—*Zanthoxylum Clara-Herbertii*.
Southernwood—*Artemisia Abrotanum*.
Sowbread—*Cyclamen*.
Sow Thistle—*Sonchus*.
Sow's-ears—*Primula Auricula*.
Soy—*Glycine*.
Spaniard, Wild—*Aciphylla* s.
Spanish Bayonet—*Yucca*.
Spanish Bluebell—*Scilla hispanica*.
Spanish Broom—*Spartium junceum*.
Spanish Carnation—*Poinciana pulcherrima*.
Spanish Chestnut—*Castanea sativa*.
Spanish Elm—*Cordia Gerasacanthus*.
Spanish Garlic—*Allium Scorodoprasum* (Rocambole).
Spanish Hyacinth—*Hyacinthus amethystinus*.
Spanish Iris—*Iris vulgaris* (*Xiphium* s).
Spanish Juice Plant—*Glycyrrhiza glabra*.
Spanish Moss—*Tillandsia usneoides*.
Spanish Oak, American—*Quercus ulata*.
Spanish Onion—*Allium Cepa*.
Spanish Oyster-plant—*Scalymus hispanicus*.
Spanish Potato—*Batatas edulis* (*Ipomoea Batatas*).
Spanish Silver Fir—*Abies Pinsapo*.
Spanish Squill—*Scilla hispanica*.
Spanish Viper's Grass—*Scorzonera hispanica*.
Sparrow Grass—*Asparagus*.
Spear-mint—*Mentha viridis*.
Spear-shaped Spleenwort—*Asplenium lanceolatum*.
Spearwort—*Ranunculus*.
Speculum Veneris—*Specularia Speculum*.
Speedwell—*Veronica*.
Spelt—*Triticum Spelta*.
Sperage—*Asparagus*.
Spice-bush—*Lindera Benzoin*.

Spider Fern—*Pteris serrulata*.
Spider Flower—*Cleome*.
Spider Lily, Golden—*Lycoris*.
Spider Orchid—*Bartholina pectinata* s.
Spider Orchis—*Ophrys aranifera*.
Spiderwort—*Tradescantia*, &c.
Spiderwort; Mountain—*Lloydia serotina*.
Spiguel—*Meum athamanticum*.
Spike Grass—*Uiola*.
Spikenard—*Nardostachys*.
Spikenard, False—*Smilacina racemosa*.
Spikenard, Ploughman's—*Baccharis*.
Spinach—*Spinacia oleracea*.
Spinach, Mountain—*Atriplex hortensis*.
Spinach, New Zealand—*Tetragonia expansa*.
Spinach, Wild—*Chenopodium Bonus-Henricus*.
Spindle-tree—*Enonymus*.
Spirals—*Stachys tubericera* s (Crosnes).
Spire Lily—*Galtonia candicans*.
Spleenwort—*Asplenium*.
Sponge-tree—*Acacia Farnesiana*.
Sponge, Vegetable—*Luffa*.
Spoonflower—*Labisia*.
Spoonflower, Arrow-leaved—*Xanthosoma sagittifolium*.
Spoonwort—*Cochlearia*.
Spread Eagle—*Oncidium carthaginense*.
Spreading Wood Fern—*Nephrodium patens*.
Sprekella, Tumbler—*Hippeastrum Cybister*.
Spring Beauty—*Claytonia*.
Spring Bell—*Sisyrinchium grandiflorum*.
Spring Flower—*Polyanthus*.
Spring Grass—*Anthoxanthum*.
Spring Onion—*Allium fistulosum* s.
Spring Snowflake—*Leucocium cernuum*.
Spring Starflower—*Triteleia* (*Milla*) *uniflora*.
Spring Vetch—*Vicia lathyroides*.
Spruce—*Abies*, *Dacrydium cupressinum*, *Picea*, &c.
Spruce, Douglas—*Pseudotsuga*.
Spruce, Hemlock—*Tsuga canadensis*.
Sprue—*Asparagus*.
Spur Valerian—*Centranthus ruber*.
Spurge—*Euphorbia*.
Spurge Flax—*Daphne Mezereum*, &c.
Spurge Laurel—*Daphne Laureola*.
Spurge Nettle—*Jatropha urens*.
Spurge Olive—*Cneorum tricoecum*, *Daphne Mezereum*.
Spurgeworts—*Euphorbiaceae*.
Spurless Violet—*Viola hederacea*.
Spurs, Slipper—*Pedilanthus*.
Squash—*Cucurbita*.
Squaw Huckleberry—*Vaccinium stamineum*.
Squill—*Scilla*.
Squill, Roman—*Bellevalia* (*Hyacinthus*) *romana*.
Squill, Striped—*Puschkinia scilloides*.
Squills—*Urginea maritima*.
Squirrel's-foot Fern—*Davallia bullata*.
Squirrel-tail Grass—*Hordeum jubatum*.
Squirting Cucumber—*Eballium Elaterium*.
Staff-tree—*Celastrus*.
Stag's-horn Fern—*Platycoerium*.
Stag's-horn Fern, Floating—*Ceratopteris*.
Stag's-horn Sumach—*Rhus typhina*.
Star Anise—*Illicium verum* s.
Star Apple—*Chrysophyllum*.
Star Capoteum—*Solanum Capnicastrum*.
Star Flower—*Aster*, *Sternbergia*, *Trientalis*, *Triteleia*.

