

THE  
ENCYCLOPÆDIA  
OF  
GARDENING

T.W. SANDERS, F.L.S.



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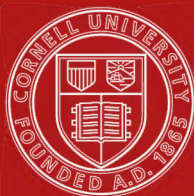
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THE  
ENCYCLOPÆDIA  
OF  
GARDENING.

A DICTIONARY OF CULTIVATED PLANTS, Etc.,  
GIVING IN ALPHABETICAL SEQUENCE THE  
CULTURE AND PROPAGATION OF HARDY  
AND HALF-HARDY PLANTS, TREES AND  
SHRUBS, ORCHIDS, FERNS, FRUIT, VEGE-  
TABLES, HOTHOUSE AND GREENHOUSE  
PLANTS, Etc., INCLUDING THEIR SPECIFIC  
• AND COMMON NAMES.

BY  
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*(Knight of First Class of the Royal Order of Wasa, Sweden).*

Editor of "Amateur Gardening" and "Farm and Garden"; Author of  
"The Alphabet of Gardening," "Amateur's Greenhouse," "Vegetables  
and their Cultivation," "The Flower Garden," Etc.

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## FOREWORDS.

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IN issuing this, a thoroughly revised edition of a work which has previously passed through twelve editions, and thus abundantly testified its value as a work of reference on the culture of all the genera of trees, shrubs, orchids, ferns, hardy plants, hothouse and greenhouse plants, and vegetables worthy of a place in British gardens, the Author desires to express his gratitude to the many persons who have written to him from time to time to point out errors or omissions in past editions, and to say that he trusts every purchaser of this volume will find it an acceptable, useful and valued guide to the successful cultivation of plants grown in their gardens and greenhouses.

The Author begs to refer the Reader to the latter portion of his introductory remarks for information as to the general features of the work and the improvements made therein. It is only needful to add here that the Reader will find the Author's "Alphabet of Gardening" an excellent companion to the present volume. Therein he will find the subjects of plant life, soils, manures, propagation, pruning, planting, training, and rotation of crops fully dealt with, and in all cases freely illustrated with diagrams. Furnished with these two volumes, the reader will, indeed, possess a concise library on all that pertains to the growth of vegetation adapted for the adornment of garden and greenhouse and for use as food, at a comparatively small cost.

T. W. S.





## INTRODUCTION.

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THE art and craft of gardening is unquestionably the oldest of all human occupations. Holy Writ tells us that when the Great Architect of the universe created Adam, the progenitor of our race, He placed him in that delightful earthly paradise, the Garden of Eden, to dress and to keep it. We, therefore, who have adopted the noble profession as a means of existence have every reason to feel justly proud of belonging to so ancient and honourable a craft, while those who have adopted other professions, and who practise the art and craft as a recreative pursuit, cannot but share a similarly grateful appreciation of its virtues.

### PRIMEVAL GARDENERS AND GARDENS.

In the long vista of time that has passed since the first grand old gardener practised the art, first for pleasure, and afterwards as a means of subsistence, gardening has never failed to have a magic fascination for rich and poor of all ages. Noah, we are told, experienced delight in cultivating the vine; Jacob in growing the vine, fig, and almond; Solomon in making gardens, orchards, and vineyards; and the ancient Egyptians, Assyrians, Chinese, Greeks, and Romans, in the fashioning of gardens, or the cultivation of fruits and vegetables. In fact, throughout all ages and all time, the noble art and craft has ever been a popular and fascinating pursuit.

King Solomon must have been an enthusiastic amateur gardener, since he tells us in Ecclesiastes that, "I planted me vineyards: I made me gardens and orchards, and I planted trees in them of all kind of fruits: I made me pools of water, to water therewith the wood that bringeth forth trees." The gardens of that period were enclosed by walls or thick hedges to protect the crops from prowling



beasts, and the crops grown therein were the vine, fig, pomegranate, walnut, almond, medlar, and quince; lettuce, endive, cucumbers, onions, leeks, garlic, and melons; and roses galore. In the hot, dry climate of Palestine watering was an indispensable operation, and hence reservoirs and conduits for irrigating the land had always to be provided.

In ancient Persia and Assyria gardens were fashioned and maintained on an elaborate style in the neighbourhood of all great cities. Not only were all the choicest of the native flora utilised in their adornment, but others obtained from far-off climes. The famous Hanging Gardens of Babylon were the wonder of the then civilised world. These consisted of no less than twenty plateaux, rising one above the other, and resting on walls 22ft. in thickness, and each planted with trees or other vegetation, kept in constant growth by artificial watering. In Egypt, too, gardens were elaborately fashioned, sculpture and masonry entering largely into their formation and decoration. In these they grew every kind of fruit, vegetables, and flowers, all of which had to be unceasingly watered by irrigation from the Nile, or by the hand of the slave.

### MEDIÆVAL GARDENING.

The Grecians also were famous gardeners. They seem to have taken special delight in having fine expanses of beautiful greensward, studded with statuary and pavilions, and furnished with shady groves. Fruit trees were lavishly cultivated, and lilies, narcissi, and roses grown in profusion in these gardens. Not less magnificent and less regal in splendour were the Roman gardens. The Romans, indeed, were keen gardeners, and grew many of the popular vegetables of the present day with great success. Moreover, they fully understood the art of manuring and forcing, and may be said to have brought the arts of horticulture and agriculture to their highest perfection at that period of the world's history. In China, Mexico, and in India, too, gardening was a popular pastime with rich and poor long before the Christian era.

So far as our own country is concerned, there is little doubt that we owe the early introduction of horticulture, and its sister art agriculture, to the Romans. When they had finally subjugated the ancient Britons, and peace prevailed, history tells us that the Roman settlers planted vineyards and orchards of apples, pears, figs, mulberries, etc., as well as grew corn, not only for home use, but also for exportation.

In the twelfth century it is recorded that vineyards flourished in the vale of Gloucester, apple orchards were plentiful in the fertile county of Worcester, market gardens existed at Fulham, and that gardens attached to the homes of the baron, yeoman, and hind were fairly common throughout England. But these gardens were not of the neat and symmetrical order of those of the present day. They were simple patches or enclosures within walls, planted with fruits, vegetables, and herbs. The monks of the Middle Ages were great gardeners. Their superior education, peaceful calling, and general habits fitted them to undertake the culture of produce in the curtilage of their monasteries. Moreover, they were in the habit of travelling a great deal, and had the opportunity of securing new or improved forms of produce to cultivate in their gardens.

### GENESIS OF ENGLISH GARDENING.

It was in the reign of Edward III. that the art of gardening began to be seriously taken in hand. Britons then began to lay out their gardens on a more ornamental plan than before, and to cultivate plants for use and medicine more extensively. The first book on gardening, entitled "De Yconomia de Housbrandia," by Walter de Henley, appeared in the 16th century, and others soon followed, including the quaint Thomas Tusser, who detailed the work of the garden and farm in pleasing rhyme. In Henry VIII.'s reign the gardens of Nonsuch and Hampton Court were laid out with regal splendour, and in Queen Bess's time the potato, tobacco, tea, and a number of other useful or ornamental plants and trees were introduced from foreign climes to enrich the gardens of the period. Evelyn, then a great writer and traveller, did a great deal to popularise and extend the art of gardening; and Gerard, the famous surgeon and botanist, published his esteemed Herbal, a work still highly valued at the present day. John Parkinson later on published his "Paradisi in sole Paradisus terrestris," a valuable work, which gave great impetus to furthering the art of gardening at the time.

In the eighteenth century marvellous strides were made in the progress of gardening. People of wealth began to lay out gardens on a magnificent scale, form parks, and plant trees for ornament and use. Botanic gardens were formed at Chelsea, Cambridge, and Kew, and greenhouses glazed with glass and artificially heated were first brought into

practical use at that period. The professional gardener of the 18th century was, however, woefully lacking in skill and intelligence. He could cultivate ordinary crops, but failed to possess the art or initiative of growing the choicer vegetables and fruit, hence these had to be imported from Holland and Flanders. Later, he seems to have improved, and to have been able to understand the art of securing early crops and ensuring successional supplies.

### GARDENING IN THE LAST CENTURY.

It was in the last century that gardening in all its phases made the most rapid strides, thanks to the efforts of such eminent experts as Thomas Andrew Knight, who did so much in the improvement of the varieties of our hardy fruits; John Claudius Loudon, in the designing and planting of gardens and in the publication of his remarkable *Encyclopædia of Gardening, and Trees and Shrubs, etc.*, both works showing a unique mental capacity and an amount of personal industry unequalled to the present time; Sir Joseph Paxton, the talented gardener and designer of the gardens of Chatsworth and the Crystal Palace; Charles Darwin, who rendered immeasurable service to botany and the improvement of plants by his researches and studies as to the origin of species; Dr. Lindley, who did so much for us in regard to plant physiology and botany; and Dr. Maxwell Masters, in regard to coniferæ—all men of noble character, high ideals, and the widest scientific and practical attainments, who have, alas! gone to their well-earned rest, and left behind them records of greatness that will never die out so long as horticulture exists.

It would, indeed, be an impossible task to mention even a tithe of those, living or dead, who have, during the past century, done so much for the art of horticulture, either by pen or deed. The long period of peace which we have enjoyed, the more widely diffused education which has prevailed, the immense help which the plethora of societies has rendered, and the marvellous increase of literature on the subject, have all been conducive to extending a love of horticulture far and wide throughout the kingdom.

It may truly be said that there is hardly a house outside our congested cities that does not possess a garden, and even in towns where garden space does not exist, the love of gardening often stimulates the citizen to form a miniature

garden on the roof, or to grow flowers on the window-sill. Commercially, too, gardening has made rapid strides during the last fifty years. Thousands of acres are devoted to growing produce for market, and hundreds of acres are covered with glass houses to force early crops to feed the ever-increasing population of this country. Commercial horticulture is, indeed, a great industry, and is likely to become still more so in years to come. The latest new phase of the industry—the intensive system of growing early crops in frames, as so successfully practised in France—is now being tried in this country, and if it should prove a practical and financial success, we shall in due course see this island converted into a colony of gardens.

### TASTE IN GARDENING.

As regards taste in gardening, a wonderful change has taken place in this respect during the last half century. Our own memories carry us back to forty years ago, and since that time we have witnessed a remarkable revolution, not only in the fashioning of gardens, but in the manner of planting, and the kinds of plants grown. For example, our earliest experience of flower gardening was the strictly geometrical in design, and the planting of beds in a similarly rigid fashion—known as carpet bedding. In those days the flaring zonal, and the tricolored, bronze, golden, and silver-leaved pelargonium, the gaudy yellow calceolaria, and pyrethrum, and the brilliant blue lobelia, were the favoured plants for bedding, and hardy herbaceous plants and annuals were regarded as but of secondary importance. Every young gardener in those days regarded a knowledge of geometry as one of the essential accomplishments of his training, and many an hour was spent in devising intricate designs of a mosaic character for planting the beds the next season. Plants with beautiful or richly-coloured foliage were much in demand for filling in the designs, and no amount of labour and expense was incurred in endeavouring to produce elaborate and ornate designs in the way of carpet or mosaic bedding. This style soon satiated the palate of the wealthy, and then followed the even more costly rage of subtropical bedding, plants of noble stature, richly-coloured foliage, or exquisite blossoms from tropical climes, being used extensively for decorating the flower garden. Eventually an apostle of Nature came upon the scene, in the person of Mr. William Robinson, a true

to see that every subject was presented in alphabetical sequence, or as fully as we should otherwise have done. However, a strong request was made by readers for the publication of the text in volume form, and we acceded to it, not without misgivings that it was as perfect as we could wish. Edition after edition being called for, the necessity eventually arose for the entire work to be reset in new type, and then, with the full concurrence of the publishers, we decided to undertake the laborious task of thoroughly revising the details and nomenclature, and remedying the one weak point in the volume, namely, adding lists of the species belonging to each genus.

This work we have happily finished, and we are sufficiently self-conscious to believe that the work in its present form will be considered as perfect as human foresight, diligence, and care could possibly expect. We do not go so far as to say it is absolutely free from error. Anyone who has had any experience in the compilation of a dictionary—and there are very few, indeed, who have—knows full well the immense difficulties that have to be encountered in collecting and arranging the data, and in the subsequent reading of the proofs. Still, the task has been a pleasant one, as the Author knows from past experience that his efforts will be appreciated heartily by thousands of enthusiastic amateur gardeners, not only in Great Britain, but beyond the seas.

It will be well, perhaps, to give a general idea of the improvements that have been made in the present volume. First of all, we have broken up the somewhat solid nature of the text which existed in previous editions by dividing the subject into several paragraphs, so as to make each cultural feature distinct. Secondly, we have added considerably to the cultural data, giving, in the case of vegetables and fruit, more especially, the main points about the market culture of these crops. Thirdly, we have added the species and hybrids in general cultivation with their respective colours, time of flowering, height, and native countries, these being classified as hardy, half-hardy, annuals, biennials, perennials, trees and shrubs, green-house or hot-house plants, so that the reader may perceive at a glance the sections under which a species is classified. Fourthly, we have thoroughly revised the nomenclature of the genera, so as to bring them up-to-date. Thus, modern botanists now class the azaleas with the rhododendrons, the godetias with the œnocheras, the rho-



danthes with the helipterums, and so on. This arrangement we have followed, so far as placing the species and cultural details are concerned. By means of cross references, however, we have placed the old familiar names in their proper sequence, so that the reader can easily get a clue to the facts he requires. Fifthly, cultural details are given under the generic name only, as the apple and pear under *Pyrus*; the plum and cherry under *Prunus*; the cabbage, broccoli, etc., under *Brassica*; carrot under *Daucus*; auricula and polyanthus under *Primula*, and so on. Lastly, we have included in alphabetical order all the common names in general use.