- Star-flowered Lily of the Valley**—*Smilacina stellata*.
Star Glory—*Ipomœa ovocinea*.
Star Grass—*Aletris*.
Star Head—*Scabiosa*.
Star Hyacinth—*Scilla amœna*.
Star Nigella—*Nigella Nigellastrum* (N. *Garidella* s).
Star of Bethlehem—*Ornithogalum umbellatum*, &c.
Star of Bethlehem, Yellow—*Gagea lutea* (*fascicularis* s).
Star of Jerusalem—*Trigonopogon pratensis*.
Star of Night—*Clusia rosea*.
Star Thistle—*Centaurea*.
Star Tulip—*Calochortus*.
Starch Hyacinth—*Muscari racemosum*.
Starfish Flower—*Stapelia Asterias*.
Starwort—*Aster*, *Stellaria*.
Starwort, Italian—*Amellus Lychnitis*.
Stavesacre—*Delphinium Staphymagria*.
Stavewood—*Sinaruda amara*.
Steeple Bush—*Spirœa tomentosa*.
Sticky Lip Fern—*Cheilanthes viscida*.
Stiff Stalk—*Rigidella*.
Stinging Nettle—*Urtica*.
Stingless Nettle—*Pilea*.
Stinking Bush—*Jatropha urens*.
Stinking Cedar—*Torreya taxifolia*.
Stinking Gladwyn—*Iris fetidissima*.
Stinking Yew—*Torreya*.
Stinkwood, Tasmanian—*Zieria Smithii*.
Stitch Grass or Stitchwort—*Stellaria*.
Stock—*Mathiola*.
Stock, Branching Annual—*Maleolmia maritima*.
Stock, Cape—*Heliophila*.
Stock, Night-scented—*Hesperis tristis*, *Mathiola odoratissima*, &c.
Stock, Virginian—*Maleolmia maritima*.
Stokes' Aster—*Stokesia carynea*.
Stone Fern, Fine-cut—*Cyrtopteris fragilis*.
Stone Fern, Naked—*Asplenium septentrionale*.
Stone Orpine—*Sedum reflexum*.
Stone Pine—*Pinus Pinea*.
Stone Pine, Swiss—*Pinus Cembra*.
Stone Rue—*Asplenium Ruta-muraria*.
Stonebreak—*Saxifraga*.
Stonecrop or Stonnord—*Sedum*.
Storax—*Styrax*.
Storax, Liquid—*Liquidambar imberbe*.
Stork's-bill—*Pelargonium*.
Stramonium—*Datura Stramonium*.
Strangle Tare—*Vicia lathyroides*.
Strawberry—*Fragaria*.
Strawberry, Barren—*Waldsteinia fragarioides*.
Strawberry-bush—*Evonymus americanus*.
Strawberry-fruited Cypress (of Tasmania)—*Microcachrys tetragona*.
Strawberry-tree—*Arbutus Unedo*, *Evonymus americanus*.
Stringy Bark Tree—*Eucalyptus obliqua*, &c.
Striped King of the Woods—*Zeuxine repia*.
Striped Mexican Marigold—*Tagetes signata*.
Striped Squill—*Prochkinia scilloides*.
Strychnine-plant—*Strychnos Nux-romica*.
Stubwort—*Oxalis Acetosella*.
Succory—*Cichorium Intybus* (Chicory).
Sugar Berry—*Celtis occidentalis*.
Sugar-bush—*Protea mellifera*.
Sugar Cane—*Saccharum officinarum*.
Sugar, Horse—*Symplocos tinctoria*.
Sugar Maple—*Acer saccharinum*.
Sugar Pea—*Pisum sativum* var.
Sugar Pine—*Pinus Lambertiana*.
Sultan, Sweet—*Centaurea moschata*.
Sultan, Yellow—*Centaurea suaveolens*.
Sumach—*Rhus*.
Sumach, Myrtle-leaved—*Coriaria myrtifolia*.
Sumach, Venise or Venus'—*Rhus Cotinus*.
Sumatra Camphor—*Dryobalanops aromatica* (D. *Camphora* s).
Summer Heliotrope—*Tournefortia heliotropioides* (*Heliotropium anchuæ-folium* s).
Summer Savory—*Satureia hortensis*.
Summer Snowflake—*Leucocitum aestivum*.
Sun Fruit—*Helianthus*.
Sun-plant—*Portulaca grandiflora*, &c.
Sun Rose—*Helianthemum*.
Sundew—*Drosera*.
Sundrops—*Oenothera fruticosa*.
Sunflower—*Helianthus*, especially *H. annuus*.
Sun's-eye, Persian—*Tulipa Oculus-solis*.
Swarrow Nut—*Caryocarp nuciferum*.
Swallow-wort—*Asclepias Chelidonium*.
Swamp Blueberry—*Vaccinium corymbosum*.
Swamp Dogwood—*Telea trifoliata*.
Swamp Hickory—*Carya amara*.
Swamp Laurel—*Magnolia glauca*.
Swamp Lily, American—*Saururus cernuus*.
Swamp Lily, Peruvian—*Zephyranthes candida*.
Swamp Locust-tree—*Gleditsia monosperma*.
Swamp Milk-weed—*Asclepius incarnata*.
Swamp Oak, Victorian—*Viminaria demodata*.
Swamp Post—*Quercus lyrata*.
Swamp Rose—*Rosa Carolina*.
Swamp Rose Mallow—*Hibiscus Moscheutos*.
Swamp Sassafras—*Magnolia glauca*.
Swamp Saxifrage—*Saxifraga pennsylvanica*.
Swamp White Oak—*Quercus bicolor*.
Swan-neck—*Cycnoches*.
Swan River Daisy—*Brachycome*.
Swan River Everlasting—*Helipterum Manglesii*.
Swan River Fern Palm—*Macrozamia*.
Swanwort—*Cycnoches*.
Swedish Beam-tree—*Pyrus intermedia*.
Swedish Juniper—*Juniperus communis fastigiata*.
Swedish Water-lily—*Nymphaea alba rosea*.
Sweet Acorn Oak—*Quercus Ballota*.
Sweet Almond—*Amygdalus communis dulcis* (*Prunus*).
Sweet Alyssum—*Kœnigia (Alyssum) maritima*.
Sweet Amber—*Hypericum Androsamum*.
Sweet Basil—*Ocimum Basilicum*.
Sweet Bay-tree—*Laurus nobilis*.
Sweet Briar—*Rosa rubiginosa*.
Sweet Broom—*Scoparia dulcis*.
Sweet Buckeye—*Pavia flava*.
Sweet Calabash—*Pawiflora maliformis*.
Sweet Cassava—*Manihot (palmata* s) *Aipi*.
Sweet Chestnut—*Castanea sativa*.
Sweet Cicely—*Myrrhis odorata*.
Sweet Coltsfoot—*Petasites*.
Sweet Flag—*Acorus Calamus*.
Sweet Gale—*Myrica Gale*.
Sweet Gum—*Liquidambar styraciflua*.
Sweet Leaf—*Symplocos tinctoria*.
Sweet Lemon—*Citrus Lumia* s.
Sweet Lime—*Citrus (medica* s) *Limetta*.

Sweet Marjoram—*Origanum Majorana*.
Sweet Maullin—*Achillea Ageratum*.
Sweet Orange—*Citrus Aurantium*, *C. sinensis* s., &c.
Sweet Pea—*Lathyrus odoratus*.
Sweet Fishamin—*Carpodinus*.
Sweet Potato—*Batatas edulis* (*Ipomoea Batatae*).
Sweet Scabious—*Scabiosa atropurpurea*.
Sweet Sedge—*Acorus Calamus*.
Sweet Sop—*Anona squamosa*.
Sweet Sultan—*Centaurea moschata*.
Sweet Viburnum—*Viburnum Lantago*.
Sweet Violet—*Viola odorata*.
Sweet William—*Dianthus barbatus*.
Sweet William Catchfly—*Silene Armeria*.
Sweet Willow—*Myrica Gale*.
Sweet Woodruff—*Asperula odorata*.
Sweet-scented Crab—*Pyrus coronaria*.
Sweet-scented Mexican Marigold—*Tagetes lucida*.
Sweet-scented Verbena—*Aloysia* (*Lippia*) *citriodora*.
Swiss Beam-tree—*Pyrus intermedia* s.
Swiss Stone Pine—*Pinus Cembra*.
Sword Fern—*Polypodium* (§ *Xiphopteris*).
Sword Lily—*Gladivus*.
Sycamore-tree—*Morus*.
Sycamore-tree—*Acer Pseudo-platanus*, *Platanus occidentalis*.
Sycamore Fig-tree—*Sycomorus antiquorum* (*Ficus Sycomorus* s.).
Syrian Bean Caper—*Zygophyllum Fabago*.
Syringa, Mock—*Philadelphus coronarius*.