As regards the genera included in the present volume, they are those in general cultivation in gardens. Those only of botanical interest, or little grown, are excluded, because we are desirous, in conjunction with the publishers, that the volume shall be issued at a price within the means of all classes of amateur gardeners.

It has been suggested by many readers that we should give the pronunciation of the generic and specific names included in the work. We certainly did entertain the idea, but eventually found the task an insuperable one. Authorities vary so much in their ideas as to the correct pronunciation, that had we attempted the task, even with the aid of a good friend and a distinguished classical scholar, we should have laid ourselves open to severe criticism. Besides, the expense involved in setting up the accentuations would have prevented the work being issued at a popular price.

### A LAST WORD TO THE READER.

Now we close this introduction, embracing a brief, general survey of the progress of gardening from the earliest to the present period, and of the general features of the volume, with a sincere hope that the busy man, who requires a fund of information in a small compass, will find this work—the reflex of forty years' practical and scientific study and experience, including twenty-one years' special acquaintance with the needs of amateur gardeners as Editor of "Amateur Gardening"—a real friend, guide, and counsellor in all that appertains to the culture of vegetation in the garden and greenhouse.

T. W. S.

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Brevity is the soul of wit.—*Shakespeare.*

A short saying oft contains much wisdom.—*Sophocles.*

It is with words as with sunbeams ; the more they  
are condensed the deeper they burn.—*Southey.*

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# ENCYCLOPÆDIA OF GARDENING.

**Aaron's Beard** (*Hypericum calycinum*).—See *Hypericum*.

**Aaron's Rod** (*Verbascum Thapsus*).—See *Verbascum*.

**Abchasiān Hellebore** (*Helleborus abchasicus*).—See *Helleborus*.

**Abele Tree** (*Populus alba*).—See *Populus*.

**Abelia**.—Ord. *Caprifoliaceæ*. Half-hardy flowering shrubs. Evergreen and deciduous. First introduced 1842.

**CULTURE**: Compost, equal parts peat, loam, sand. Position, warm, sheltered walls outdoors. Plant, April or Oct. Prune slightly after flowering. Propagate by layers in March, or cuttings of firm shoots in cold frame in July.

**GREENHOUSE CULTURE**: Compost, equal parts loam, peat, leaf-mould & silver sand. Position, well-drained pots in sunny, cold house. Pot in Oct. Store in cold frame till Jan. Water moderately at first, freely when in full growth. Give little water during winter. Prune straggly growths after flowering. Stand outdoors during summer.

**SPECIES CULTIVATED**: *A. floribunda*, rosy-purple, March, 3 ft., Mexico; *Chinensis* (Syn. *A. rupestris*), pink, fragrant, Sept., 5 ft., China; *triflora*, white and pink, Sept., 5 ft., Himalayas.

**Abies** (*Deal*; *Silver Fir*).—Ord. *Coniferae*. Hardy coniferous evergreen trees. First introduced 1603.

**CULTURE**: Soil, sandy loam. Position, high, dry, open from sea coast. Plant, Oct. or April. *A. pectinata* (Common Silver Fir or Deal Tree), a good species to plant in mixed woods as shelter for game. Timber valuable for joists, rafters, and floor boards. Tree grows rapidly after first few years. Propagate by seeds sown  $\frac{1}{8}$  in. deep in sandy loam in a temp. 55°, March, or outdoors in April.

**SPECIES CULTIVATED**: *A. amabilis* (Red Fir), 100 to 150 ft., British Columbia; *balsamea* (Balsam Fir), 70 to 80 ft., N. America; *brachyphylla*, 120 ft., Japan; *bracteata*, 150 to 200 ft., California; *cephalonica*, 80 to 100 ft., Greece; *concolor*, 100 to 150 ft., California; *firma*, 100 ft., Japan; *Fraseri*, 60 to 80 ft., Carolina; *grandis*, 200 ft., California; *lowiana* (Low's Silver Fir), 300 ft., Carolina; *magnifica*, 200 ft., N. California; *Mariesi*, 90 to 100 ft., Japan; *nobilis*, 200 ft., California; *nordmanniana* (Nordman's Fir), 80 to 100 ft., Caucasus; *pectinata*, 80 to 100 ft., S. Europe; *Pinsapo*, 60 to 80 ft., Spain; *religiosa*, 60 to 70 ft., Mexico; *sachalinense*, 130 ft., Isle of Sachalin; *Veitchi*, 120 to 140 ft., Japan; *webbiana*, 80 to 90 ft., Himalayas. See also *Picea*.

**Abobra** (*Scarlet-fruited*).—Ord. *Cucurbitaceæ*. Half-hardy climbing, tuberous-rooted perennial. Deciduous. Fruit, egg-shaped, scarlet; Sept. & Oct.

**CULTURE**: Soil, sandy. Position, south wall. Plant, June; lift tubers Oct. & store in frost-proof place. Propagate by seeds sown in leaf-mould, loam & sand, temp. 65°, March.

**SPECIES CULTIVATED**: *A. viridiflora*, green, fragrant, summer, 6 ft., S. America,

**Abroma**.—Ord. *Sterculiaceæ*. Stove-flowering plants. Evergreen. First introduced 1770.

**CULTURE**: Compost, equal parts loam, peat, sand. Pot & prune,

March. Water freely in summer, moderately in winter. Temp., March to Sept. 70° to 80°; Sept. to March 60° to 65°. Propagate by seeds sown 1-16 in. deep, or cuttings of firm shoots, in fine sandy soil, March, temp. 65° to 75°.

SPECIES CULTIVATED: *A. angusta*, purple, Aug., 8 to 10 ft., Asia; *orbicularis*, purple, June.

**Abronia** (Sand Verbena).—Ord. Nyctaginaceæ. Half-hardy trailing plants. First introduced 1823. Flowers fragrant.

CULTURE: Soil, sandy loam. Position, exposed rockery or elevated warm border. Plant, June. Propagate by seeds sown 1-16 in. deep in sandy soil, temp. 55° to 65°, March; perennials by cuttings of young shoots in similar soil & temp. *A. umbellata*, good greenhouse plant.

SPECIES CULTIVATED: *A. arenaria*, lemon-yellow, July, 9 to 18 ins.; *fragrans*, white, July, 1 to 2 ft.; *umbellata*, rosy-pink, June and July, 6 to 18 in. Natives of California.