Table Mountain Pine—*Pinus pungens*.
Tacamahac—*Populus balsamifera*.
Tahay—*Calptorea speciosa* s.
Tail Flower—*Anthurium*.
Talewort—*Borago officinalis*.
Tallpot Palm—*Corypha umbraculifera*.
Tallow-shrub—*Myrica cerifera*.
Tallow-tree, Chinese—*Stillingia schifera*.
Tallow-tree, Sierra Leone—*Pentadesmia butyacea*.
Tam Furze—*Ulex nanus*.
Tamarack—*Larix americana* (*pendula* s.).
Tamarind-tree—*Tamarindus indica*.
Tamarisk—*Tamaria*.
Tame Poison—*Vincetoxicum officinale*.
Tanghin—*Tanghinia*.
Tangier Pea—*Lathyrus tingitanus*.
Tanner's-tree—*Coriaria myrtifolia*.
Tansy—*Tanacetum vulgare*.
Tape Grass—*Vallisneria spiralis*.
Tapioea-plant—*Manihot utilissima*.
Tare—*Vicia*.
Taro—*Colocasia antiquorum*.
Tarragon—*Artemisia Draunculus*.
Tasmanian Cider-tree—*Eucalyptus Gumii*.
Tasmanian Edible Fern—*Pteris aquilina esculenta*.
Tasmanian Sassafras—*Atherosperma moschata*.
Tasmanian Stinkwood—*Zieria Smithii*.
Tasmanian Strawberry-fruited Cypress—*Microwachryx tetragona*.

Tassel Hyacinth—*Muscari comosum*.
Tasteless Mountain Currant—*Ribes alpinum*.
Tea—*Camellia theifera*.
Tea, Arab—*Catha edulis*.
Tea Berry—*Gaultheria procumbens*.
Tea, Botany Bay—*Smilax glycyphylla*.
Tea, Brazilian—*Ilex paraguariensis*, *Stachytarpheta jamaicensis* (*indica* s.).

Tea, Canada—*Gaultheria procumbens*.
Tea, Kafir—*Helichrysum nudiflorum*.
Tea, Labrador—*Ledum*.
Tea, Mexican—*Chenopodium ambrosioides*.
Tea, New Jersey—*Ceanothus americanus*.
Tea, Oswego—*Monarda didyma*.
Tea, Paraguay—*Ilex conocarpa* s., *I. paraguariensis*.
Tea Roses—*Rosa indica odorata* s.
Tea-leaved Willow—*Salix phylicifolia*.
Tea-tree—*Lycium barbarum*.
Teak-tree, African—*Oldfieldia africana*.
Teak-trees, Indian—*Tectona*.
Teak-trees, New Zealand—*Vitex littoralis*.
Teasel, Teasel, or Teasle—*Dipsacus*.
Telegraph-plant—*Desmodium gyrans*.
Ten Weeks' Stock—*Mathiola (incana* s) *annua*.
Teosinte—*Euchlena luxurians* (*mezziacua* s).
Terebinth-tree—*Pistacia Terebinthus*.
Texas Umbrella-tree—*Melia Azedarach umbraculiformis* s.
Thatch Palms—*Buteira*, *Howea*, *Sabal*, *Thrinax*, &c.
Thick Leaf—*Crasula*.
Thimbleberry—*Rubus occidentalis*.
Thistle—*Carbenia*, *Carduus*, *Cnicus*, &c.
Thistle, Blessed—*Carbenia benedicta* s., *Silybum Marianum*.
Thistle, Cotton—*Onopordon Acanthium*.
Thistle, Fish-bone—*Chamaepeuce Casabonice*.
Thistle, Globe—*Echinops*.
Thistle, Golden—*Protea Scolymus*, *Scolymus hispanicus*.
Thistle, Hedgehog—*Echinocactus*.
Thistle, Holy—*Silybum Marianum*.
Thistle, Horse—*Cnicus*.
Thistle, Ivory—*Eryngium giganteum*.
Thistle, Melon—*Melocactus*.
Thistle, Mexican—*Cnicus conspiciens*.
Thistle, Our Lady's Milk—*Silybum Marianum*.
Thistle, Plumed—*Cnicus*.
Thistle, Saffron—*Carthamus tinctorius*.
Thistle, Scotch—*Onopordon acanthium*.
Thistle, Sow—*Sonchus*.
Thistle, Star—*Centaurea*.
Thistle, Torch—*Cereus*.
Thorn—*Acacia*, *Cratægus*, &c.
Thorn Apple—*Datura Stramonium*.
Thorn, Box—*Lycium*.
Thorn Broom—*Ulex europæus*.
Thorn, Camel's—*Athagi camelorum*.
Thorn, Christ's—*Palurus aculeatus* (*Spina Christi* s), *Zizyphus Spina Christi*.
Thorn, Cockspar—*Plectranthus*.
Thorn, Egyptian—*Acacia vera*.
Thorn, Fire—*Cratægus Pyracantha*.
Thorn, Garland—*Palurus aculeatus* (*Spina Christi* s).
Thorn, Goat's—*Astragalus Tragacantha*.
Thorn, Jerusalem—*Parkinsonia aculeata*.
Thorn, Lily—*Catesbea*.
Thorn, North American—*Cratægus coccinea*.
Thorn, Orange—*Chriobatus*.
Thorn, Sallow—*Hippophaë*.
Thorn, Washington—*Cratægus cordata*.
Thorn, White—*Cratægus Oxyacantha*.
Three Birds Orchis—*Pogonia pendula*.
Three Faces under a Hood—*Vinda tricolor*.
Three-leaved Nightshade—*Trillium*.
Thrift—*Armeria*.
Thrift, Prickly—*Acantholimon*.
Throat Root—*Campanula Cervicaria*.

- Threatwort**—*Campanula Cervicaria*, *Digitalis purpurea*, *Trachelium*.
- Thunderbolt Iris**—*Iris (Xiphion) spectabilis* s.
- Thunder-plant**—*Sempervivum tectorum*.
- Thyme**—*Thymus*.
- Thyme, Basil**—*Calamintha Aciōsa*.
- Thyme, Cat**—*Teucrium Marum*.
- Thyme, Water**—*Elodea*.
- Thyrse Flower**—*Thyracanthus*.
- Tick Bean**—*Faba vulgaris* var.
- Tickle my Fancy**—*Viola tricolor*.
- Tickseed**—*Coreopsis*.
- Tiger Flower**—*Tigridia*.
- Tiger Iris**—*Tigridia*.
- Tiger Lily**—*Lilium tigrinum*.
- Tiger's-tail Spruce**—*Abies (Picea s) pulita*.
- Tigris, Flower of**—*Tigridia Parvonia*.
- Tile-root**—*Grissorhiza*.
- Till**—*Leus esculenta*.
- Tip upon Tops**—*Primula acutis* var. (Polyanthus).
- Toad-cup Lilly**—*Marica cœrulea*.
- Toadflax**—*Linaria*.
- Toad Flower, African**—*Stapelia*.
- Toad Lilly, Japanese**—*Trierythra hirta*.
- Tobacco**—*Nicotiana Tabacum*.
- Tobacco, Mountain**—*Arnica montana*.
- Tobacco, Rock**—*Primula Tabacum* s.
- Toddy Palm**—*Caryota urens*.
- Tolu Balsam-tree**—*Myroxylon toluiferum*.
- Tomato**—*Lycopersicon esculentum*.
- Tomato, Cannibal's**—*Solanum anthrophagorum* (S. Upero s).
- Tonga Bean**—*Dipteryx odorata*.
- Tonga-plant**—*Epipremnum mirabile*.
- Tongue Fern, Wood**—*Drymoglossum*.
- Tongue-flowered Orchis**—*Scorpius Lingua*.
- Tongue Grass**—*Lepidium sativum*.
- Tongue Violet**—*Schweiggeria pauciflora* (fruticosa s).
- Tonquin Bean**—*Dipteryx odorata*.
- Tooth Cress**—*Dentaria bulbifera*.
- Toothache-tree**—*Zanthoxylum*.
- Toothbrush-tree**—*Salvadora persica*.
- Toothed Bladder Fern**—*Cyatopteris fragilis dentata*.
- Toothed Spleenwort**—*Asplenium decussatum*.
- Toothwort**—*Dentaria (Cardamine s)*, *Lathraea squamaria* *Plumbago scandens*.
- Torch Cactus**—*Cereus*.
- Torch Lily**—*Kniphofia*.
- Torch Pine**—*Pinus Torda* s.
- Torch Thistle**—*Cereus*.
- Torches**—*Verbascum Thapsus*.
- Toringo Crab**—*Pyrus Toringo*.
- Tormentil Root**—*Potentilla Tormentilla*.
- Tortoise-plant**—*Trotudinaria Elephantipes*.
- Tortoiseshell Bamboo**—*Phyllostachys heterocyela*.
- Totara Pine**—*Podocarpus Totara*.
- Touch-me-not**—*Impatiens Noli-me-tangere* (Noli-tangere s).
- Tous les Mois**—*Canna edulis*.
- Town Cress**—*Lepidium sativum*.
- Tragacanth Gum-plant**—*Astragalus Tragacantha*, *Sterculia Tragacantha*.
- Travellers' Joy**—*Clematis Vitalba*.
- Travellers' Tree**—*Ravenala madagascariensis*.
- Treacle, Countryman's**—*Ruta graveolens*.
- Treasure Flower**—*Gazania*.
- Tree Carnation**—*Dianthus* var.
- Tree Carrot**—*Thapsia edulis*.
- Tree Celandine**—*Boconia frutescens*.
- Tree Ferns**—Ferns of arborescent habit; e.g., *Cyathea* and *Dicksonia*.
- Tree Lavatera**—*Lavatera Olbia*.
- Tree Lupine**—*Lupinus arboreus*.
- Tree Mallow**—*Lavatera arborea*.
- Tree of Chastity**—*Vitex Agnus-castus*.
- Tree of Heaven**—*Ailanthus*.
- Tree of Life**—*Thuja*.
- Tree of Sadness**—*Nyctanthes Arbor-tristis*.
- Tree Onion**—*Allium Cepa aggregatum*.
- Tree Pœony**—*Pœonia Moutan*.
- Tree Panax**—*Dendropanax*.
- Tree Poppy**—*Dendrooneon rigida*.
- Tree Sedum**—*Sedum dendroideum* s.
- Trefoll**—*Trifolium*.
- Trefoll, Bird's-foot**—*Lotus corniculatus*.
- Trefoll, Bog**—*Menyanthes trifoliata*.
- Trefoll, Golden**—*Anemone Hepatica*.
- Trefoll, Marsh**—*Menyanthes trifoliata*.
- Trefoll, Milk**—*Cytisus*.
- Trefoll, Moon**—*Medicago arborea*.
- Trefoll, Scented**—*Melilotus*.
- Trefoll, Shrubby**—*Jasminum frutescens*, *Ptelea trifoliata*.
- Trefoll, Water**—*Menyanthes trifoliata*.
- Trembling Tree**—*Populus Tremula*, *P. tremuloidea*.
- Trigger-plant, Grass-leaved**—*Styglidium graminifolium*.
- Trinity Flower**—*Trillium*.
- Triplet Lilly**—*Triteleia*.
- Tripoly**—*Aster Tripolium*.
- Troll Flower**—*Trollius*.
- Tropical Dockweed**—*Pistia Stratiotes*.
- Trotties**—*Symphytum asperinum*.
- True Love**—*Paris quadrifolia*.
- Truffle**—*Tuber*.
- Trumpet Crooper**—*Tecoma radicans*, &c.
- Trumpet Flower**—*Bignonia*, *Solantra grandiflora*, *Tecoma*.
- Trumpet Flower, Peruvian**—*Brugmansia suaveolens*.
- Trumpet Honeysuckle**—*Lonicera sempervirens*.
- Trumpet Leaf**—*Sarracenia*.
- Trumpet Lilly**—*Lilium* (long-flowered species), *Richardia africana*.
- Trumpet Weed**—*Eupatorium purpureum*.
- Trumpets**—*Sarracenia flava*.
- Tube Flower**—*Clerodendron Siphonanthus*.
- Tube-tongue, Scalloped**—*Salpiglossis sinuata*.
- Tuber Root**—*Asclepias tuberosa*.
- Tuberose**—*Polygonum tuberosa*.
- Tuberous-rooted Wistaria**—*Apios tuberosa*.
- Tufted Columbine**—*Thalictrum aquilegifolium*.
- Tufted Pansy**—*Viola cornuta*.
- Tufted Vetch**—*Vicia Cræca*.
- Tulip**—*Tulipa*.
- Tulip, African**—*Hæmnanthus*.
- Tulip-bearing Myrtle**—*Darwinia macrostegia*.
- Tulip, Butterfly**—*Calochortus lilacinus*.
- Tulip, Californian**—*Calochortus*.
- Tulip, Drooping**—*Fritillaria Meleagris*.
- Tulip, Golden Star**—*Calochortus pulchellus*.
- Tulip, Mariposa**—*Calochortus*.
- Tulip, Star**—*Calochortus*.
- Tulip-tree**—*Liriodendron tulipifera*, *Stenocarpus sinuatus*.
- Tulip-tree, Laurel-leaved**—*Magnolia*.
- Tulip, Wild** (of California)—*Calochortus*.
- Tumbler Sprekella**—*Hippeastrum Cybister*.
- Tunbridge Wells Filmy Fern**—*Hymenophyllum tunbridgensis*.