**Abrus** (Paternoster; Rosary Pea; Crab's Eyes; Weather Plant).—Ord. Leguminosæ. Stove climber. Orn. foliage. Deciduous. First introduced 1680.

CULTURE: Compost, two parts loam, one part peat & sand. Pot & prune March. Water freely spring & summer, moderately in autumn & winter. Temp., March to Sept. 70° to 80°; Sept. to March 60° to 65°. Propagate by seeds sown ¼ in. deep, or cuttings of firm shoots in sandy loam, temp. 75° to 85°, Feb.

SPECIES CULTIVATED: *A. precatorius*, pale purple, May, 9 to 12 ft., E. Indies. Seeds scarlet and black.

**Abutilon** (Indian Mallow).—Ord. Malvaceæ. Greenhouse evergreen shrubs.

CULTURE: Compost, two parts loam, one part peat & sand. Position, sunny greenhouse. Pot & prune March. Temp., March to Sept. 55° to 65°; Sept. to March 50 to 55°. Water freely in spring & summer, moderately in autumn & winter. May be used for bedding in summer. Propagate by seeds sown ½ in. deep, or cuttings in light rich soil, temp. 70°, March.

SPECIES CULTIVATED: *A. aurantiacum*, orange, spring and summer, 3 to 6 ft., Brazil; *bedfordianum*, red and yellow, autumn, 3 to 6 ft., Brazil; *esculentum*, yellow, summer, 3 to 6 ft., Brazil; *floribundum*, orange-red, summer, 5 ft.; *graveolens*, orange-red, Asia; *insigne*, white and carmine, Jan., 5 ft., New Granada; *megapotamicum* (Syn. *vexillarium*), yellow and scarlet, 4 to 8 ft., summer, Brazil; *pæoniflorum*, pink, Jan., 5 ft., Brazil; *pulchellum*, white, May, 3 to 4 ft., N.S. Wales; *striatum*, orange-red, all year round, 6 to 10 ft., Brazil; *sellovianum marmoratum*, mottled foliage, Brazil; *Thompsoni*, mottled leaves; *venosum*, orange-red, July, 3 to 4 ft.; *vitifolium*, white, July, Chili, nearly hardy. Popular varieties: *Boule de Neige*, white; *Delicatum*, rose; *Louis Van Houtte*, purple; *Queen of Yellows*, yellow.

**Abyssinian Banana** (*Musa ensete*).—See *Musa*.

**Abyssinian Primrose** (*Primula verticillata*).—See *Primula*.

**Acacallis**.—Ord. Orchidaceæ. Stove epiphytal orchids. Culture and propagation as advised for *Agansia*.

SPECIES CULTIVATED: *A. cyanea*, light blue, summer, 1 ft., Brazil.

**Acacia** (Wattle; Gum; Myrrh trees).—Ord. Leguminosæ. Greenhouse flowering plants. Evergreen. First introduced 1656.

CULTURE: Compost, equal parts peat, loam, sand. Pot & prune, Feb. or March. Water freely in spring & summer, moderately in autumn & winter. Temp., March to Sept. 55° to 65°; Sept. to March 50° to 55°. Propagate by seeds sown ½ in. deep, or cuttings of firm shoots, in sandy peat, well-drained pots, temp. 75° to 85°, March.

SPECIES CULTIVATED: *A. armata*, yellow, spring, 6 to 10 ft., Australia; *cordata*, yellow, spring, 12 to 18 ins., Australia; *dealbata* (*Mimosa*), yellow, spring, 10 ft., Australia; *Drummondii*, yellow, April, 10 ft., Australia; *leprosa*, yellow, April, 6 to 10 ft., Australia; *longifolia angustifolia*, yellow, March, 10 ft.,

Australia; pubescens, yellow, April, 6 to 12 ft., Australia; pulchella, yellow, March, 3 to 6 ft., Australia; riceana, yellow, May, 20 ft., Tasmania; verticillata, yellow, March, 6 to 20 ft., Australia. See also the genus *Albizzia* and *Robinia*.

**Acæna** (New Zealand Bur).—Ord. Rosaceæ. Hardy herbaceous trailing perennials. Evergreen. First introduced 1828.

**CULTURE:** Soil, sandy loam. Position, moist, open, or shady rockery. Plant, Oct. to April. Propagate by seeds sown 1-16 in. deep in March, temp. 65°; cuttings in cold frame in Aug.; division of roots in April; all in sandy soil.

**SPECIES CULTIVATED:** *A. adscendens*, purple, summer, Patagonia; *microphylla*, crimson spines, New Zealand; *pulchella*, bronzy foliage, New Zealand; *sericea*, greenish, Chili; *splendens*, hairy foliage, Chili.

**Acalypha** (Three-sided Mercury; Copper-leaf).—Ord. Euphorbiaceæ. Stove plants. Orn. foliage. Evergreen. First introduced 1866. Leaves, orange, red, green, crimson.

**CULTURE:** Compost, equal parts leaf-mould, peat, loam, sand. Pot & prune, Feb. or March. Water freely in spring and summer, moderately in autumn & winter. Temp., March to Sept. 70° to 80°; Sept. to March 60° to 65°. Suitable for summer or subtropical bedding. Propagate by cuttings in sandy soil, temp. 80°, Feb. or March.

**SPECIES CULTIVATED:** *A. hispida*, 6 to 10 ft., New Guinea; *muscaica*, 6 to 10 ft., Polynesia; *godseffiana*, 1 to 3 ft., New Guinea; *wilkesiana*, 3 to 4 ft., Fiji; *tricolor* (see *wilkesiana*); *Sanderi* (see *hispida*).

**Acantholimon** (Prickly Thrift).—Ord. Plumbaginaceæ. Hardy perennials. Evergreen. First introduced 1851.

**CULTURE:** Soil, sandy loam. Position, sunny rockery or warm border. Plant, Oct to April. Propagate by layering shoots in Aug., similar to carnations; cuttings in cold frame in Sept.

**SPECIES CULTIVATED:** *A. acroseum*, rose, July and Aug., 6 in., Asia Minor; *glumaceum*, rose, July, 6 in., Armenia; *Kotschyi*, white, July, Asia.

**Acanthopanax**.—Ord. Araliaceæ. Hardy ornamental-leaved evergreen shrubs formerly included in the genus *Aralia*.

**CULTURE:** Soil, rich, well drained loam. Position, warm, sheltered shrubberies, or corners of lawns. Plant in Sept. or April. Increased by seeds sown in heat in spring; cuttings of ripened shoots in autumn; suckers at any time.

**SPECIES CULTIVATED:** *A. ricinifolium* (Syn. *Aralia Maximowiczii*), leaves castor-oil like, elegant, Japan; *sessiliflorum*, leaves wrinkled, large, Japan; *spinosum* (Syn. *Aralia pentaphylla*), elegant foliage, Japan; *spinosum variegata*, leaves edged with creamy-white.