Tunhoof—*Nepeta Glechoma*.
Tupelo-tree—*Nyssa*.
Turkey Corn—*Dicentra formosa*.
Turkey Oak—*Quercus Cerris*.
Turkey Ranunculus—*Ranunculus asiaticus sanguineus*.
Turkey Rhubarb—*Rheum palmatum*.
Turkey's Beard—*Xerophyllum asphodeloides (setifolium s)*.
Turkish Tulp—*Tulipa acuminata*.
Turk's-cap Cactus—*Melocactus communis*.
Turk's-cap Lily—*Lilium Martagon*.
Turk's-cap Lily, American—*Lilium superbum*.
Turk's Herb—*Herniaria glabra*.
Turmeric—*Curcuma*.
Turmeric Root—*Hydrastis canadense*.
Turmeric-tree, Australian—*Zieria*.
Turnip—*Brassica Rapa*.
Turnip Cabbage—*Brassica oleracea Caulo-rapa (Kohl-rabi)*.
Turnip, Devil's—*Bryonia dioica*.
Turnip, Indian—*Arisema triphyllum (atrarubens s)*.
Turnip, Lion's—*Leontice Leontopetalum s*.
Turnip Radish—*Raphanus sativa var.*
Turnip-rooted Cabbage—*Brassica oleracea Caulo-rapa (Kohl-rabi)*.
Turnip-rooted Celery—*Apium graveolens rapaceum (Celeriac)*.
Turnip, St. Anthony's—*Ranunculus bulbosus*.
Turnsole—*Heliotropium*.
Turpentine—*Sitibium terebinthaceum*.
Turpentine-tree—*Abies, Pinus, Pistacia, Tristantia conferta, &c.*
Turtle-head or Turtle Bloom—*Chelone*.
Tussock Grass, Australian—*Xerotes longifolia*.
Tutsan—*Hypericum Andromedum*.
Twayblade—*Listera*.
Twin Flower—*Beacon geminiflora*.
Twisted Stalk—*Strepopus*.
Tyle Berry—*Jatropha multifida*.

Umbrella Leaf—*Diphyllia cymosa*.
Umbrella Palm—*Hedyoscepe Carterburiana*.
Umbrella Pine—*Sciadopitys verticillata*.
Umbrella-plant—*Saxifraga peltata*.
Umbrella-tree—*Magnolia Umbrella, Melia Azadirach umbra-culiformis s, Theopelia populnea*.
Umbrellawort—*Oxybaphus*.
Underground Bean—*Vanduzelia subterranea*.
Underground Onion—*Allium Cepa var.*
Unicorn-plant—*Martynia lutea, M. proboscidea*.
Unicorn Root—*Aletris farinosa*.
Upas-tree—*Antiaria tozicaria*.
Upland Willow Oak—*Quercus cinerea*.
Upright Portugal Laurel—*Cerasus lusitanica myrtifolia*.
Urn Flower, Drooping—*Urecolina pendula*.
Uva Grass—*Glycerium saccharoides s*.

Valerian—*Valeriana*.
Valerian, Greek—*Polemonium caeruleum*.
Valerian, Long-spurred—*Centranthus macranthos*.
Valerian, Red or Spur—*Centranthus ruber*.
Valerianworts—*Valerianea*.
Valley Oak—*Quercus lobata s*.
Valonia or Valonia Oak—*Quercus Agilops*.
Vanilla-plant—*Trillisa odoratissima, Vanilla*.
Van Thol Tulp—*Tulipa marvolens*.
Variegated Laurel—*Aucuba*.
Varnish-tree—*Ailanthus glandulosa, Melanorrhoea unitatisiana (unitata s), Rhus vernicifera, &c.*
Vegetable Butter—*Dasia butyracea*.

Vegetable Fire Cracker—*Brodiaea coccinea (Brenonertia Ida-maia s)*.
Vegetable Hair—*Tillandsia usneoides*.
Vegetable Horsetail—*Chamaeceros humilis*.
Vegetable Ivory—*Phytelphas macrocarpa*.
Vegetable Marrow—*Cucurbita Pepo ovifera*.
Vegetable Oyster—*Tragopogon porrifolius*.
Vegetable Sponge—*Luffa*.
Vegetable Tallow-plant—*Stillingia sebifera*.
Veitch's Creeper—*Ampelopsis tricuspidata (Vitis inconstans s)*.
Velani Oak—*Quercus Egilops*.
Velvet Flower—*Amaranthus caudatus*.
Velvet Leaf—*Cissampelos Pareira, Lavatera arborea*.
Venice Sumach—*Rhus Cotinus*.
Venus' Basin—*Dipsacus sibiricus*.
Venus' Fly-trap—*Dionaea muscipula*.
Venus' Golden Apple—*Atalantia monophylla*.
Venus' Hair Fern—*Adiantum Capillus-Veneris*.
Venus' Looking-glass—*Specularia perfoliata, S. Speculum*.
Venus' Navelwort—*Omphalodes linifolia*.
Venus' Sumach—*Rhus Cotinus*.
Verbena, Lemon-scented—*Aloysia (Lippia) citriodora*.
Verbena Oil-plant—*Andropogon Schenanthus*.
Verbena, Sand—*Abronia*.
Verbena, Sweet-scented—*Aloysia (Lippia) citriodora*.
Vernal Grass—*Anthoxanthum odoratum*.
Versailles Laurel—*Cerasus (Prunus) Lauracerasus var.*
Vervain—*Verbena*.
Vervain, Bastard—*Stachytarpheta*.
Vervain Sage—*Salvia Verbenaca*.
Vetch—*Vicia*.
Vetch, Bastard—*Phaca*.
Vetch, Bitter—*Orobus*.
Vetch, Bladder—*Phaca*.
Vetch, Chickling—*Lathyrus sativus*.
Vetch, Crown—*Coronilla*.
Vetch, Hatchet—*Securigera Coronilla*.
Vetch, Horseshoe—*Hippocrepis*.
Vetch, Kidney—*Anthyllis*.
Vetch, Liquorice—*Astragalus glycyphyllos*.
Vetch, Medick—*Ombrophis*.
Vetch, Milk—*Astragalus*.
Victoria Beet—*Beta hortensis metallic*.
Victorian Bird Cherry—*Pimelia drupacea*.
Victorian Bottle-tree—*Stereulia diversifolia*.
Victorian Dogwood—*Prostanthera laxianthos*.
Victorian Hazel—*Pomaderris apetala*.
Victorian Rosemary—*Westringia rosmarinifolius*.
Victorian Swamp Oak—*Viminaria denudata*.
Victoria's Water-lily—*Victoria regia*.
Victor's Laurel—*Laurus nobilis*.
Vine—*Vitis vinifera, &c.*
Vine, Alleghany—*Adlonia cirrhosa*.
Vine, Australian—*Vitis hypoglauca*.
Vine, Balloon—*Cardiospermum Halicacabum*.
Vine Bower—*Clematis Viteella*.
Vine, Condar—*Marsdenia Canaduranga*.
Vine, Cypress—*Quasnocht vulgaris*.
Vine, Glory—*Clianthus*.
Vine, Golden—*Stigmaphyllon ciliatum*.
Vine, Granadilla—*Passiflora quadrangularis*.
Vine, Grape—*Vitis vinifera*.
Vine, Grape-flower—*Wistaria*.
Vine, Ice—*Cissampelos Pareira*.
Vine, Kangaroo—*Vitis antarctica*.
Vine, Kadsu—*Pueraria Thunbergiana*.