**Acanthophœnix** (Prickly Date Palm).—Ord. Palmaceæ. Stove plants. Orn. foliage. Evergreen. First introduced 1861.

**CULTURE:** Compost, two parts peat, one part loam & sand. Repot, Feb. Water freely in summer, moderately other times. Temp., March to Sept. 70° to 85°; Sept to March 60° to 65°. Propagate by seeds sown 1 in. deep in light soil, temp. 80°, Feb. or March.

**SPECIES CULTIVATED:** *A. crinita*, 6 to 10 ft., Seychelles; *rubra*, 6 to 12 ft., Madagascar.

**Acanthorhiza**.—Ord. Palmaceæ. Stove palms. Orn. foliage. Evergreen. First introduced, 1864.

**CULTURE:** Compost, two parts loam, one part leaf-mould & sand. Repot, Feb. Water moderately in summer, very little other times. Temp., March to Sept. 70° to 85°; Sept. to March 60° to 65°. Propagate like *Acanthophœnix*.

**SPECIES CULTIVATED:** *A. aculeata*, Central America.

**Acanthus** (Bear's Breech; Bear's Foot).—Ord. Acanthaceæ. Hardy herbaceous perennials. Orn. foliage. Deciduous. First introduced 1548.



**CULTURE:** Soil, sandy loam. Position, warm sheltered border. Plant, Oct. to April. Propagate by seed sown  $\frac{1}{2}$  in. deep in light soil; division of roots in Oct. or March.

**SPECIES CULTIVATED:** *A. longifolius*, rosy-purple, June, 3 to 4 ft., Dalmatia; *candelabrum*, purple, July, 3 ft.; *hirsutus*, rose, July, 2 to 3 ft., Orient; *mollis*, white, rose, lilac, 3 to 4 ft., S. Europe; *mollis latifolius*, a superior variety; *spinus*, purplish, July, 2 to 4 ft., Levant; *spinus spinosissimus*, rosy-flesh, July, 3 ft., Dalmatia.

**Acer** (Maple).—Ord. Sapindaceæ. Hardy trees. Orn. foliage. Deciduous.

**CULTURE:** Soil, well-drained loam. Position, shrubberies or open spaces; Japanese kinds in warm borders or in pots in cool greenhouse. Plant, Oct. to March. Propagate by seeds sown  $\frac{1}{4}$  in. deep in sheltered position Oct.; grafting March; budding Aug. for choice Japanese and variegated kinds; layering Oct.

**USEFUL DATA:** Common Maple (*Acer campestris*) will grow to an altitude of 1,200 ft., and the Sycamore (*Acer pseudo-platanus*) to 1,500 ft. above sea level. Timber reaches maturity at 40 years of age. Average life of trees, 500 to 700 years. Timber of Sycamore, used for making pattern moulds, stair rails, turnery, etc.; that of common species and Sugar or Bird's Eye Maple (*A. saccharinum*) for cabinet work. Average weight of cubic foot of Sycamore wood, 41 lb.; number of cubic feet in a ton, 54. Average weight of cubic foot of Maple wood, 42 lb.; number of cubic feet in a ton, 50. Average value of Sycamore wood per cubic foot, 1s. to 1s. 6d.; Maple, 1s. to 1s. 9d. Number of seeds in a pound, 5,000. Number of Maple seeds required to plant an acre of ground, 14 lb.; Sycamore, 30 lb. Sycamore best tree for hilly exposed positions.

**SPECIES CULTIVATED:** *A. argutum*, Japan; *campestre* (Common Maple), Britain; *campestre variegatum*, leaves white and yellow, Britain, 20 ft.; *carpinifolium*, 50 ft., Japan; *circinatum*, leaves scarlet in autumn, 5 to 6 ft., N.W. America; *dasycarpum*, 40 ft., N. America; *dasycarpum aureo-marginatum*, leaves mottled yellow; *japonicum*, 20 ft. Japan; *japonicum aureum*, golden leaved; *japonicum laciniatum*, finely cut leaves; *japonicum rufinerve albo-lineatum*, leaves edged creamy white; *Negundo* (Box Elder), 20 to 40 ft., N. America; *Negundo crispum*, curled leaves; *Negundo laciniatum*, finely cut leaves; *Negundo variegatum*, silvery leaves; *palmatum*, 10 to 20 ft., Japan; *palmatum aureum*, yellow and scarlet-tinted foliage; *palmatum albo-marginatum*, leaves edged with white; *palmatum atropurpureum*, bronzy-purple leaves; *palmatum rosea-marginatum*, leaves edged with rose; *palmatum septemlobum atropurpureum*, purple foliage; *palmatum septemlobum bicolor*, leaves carmine tinted; *palmatum septemlobum elegans*, leaves finely cut, red and bronze tinted; *palmatum septemlobum flavescens*, leaves yellow tinted; *palmatum dissectum ornatum*, leaves fern-like and bronzy purple tinted; *palmatum dissectum roseo-marginatum*, leaves tinted with rose and white; *platanoides* (Norway Maple), 50 ft., Europe; *platanoides, aureo-variegatum*, leaves blotched with yellow; *platanoides laciniatum*, leaves finely cut; *platanoides variegatum*, leaves blotched with white; *pseudo-platanus* (Sycamore) 30 to 60 ft., Central Europe; *pseudo-platanus, albo-variegatum*, leaves green and white; *rubrum* (Scarlet Maple), 20 ft., Canada, scarlet flowered; *saccharinum* (Bird's Eye or Sugar Maple), 40 ft., N. America.

**Aceras** (Green-man Orchis).—Ord. Orchidaceæ. Hardy terrestrial tuberous-rooted orchid. Deciduous. Nat. Britain.

**CULTURE:** Soil, chalky loam. Position, open and dry. Plant, Oct. to March. Propagate by division of tubers Oct. or March.

**SPECIES CULTIVATED:** *A. Anthrophora*, green, June, 6 to 10 ins.

**Achillea** (Milfoil; Yarrow; Sweet Maudlin'.—Ord. Compositæ. Hardy herbaceous perennials.

**CULTURE:** Soil, ordinary. Position, dwarf species on rockery, tall ones in open borders. Plant Oct. to April. Propagate by seeds sown

$\frac{1}{2}$  in. deep in warm position outdoors April; cuttings under handlights or in cold frame Sept.; division of roots Nov. or March.