Violet, Cape—*Ionidium capense*.
Violet, Corn—*Specularia hybrida*.
Violet, Cross—*Ionopsidium (Cochlearia s) caule*.
Violet, Damask—*Hesperia matronalis*.
Violet, Dame's—*Hesperia matronalis*.
Violet, Dog's-tooth—*Erythronium Dens-canis*.
Violet, False—*Dalibarda repens (Rubus Dalibarda)*.
Violet, Foreign—*Schweiggeria*.
Violet, Fringed—*Thymantus*.
Violet, Mercury's—*Campanula Medium*.
Violet, Tongue—*Schweiggeria pauciflora (fruticosa s)*.
Violet, Water—*Hottonia palustris*.
Violet Willow—*Salix daphnoides*.
Violet-flowered Horned Poppy—*Ranunculus hybridus*.
Viorna—*Clematis Fiorina*.
Viper Gourd—*Trichosanthes anguina*.
Viper's Bugloss—*Echium*.
Viper's Grass—*Scorzonera*.
Virgin's Bower—*Clematis*.
Virginian Cowslip—*Mertensia virginica (pulmonarioides s)*.
Virginian Creeper—*Ampelopsis quinquefolia (Vitis hederacea)*.
Virginian Date Palm—*Diospyros virginiana*.
Virginian Poke Weed—*Phytolacca decandra*.
Virginian Raspberry—*Rubus occidentalis*.
Virginian Silk—*Periploca graeca*.
Virginian Stock—*Malcolmia maritima*.
Virginian Willow—*Ita virginica*.

Washoe—*Eumonymus atropurpureus*.
Wafer Ash—*Ptelea trifoliata*.
Wahoo—*Ulmus alata*.
Wake Robin—*Arum maculatum, Trillium grandiflorum*.
Walking Leaf—*Scelopendrium rhizophyllum*.
Wall Cross—*Arabis*.
Wall Fern—*Polypodium vulgare*.
Wall Pennywort—*Cotyledon Umbilicus*.
Wall Pepper—*Sedum acre*.
Wall Rue—*Asplenium Ruta-muraria*.
Wallflower—*Cheiranthus Cheiri*.
Wallflower, Alpine—*Erysimum ochroleucum*.
Wallflower, Fairy—*Erysimum pumilum*.
Wallflower-leaved Stock—*Mathiola incana*.
Wallflower, Western—*Erysimum (asperum) arkansanum s*.
Wallwort—*Sambucus Ebulus*.

Water Betony—*Scrophularia aquatica*.
Water Caltrops—*Trapa natans*.
Water Chestnut—*Trapa natans*.
Water Cross—*Nasturtium officinale*.
Water Dropwort—*Ranunculus*.
Water Elder—*Viburnum Opulus*.
Water Elm—*Zelkova s*.
Water Fairy Flower—*Narcissus Tazetta var*.
Water Fern, Creeping—*Nephridium Thelypteris*.
Water Flag—*Iris Pseudacorus*.
Water Gladiole—*Butomus umbellatus*.
Water Gum-tree—*Tristavia nerifolia*.
Water Hyacinth—*Eichhornia*.
Water Hyacinth, Blue—*Eichhornia azurea*.
Water Leaf, Sitka—*Romanzoffia sitkensis*.
Water Lemon—*Passiflora laurifolia*.
Water Lemon, Wild—*Passiflora foetida*.
Water Lentils—*Lemna*.
Water Lettuce—*Pistia Stratiotes*.
Water Lilly—*Euryale, Limnanthemum, Nuphar, Nymphaea Ranunculus Lyallii, Victoria, Villarsia*.
Water Locust-tree—*Gleditschia monosperma*.
Water Maize—*Victoria regia*.
Water Melon—*Citrullus vulgaris*.
Water Milfoil—*Myriophyllum*.
Water Milk, Hooded—*Utricularia*.
Water Oak—*Quercus aquatica, Q. laurifolia s*.
Water Paronip—*Sium*.
Water Plantain—*Alisma Plantago*.
Water Platter—*Victoria regia*.
Water Poppy—*Hydrocleys Commersoni*.
Water Reed—*Arundo*.
Water Rice—*Zizania*.
Water Sensitive Plant—*Neptunia plena*.
Water Snowflake—*Limnanthemum indicum*.
Water Soldier—*Stratiotes aloides*.
Water Spike—*Potamogeton*.
Water Thyme—*Elodea*.
Water Trefoil—*Menyanthes trifoliata*.
Water Vine—*Phytocrene*.
Water Violet—*Hottonia palustris*.
Water White Oak—*Quercus lyrata*.
Water Willow, American—*Dianthera americana*.
Wattle—*Acacia, Citharexylum*.