**SPECIES CULTIVATED:** *A. ægyptica*, yellow, summer, 12 to 18 ins., Greece; *Ageratum* (Sweet Maudlin), white, summer, 6 ins., Greece; *atrata*, white, Aug., 6 ins., Austria; *Clavennæ*, white, summer, 6 ins., Austria; *Eupatorium*, yellow, summer, 4 to 5 ft., Caucasus; *millefolium roseum*, rose, summer, 1 to 3 ft., Britain; *mongolica*, white, July, 18 ins., Mongolia; *ptarmica*, "The Pearl," white, double, 2 ft., summer, Britain; *rupestris*, white, May, 3 in., Italy; *serrata*, white, summer, 1 ft., Switzerland; *tanacetifolia*, yellow, summer, 2 ft., Europe; *tomentosa*, yellow, summer, 8 to 12 ins., Europe; *umbellata*, white, June, 4 ins., Greece.

**Achimenes.**—Ord. Gesneraceæ. Stove tuberous-rooted perennials. Deciduous. First introduced 1778.

**CULTURE:** Compost, two parts peat & loam, one part leaf-mould, sheep manure, & sand. Pot tubers in Feb., 1 in. apart, 2 in. deep, in pots, pans, or baskets. Water moderately at first, freely when in growth. After flowering gradually withhold water from roots, & when foliage dies place pots on their sides in greenhouse, letting them remain till Feb. Temp., Feb. to Sept. 70° to 75°; Sept. to Feb. 50° to 55° Propagate by seeds sown  $\frac{1}{2}$  in. deep in light soil, temp. 70° to 80°, March; cuttings of young shoots & leaves April; division of tubers Feb.

**SPECIES CULTIVATED:** *A. coccinea*, scarlet, Aug., 1 ft., W. Indies; *grandiflora*, crimson, Oct., 18 in., Mexico; *heterophylla*, scarlet, July, 1 ft., Brazil; *longiflora*, violet, *longiflora alba*, white, and *longiflora major*, violet, Aug., 1 ft., Mexico; *patens*, violet, June, 1 ft., Mexico. A number of still prettier hybrids and varieties will be found in trade lists.

**Acineta.**—Ord. Orchidaceæ. Stove epiphytal or sub-terrestrial orchids. Evergreen. First introduced 1837. Flowers fragrant.

**CULTURE:** Compost, equal parts sphagnum moss & peat. Position, suspended baskets. Pot after flowering. Water freely when growing, little when at rest. Temp., March to Sept. 70° to 75°; Sept. to March 60° to 65°. Resting period, winter. Propagate by division of pseudobulbs Feb.

**SPECIES CULTIVATED:** *A. Barkeri*, yellow and crimson, May, 2 ft., Mexico; *chrysantha*, yellow, May, 2 ft., Colombia; *densa*, yellow and red, Oct., 18 in., Central America; *Humboldtii*, crimson, May, 2 ft., Colombia; *sulcata*, yellow, May, 1 ft., Ecuador.

**Aciphylla** (Spear-grass or Bayonet Plant).—Ord. Umbelliferæ. Hardy rock perennials. Evergreen. Nat. N. Zealand. First introduced 1875.

**CULTURE:** Soil, sandy. Position, open rockery. Plant, October to April. Propagate by seeds sown  $\frac{1}{2}$  in. deep in pans in cold frame, or warm position outdoors April; division of roots March.

**SPECIES CULTIVATED:** *A. Colensoi*, white, summer, 6 in.; *Lyallii*, 6 in.; *squarrosa*, white, summer, 6 in.

**Acis.**—See *Leucojum*.

**Acmena.**—Ord. Myrtaceæ. Greenhouse flowering shrubs. Evergreen. First introduced 1790.

**CULTURE:** Compost, equal parts peat & loam, little sand. Pot, March. Water moderately spring & summer, little other times. Temp., March to Sept. 55° to 60°; Sept. to March 45° to 50°. Propagate by cuttings of half-ripened shoots in sandy peat under bell-glass, temp. 55°, March.

**SPECIES CULTIVATED:** *A. floribunda*, white, April to Aug., 4 ft., New Zealand; *ovata*, white.

**Acokanthera** (Winter Sweet).—Ord. Apocynaceæ. Greenhouse evergreen shrubs. First introduced 1787.

**CULTURE:** Compost, equal parts loam & leaf-mould with little charcoal & sand. Position, well-drained pots in warm, moist stove. Pot, Feb. or March. Water freely, March to Oct.; moderately after-

wards. Syringe daily, April to Sept. Shade from sun. Apply weak stimulants occasionally; May to Sept. Prune, Feb., shortening straggling shoots only. Temp., April to Oct., 60° to 70°; Oct. to April 50° to 55°. Propagate by cuttings inserted in light peaty soil under bell-glass in temp. 55°, spring or summer.

**SPECIES CULTIVATED:** *A. spectabilis* (Syn. *Toxicophlœa spectabilis*), white, fragrant, winter, 4 to 6 ft., S. Africa.

**Aconite** (*Aconitum Napellus*).—See *Aconitum*.

**Aconitum** (Wolf's-bane; Monk's-hood).—Ord. Ranunculaceæ. Hardy herbaceous perennials. Deciduous.

**CULTURE:** Soil, ordinary. Position, partially shaded borders. Plant, Oct. to March. Propagate by seeds sown  $\frac{1}{2}$  in. deep in warm position outdoors April, or in boxes of light soil in cold frame in March; division of flesh roots Nov. or March.

**SPECIES CULTIVATED:** *A. album*, white, Aug., 4 to 5 ft., Levant; *augustifolium*, blue, June, 2 to 3 ft., Siberia; *Anthora*, yellow, July, 1 to 2 ft., Pyrenees; *barbatum*, yellow, July, 2 to 4 ft., Siberia; *biflorum*, blue, June, 6 in., Siberia; *Fortunei* (Syn. *chinense*), blue, July to Sept., 4 to 6 ft., China; *emineus*, blue, June, 2 to 4 ft., Europe; *Fischeri* (Syn. *autumnale*), purple, July to Oct., Europe and N. America; *Halleri*, violet, June, 4 to 6 ft., Switzerland; *japonicum*, flesh, July to Sept., 3 to 6 ft., Japan; *lycoctonum*, creamy yellow, July and Aug., 4 to 6 ft., Europe; *Napellus*, blue, July to Sept., 3 to 4 ft., England; *variegatum*, blue and white, July and Aug., 3 to 5 ft., Europe.

**Acorus** (Sweet Flag; Myrtle Grass).—Ord. Araceæ. Hardy aquatics. Evergreen. First introduced 1796. Leaves and roots fragrant.

**CULTURE:** Soil, muddy. Position, margins of ponds. Plant, March. Propagate by division of roots March.

**SPECIES CULTIVATED:** *A. Calamus*, 3 ft., N. Hemisphere; *Calamus variegatus*, leaves striped, golden yellow; *gramineus*, 2 ft., Japan; *gramineus variegatus*, leaves variegated.

**Acroclineum**.—See *Helipterum*.

**Acrophyllum**.—Ord. Saxifragaceæ. Greenhouse flowering shrub. Evergreen. First introduced, 1838.

**CULTURE:** Compost, equal parts peat & loam, little sand. Pot and prune, Feb. Water freely spring & summer, moderately other times. Temp., March to Sept. 55° to 60°; Sept to March 45° to 50°. Propagate by cuttings of firm shoots in sandy peat under bell-glass in a cool house in summer.

**SPECIES CULTIVATED:** *A. venosum*, pink, May, 6 ft., Australia.

**Acrostichum** (Elephant's Ear).—Ord. Filices. Stove and greenhouse fern. Evergreen. First introduced 1793.

**CULTURE:** Compost, equal parts peat, loam, & leaf-mould, sand & charcoal. Pot, Feb. or March. Water freely spring & summer, moderately other times. Temp., stove species, March to Sept. 70° to 85°, Sept. to March 60° to 65°; greenhouse species, March to Sept. 55° to 60°, Sept to March 45° to 50°. Propagate by division of roots at potting time, or by spores in spring.

**SPECIES CULTIVATED:** (Stove kinds)—*A. acuminatum*, 1 to 2 ft., Brazil; *apiifolium*, 2 to 6 in., Philippine Islands; *appendiculatum*, 6 to 18 in.; *Auberti*, 1 ft., Natal, Guatemala, etc.; *aureum*, 1 to 2 ft., Tropics; *auritum*, 1 to 2 ft., Malaya; *cervinum*, 2 to 4 ft., Tropical America; *conforme*, 6 in., Tropics; *crinum* (Elephant's Ear Fern), 4 to 18 in., West Indies; *decoratum*, 1 ft., W. Indies; *drynarioides*, 1 to 2 ft., Penang; *flagelliferum*, 1 ft., Tropics; *Hermineri*, 1 to 2 ft., W. Indies; *magnum*, 1 to 2 ft., British Guiana; *muscosum*, 6 to 12 in., Tropical America; *nicotianefolium*, 1 to 2 ft., Cuba; *osmundaceum*, 2 to 3 ft., Ecuador; *peltatum*, 2 to 6 in., Tropical America; *scandens*, 1 to 3 ft., China, Ceylon, etc.; *scolopendrifolium*, 1 ft., Brazil; *virens*, 1 ft., Tropical Asia; *viscosum*, 6 to 12 in., Cuba.

**GREENHOUSE SPECIES:** *A. blumeanum*, 4 to 6 in., Assam; *canaliculatum*, 3 to 4 ft., climbing, Venezuela; *Cænopteris*, 2 to 3 ft., climbing, Mexico.

**Actæa** (Toad-root; Bane-berry; Herb Christopher).—Ord. Ranunculaceæ. Hardy herbaceous perennials. Berries, red, white, or black, poisonous.

**CULTURE:** Soil, ordinary. Position, shady border. Plant, Oct. to March. Propagate by seeds sown in garden April; division of roots March.

**SPECIES CULTIVATED:** *A. alba*, white, May, 12 to 18 in., N. America; *spicata*, white, May, 1 ft., Britain; *spicata rubra*, red, N. America.

**Actinella** (Pigmy or Dwarf Sunflower).—Ord. Compositæ. Hardy herbaceous perennial.

**CULTURE:** Soil, light sandy. Position, rockery or open sunny border. Plant, Oct to March. Propagate by division of roots in March.

**SPECIES CULTIVATED:** *A. grandiflora*, yellow, summer, 6 in., Rocky Mountains.

**Actinidia**.—Ord. Ternstroemiaceæ. Hardy climbing shrubs. Deciduous.

**CULTURE:** Soil, light rich loam. Position, south or south-west wall. Plant, Oct. to March. Propagate by seeds sown in pots in cold frame April; layering shoots in Nov.

**SPECIES CULTIVATED:** *A. polygama*, white, fragrant, summer, Japan; *volubilis*, white, June, Japan. *A. polygama* bears edible berries.

**Actiniopteris**.—Ord. Filices. Stove & greenhouse ferns. Evergreen.

**CULTURE:** Compost, equal parts peat, loam, charcoal, potsherds, & silver sand. Pot, Feb. or March. Good drainage & clean pots essential. Water moderately all seasons & keep atmosphere moist. Temp., March to Sept. 70° to 80°; Sept. to March 60° to 70° for *A. radiata*; and 60° to 70° March to Sept., and 55° Sept. to March for *P. radiata australis*. Propagate by spores similar to *Adiantum*.

**SPECIES CULTIVATED:** *A. radiata*, 3 in., India, requires stove treatment; *radiata australis*, 6 in., Mascarene Islands, greenhouse kind.

**Actinomeris** (North American Sunflower).—Ord. Compositæ. Hardy herbaceous perennial. First introduced 1640.

**CULTURE:** Soil, ordinary. Position, open border. Plant, Oct. to April. Propagate by seeds sown  $\frac{1}{2}$  in. deep outdoors April; division of roots March.

**SPECIES CULTIVATED:** *A. squarrosa*, yellow, July, 3 ft., N. America.

**Actinotus** (Flannel Flower).—Ord. Umbelliferæ. Greenhouse or half-hardy herbaceous perennial.

**INDOOR CULTURE:** Compost, equal parts loam & peat, with a liberal addition of silver sand. Position, sunny part of cool greenhouse. Pot, March or April. Water freely March to Oct.; moderately afterwards. Temp., March to Sept. 55° to 65°; Sept. to March 45° to 55°.

**OUTDOOR CULTURE:** Soil, ordinary. Position, sunny. Sow seeds in temp. of 65° in March or April. Harden off seedlings gradually, and plant out at the end of May. Propagate by seeds sown in a temp. of 65° in spring; or by division at the roots at potting time.

**SPECIES CULTIVATED:** *A. Helianthi*, white, June, 2 ft., Australia.

**Ada**.—Ord. Orchidaceæ. Greenhouse orchid. Evergreen. First introduced 1863.

**CULTURE:** Compost, equal parts peat & sphagnum moss. Position, pots in shade. Repot when new growth begins. Water freely during season of growth, moderately afterwards. Resting period, none.

Temp., March to Sept. 55° to 60°; Sept to March 45° to 50°. Propagate by dividing plant at potting time.

**SPECIES CULTIVATED:** *A. aurantiaca*, orange, Jan., 1 ft., Colombia; Lehmanni, red, 1 ft., Colombia.

**Adam's Apple** (*Tabernæmontana coronaria*).—See *Tabernæmontana*.

**Adam's Laburnum** (*Laburnum Adamii*).—See *Laburnum*.

**Adam's Needle** (*Yucca gloriosa*).—See *Yucca*.

**Adder's Fern** (*Polypodium vulgare*).—See *Polypodium*.

**Adder's-tongue Fern** (*Ophioglossum vulgatum*).—See *Ophioglossum*.

**Adder's Violet** (*Goodyera pubescens*).—See *Goodyera*.

**Adenandra**.—Ord. Rutaceæ. Greenhouse flowering shrubs. Evergreen. Nat. Cape of Good Hope. First introduced 1720.

**CULTURE:** Compost, equal parts loam, peat, & sand. Pot, March. Water moderately Sept. to April, freely afterwards. Temp., Sept. to March 50° to 55°; March to Sept. 55° to 65°. Propagate by cuttings of young shoots in sandy peat under bell-glass, March; also by seeds sown in similar soil at any time.