Weevil-plant—*Cureuligo*.
Welsh Nut—*Juglans regia* (Walnut).
Welsh Onion—*Allium fistulosum* s.
Welsh Polypody—*Polypodium vulgare cambricum*.
Welsh Poppy—*Mecanopsis cambrica*.
West Coast Creeper—*Pergularia odoratissima*.
West Indian Birch—*Bursera guianifera*.
West Indian Cookspur—*Pisonia aculeata*.
West Indian Filbert—*Entada scandens*.
West Indian Holly—*Turnera ulmifolia*.
West Indian Maypole, Mountain Green, or Mountain Pride—*Spathelia simplex*.
West Indian Mugwort—*Parthenium hysterophorus*.
West Indian Pine—*Pinus occidentalis* s.
West Indian Samphire—*Securium portulacastrum*.
West Wind, Flower of the—*Zephyranthes*.
Western Larch—*Larix occidentalis*.
Western Pitch Pine—*Pinus ponderosa*.
Western Wallflower—*Erysimum (asperum) arkansanum* s.
Western Yew—*Taxus brevifolia*.
Weymouth Pine—*Pinus Strobus*.
Whanghee Cane—*Phyllostachys nigra*.
Wheat—*Triticum vulgare*.
Wheat, Buck—*Fagopyrum esculentum*.
Wheat, Cow—*Melanopyrum*.
Wheat, Guinea or Turkey—*Zea Mays*.
Whin—*Ulex*.
Whin, Petty—*Genista anglica*.
Whinberry—*Vaccinium Myrtillus*.
White Alder—*Platylaphus trifoliatus*.
White Arum Lily—*Richardia africana*.
White Ash—*Fraxinus americana*.
White Basswood, American—*Tilia heterophylla*.
White Beam-tree—*Pyrus Aria*.
White Ben—*Silene inflata*.
White Birch—*Betula alba*.
White Bladder Flower—*Physianthus albus* (*Aranea cericifera* s).
White Bothen—*Chrysanthemum Leucanthemum*.
White Bottle—*Silene inflata*.
White Butterwood—*Trichilia spondioides*.
White Camassia—*Camassia esculenta Leichtlini*.
White Campion—*Lycnis alba*.
White Cedar—*Chamaecyparis, Thuja gigantea, T. occidentalis*.
White Currant—*Ribes rubrum* var.
White Cypress—*Taxodium distichum*.
White Deal—*Picea excelsa*.
White Elm—*Ulmus americana*.
White Elm, Corky—*Ulmus racemosa* s.

White Sapota—*Casimiroa edulis*.
White Spruce—*Picea alba*.
White-topped Aster—*Scirpocarpus*.
White-tree—*Melaleuca leucadendron*.
White Vine—*Clematis Vitalba*.
White Water-lily—*Nymphaea alba*.
White Willow—*Salix alba*.
White Wood—*Liriodendron tulipifera, Tilia americana*.
Whiteheart Hickory—*Carya tomentosa*.
Whitethorn—*Crataegus Oxyacantha*.
Whitloof—*Cichorium Intybus* (Chicory).
Whitlow Grass—*Draba, Erophila vulgaris* s. *Paronychia*.
Whitton-tree—*Viburnum Opulus*.
Whitwort—*Pyrethrum Parthenium*.
Whorl Flower—*Morina longifolia*.
Whortleberry—*Vaccinium Myrtillus, &c.*
Widow, Mournful—*Scabiosa atropurpurea*.
Widow-wall—*Cnicorum*.
Widow-wise—*Genista tinctoria*.
Wig-tree—*Rhus Cotinus*.
Wild Bergamot—*Monarda fistulosa*.
Wild Black Currant, American—*Ribes floridum* (*americanum* s).
Wild Clary—*Salvia Verbenca*.
Wild Clove—*Pimenta acris*.
Wild Date—*Phoenix sylvestris*.
Wild Endive—*Cichorium Intybia*.
Wild Ginger—*Asarum europaeum*.
Wild Hyacinth—*Scilla nutans* (*Jostalis* s).
Wild Hyssop—*Verbeum hastata*.
Wild Irishman—*Discaria Toumatou*.
Wild Liquorice—*Abrus*.
Wild Olive—*Elaeagnus, Olea europaea*.
Wild Pepper, Indian—*Vitex trifolia*.
Wild Pink, American—*Silene* (*Melandryum* s) *peninsularis*.
Wild Red Raspberry, American—*Rubus strigosus*.
Wild Rosemary—*Andromeda polifolia*.
Wild Snowball—*Ceanothus americanus*.
Wild Spaniard—*Aciphylla* s.
Wild Spinach—*Cheopodium Bonus-Henricus*.
Wild Tulip-tree (of California) —*Calochortus*.
Wild Water Lemon—*Passiflora foetida*.
Wild William—*Lycnis Flus-cuculi*.
Wild Woad—*Roseda Lutcola*.
Wilding—*Pyrus Malus*.
Willow—*Salix*.
Willow, American Water—*Dianthea americana*.
Willow, French—*Epilobium angustifolium, Salix triandra*.

- Willow Grass**—*Polygonum amphibium*.
Willow Herb—*Epilobium*.
Willow Oak—*Quercus cinerea*, *Q. Phellos*, *Q. salicina*.
Willow, Persian—*Epilobium angustifolium*.
Willow, Sweet—*Myrica Gale*.
Willow, Virginian—*Itea virginica*.
Willow, Water—*Dianthera americana*.
Wind Rose—*Papaver Rhoeas*, *Ranunculus hybridus*.
Windflower—*Anemone*, *Gentiana Pneumonanthe*.
Windflower, Bastard—*Gentiana Pseudo-pneumonanthe*.
Window-bearing Orchid—*Cryptopharanthus s.*
Windroot—*Asclepias tuberosa*.
Wine Berry—*Vaccinium Myrtillus*.
Wine Berry, Japanese—*Rubus phoenicolasius*.
Wine Palm, East Indian—*Phoenix sylvestris*.
Winged Everlasting—*Ammobium alatum*.
Winter Aconite—*Eranthis*.
Winter Berry—*Ilex verticillata*.
Winter Bloom—*Hamanella virginica (virginiana s.)*.
Winter Cherry—*Physalis Alkekengi*.
Winter Clover—*Mitchella repens*.
Winter Cress—*Barbarea*.
Winter Daffodil—*Sternbergia lutea*.
Winter Grape—*Vitis cordifolia*.
Winter Hawthorn—*Aponogeton distachyon*.
Winter Heath—*Erica carnea*.
Winter Heliotrope—*Petalites fragrans*.
Winter Jasmine—*Jasminum nudiflorum*.
Winter Savory—*Saturia montana*.
Winter Wolf's-bane—*Kranthis hyanthis*.
Wintergreen—*Pyrola*.
Wintergreen, Aromatic—*Gaultheria*.
Wintergreen, Chickweed—*Tridentalis*.
Wintergreen, Creeping—*Gaultheria procumbens*.
Wintersweet—*Toxicoptera (Ascanthera s.) spectabilis*.
Wistaria, Tuberos-rooted—*Apium tuberosa*.
Witch Alder, American—*Fothergilla alnifolia*.
Witch Elm—*Ulmus glabra*, *U. montana*.
Witch Hazel—*Hamanelis*.
Witches' Thimble—*Silene maritima*.
Withe Rod, American—*Viburnum nudum*.
Withe, Serpent—*Aristolochia odoratissima*.
With-wind—*Convolvulus*.
Withy—*Salix fragilis*.
Withy, Hoop—*Ribina*.
Witloof—*Cichorium Intybus* var. (Chicory).
Wittebroom—*Leucadendron*.
Woad, Dyer's—*Isatis tinctoria*, *Reseda Luteola*.
Woad, Waxen—*Gentiana tinctoria*.
Woad, Wild—*Reseda Luteola*.
Wolf Berry—*Symphoricarpos occidentalis*.
Wolf Chop—*Messembryanthemum lupinum*.
Wolf's-bane—*Aconitum*.
Wolf's-bane, Winter—*Eranthis hyanthis*.
Wolf's-claw—*Lycopodium clavatum*.
Wolf's-milk—*Euphorbia*.
Woman's-cap Orchid—*Thelymitra*.
Wonga-wonga Vine—*Tecoma australis*.
Wood Anemone—*Anemone nemorosa*.
Wood Betony—*Peduncularis canadensis*, *Stachys Betonica*.
Wood Bronzey—*Fraxinus*.
Wood Fern—*Polypodium vulgare*, &c.
Wood Fern, Crested—*Nephrodium cristatum*.
Wood Fern, Evergreen—*Nephrodium marginale*.
Wood Fern, Florida—*Nephrodium floridanum*.
Wood Fern, Fragrant—*Nephrodium fragrans*.
Wood Fern, Rigid—*Nephrodium rigidum*.
Wood Fern, Spreading—*Nephrodium patens*.
Wood Laurel—*Daphne Laureola*.
Wood Lily—*Pyrola minor*, *Trillium*.
Wood Nut—*Corylus Avellana*.
Wood Olive—*Elæodendron*.
Wood Sage, Bastard—*Teucrium Pseudo-scorodonia*.
Wood Sorrel—*Oxalis Acetosella*.
Wood Sower—*Oxalis Acetosella*.
Wood Tongue Fern—*Drymoglossum*.
Wood Violet—*Viola sylvatica (sylvestris s.)*.
Woodbine—*Lonicera Periclymenum*.
Woodbine, American—*Ampelopsis quinquefolia (Vitis hederacea)*.
Woodruff or Woodrowel—*Asperula*.
Woody Nightshade—*Solanum Dulcamara*.
Woollen—*Verbascum*.
Woolly Lip Fern—*Cheilanthes lanuginosa*.
Woolly Mullein—*Verbascum phlomisoides*.
Worm Grass—*Spigelia marilandica*.
Wormwood—*Artemisia Absinthium s.*
Woundwort—*Anthyllis Vulneraria*, *Stachys*.
Woundwort, Hercules'—*Heracleum*.
Wraak Grass—*Zostera*.
Wreath, Purple—*Patrica nobilis*.
Wreathwort, Purple—*Orchis mascula*.
Wright's Lip Fern—*Cheilanthes Wrightii*.
Wych—*See Witch*.
Wymot—*Althæa*.
Yacca-wood Tree—*Podocarpus Pyrdicana*.
Yam—*Dioscorea*.
Yang-mae-tree—*Myrica Nagi (rubra s)*.
Yarrow—*Achillea*.
Yarrow, Soldiers'—*Stratiotes aloides*.
Yate or Yelt-tree—*Eucalyptus cornuta*.
Yellow Archangel—*Lamium Galeobdolon*.
Yellow-barked Oak—*Quercus tinctoria (velutina s)*.
Yellow Chestnut Oak—*Quercus Prinus acuminata s.*
Yellow Cress—*Barbarea præcox (American Cress)*.
Yellow Deal—*Pinus sylvestris*.
Yellow Elder—*Tecoma stans*.
Yellow Everlasting—*Helichrysum arvenarium*.
Yellow-eyed Grass (of North America)—*Xyris*.
Yellow Flag—*Iris Pseudacorus*.
Yellow Garden Hawkweed—*Tolpis barbata*.
Yellow Iris—*Iris Pseudacorus*.
Yellow Larkspur—*Tropeolum*.
Yellow Loosestrife—*Lysimachia vulgaris*.
Yellow Pine—*Pinus mitis s.*
Yellow Rattle—*Rhinanthus Crista-galli*.
Yellow Rock Indian Cress—*Tropæolum polyphyllum*.
Yellow Rocket—*Barbarea vulgaris*.
Yellow Root—*Hydrastis canadensis*.
Yellow Star Flower—*Sternbergia lutea*.
Yellow Star of Bethlehem—*Gagea lutea (fascicularis s)*.
Yellow-striped Water-lily, American—*Nuphar advena*.
Yellow Sultan—*Centaurea suaveolens*.
Yellow Water-lily—*Nuphar luteum*.
Yellow Weed, Dyer's—*Reseda Luteola*.
Yellow Wood—*Cladonia tinctoria*, *Ochrosia borbonica*, *Podocarpus elongata*, &c.
Yellow-wort—*Chlora*.
Yellowby—*Chrysanthemum segetum*.
Yevering Bells—*Pyrola secunda*.
Yew—*Taxus*.

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Yew, Chinese—*Cephalotaxus, Podocarpus chinensis.*
Yew, Cluster-flowered—*Cephalotaxus.*
Yew, Japanese—*Cephalotaxus pedunculata fastigiata.*
Yew, Jointed—*Athrotaxis.*
Yew, Lord Harrington's—*Cephalotaxus pedunculata*
Yew, Prince Albert's—*Saevogthea conspicua.*
Yew, Stinking—*Torreya.*
Yoke Elm—*Carpinus Betulus.*
York and Lancaster Roses—*Rosa centifolia*
Youth and Old Age—*Zinnia*

Youthwort—*Drosera rotundifolia.*
Yulan—*Magnolia conspicua (M. Yulan s).*
Zanona Palm—*Socratea exorrhiza.*
Zante Wood—*Chlorozylon Swietenia, Rhus Cotinus.*
Zebra-plant—*Calathea zebrina.*
Zebra Wood—*Guettarda speciosa, Myrtus (Eugenia s) fruge.*
Zedoary, Round—*Curcuma Zedoaria.*
Zephyr Flower—*Zephyranthes.*
Zonal Geranium or Pelargonium—*Pelargonium zonale.*