**SPECIES CULTIVATED:** *A. amœna*, red, June, 2 ft., fragrans, pink, June, 2 ft.; coriacea, pink, June, 18 in.; marginata, flesh, June, 18 in.; umbellata, pink, June, 2 ft.; uniflora, white and pink, June, 18 in.

**Adenantha** (*Barbados Pride*).—Ord. Leguminosæ. Stove evergreen flowering shrubs. First introduced 1759.

**CULTURE:** Compost, equal parts peat & loam, with a little silver sand. Position, well-drained pots in light part of stove. Pot, March. Water freely in spring & summer, & moderately in autumn & winter. Temp., March to Oct. 65° to 85°; Oct. to March 55° to 65°. Propagate by cuttings of side shoots removed with a base of old wood & inserted in sand under bell-glass in spring.

**SPECIES CULTIVATED:** *A. bicolor*, yellow, July, Ceylon; pavonina, yellow and white, July, 5 ft., China.

**Adenophora** (*Gland Bell-flower*).—Ord. Campanulaceæ. Hardy perennials. First introduced 1783.

**CULTURE:** Soil, ordinary. Position, sunny, well-drained border. Plant, Oct. to Nov. Propagate by seeds sown in March, in pots or pans in cold frame; division in spring.

**SPECIES CULTIVATED:** *A. coronopifolia*, blue, July, 1 to 2 ft., *Dahuria*; denticulata, blue, July, 18 in., *Dahuria*; Lamarekii, blue, June, 1 to 2 ft., *Transsylvania*; latifolia, blue, July, 18 in., *Dahuria*; lilifolia, whitish blue, fragrant, Aug., 18 in., *Siberia*; stylosa, blue, May, 1 ft., *E. Europe*; verticillata, blue, June, 2 to 3 ft., *Dahuria*.

**Adiantum** (*Maidenhair Fern*).—Ord. Filices. Stove, greenhouse, and hardy ferns. Evergreen and deciduous.

**CULTURE:** Compost, two parts peat, one part loam, silver sand, charcoal. Pot, March. Water moderately Sept. to March, freely afterwards. Position, shady at all times. Plant hardy species in April in equal parts peat & loam in shady position. Temp., stove species, Sept. to March 60° to 70°, March to Sept. 70° to 80°; greenhouse species, Sept. to March 50° to 55°, March to Sept. 55 to 65° Propagate by spores sown on fine sandy peat kept moist & shaded under bell-glass.

**STOVE SPECIES:** *A. semulum*, 8 to 13 in., *Brazil*; æthiopicum, 12 to 18 in., *Tropics*; Bausei, 18 in. to 2 ft., hybrid; Birkenheadii, 18 in., hybrid; caudatum, 6 to 15 in., *Tropics*; caudatum Edgeworthii, 6 to 15 in.; Collisii, hybrid; colpodis, 18 in., *Tropical America*; concinnum, 12 to 18 in., *Tropical America*; concinna-latum, 18 in., *E. Indies*; cristatum, 18 in. to 3 ft., *W. Indies*; cuneatum, 9 to 18 in., *Tropical America*, and its varieties deflexum, dissectum, elegans, gracillimum, gran-



dicops, lawsonianum, luddemannianum, mundulum; curvatum, 12 to 18 in., Brazil; cyclosorum, Brazil; farleyense (see tenerum); Fergusonii, 2 to 3 ft., Ceylon; fragrantissima, hybrid; fulvum, 9 to 12 in., Fiji; Ghiesbreghtii, probably a hybrid; henslovianum, 12 to 18 in., Peru; Lathomii (see tenerum); lucidum, 12 in., W. Indies; lumulatum, 12 in., Tropics; macrophyllum, 12 in., W. Indies; Moorei, 12 in., Peru; palmatum, 10 in., Peru; peruvianum, 16 in., Peru; rhodophyllum, 6 in., hybrid; rubellum, 6 in., Bolivia; Seemannii, 12 to 18 in., Brazil; tenerum, W. Indies; tenerum farleyense (Syn. farleyense), 12 to 15 in., Barbados; tenerum scutum, garden origin; tenerum Lathomii (Syn. A. Lathomii); tenerum Victoris (Syn. A. Victoris); tetraphyllum, 12 to 18 in., W. Indies; tetraphyllum acuminatum; tetraphyllum gracilis; tinctum, 6 to 12 in., Peru; trapeziforme, 9 to 18 in., W. Indies; trapeziforme Sancta-Catherinae, Brazil; veitchianum, 12 in., Peru; Weigandii, 6 to 10 in., garden origin; Williamsii, 12 in., Peru.

**GREENHOUSE SPECIES:** A. æmulum assimile, 8 in., Australia; æmulum chilense, 8 in., Chili; æmulum emarginatum, 6 in., California; æmulum scabrum (Silver Maidenhair), 6 in., Chili; æmulum sulphureum (Golden Maidenhair), 6 in., Chili; affine, 12 in., New Zealand; capillus-veneris (Common Maidenhair), 6 in. Temperate Zone, and its varieties, daphnites, elegantissimum, grande, imbricatum, Maresii, obrienianum, and semi-lunulatum; diaphanum, 6 in., Java; excisum, 3 to 6 in., Chili; excisum multifidum, garden form; formosum, 12 in., Australia; hispidulum (Syn. A. pubescens), 12 in., New Zealand; reniforme, 6 in., Madeira.

**HARDY SPECIES:** A. pedatum, 1 to 3 ft., N. America.

**Adlumia** (Climbing Fumitory; Alleghany Vine).—Ord. Papaveraceæ Hardy biennial. Climber. First introduced 1788.

**CULTURE:** Soil, light, rich. Position, warm border against south wall, or trellis in open garden. Plant, May. Propagate by seeds sown  $\frac{1}{2}$  in. deep in border in April, or in pots in temp.  $55^{\circ}$  to  $65^{\circ}$ , March.

**SPECIES CULTIVATED:** A. cirrhosa, white, Aug., 10 to 15 ft., N. America.

**Adonis** (Pheasant's Eye; Ox-eye).—Ord. Ranunculaceæ. Hardy annuals and perennials.

**CULTURE:** Soil, ordinary, rich. Position, open border for annuals, & rockeries for perennials. Plant, Oct. Propagate annuals by seeds sown shallow in borders in March; perennials by division of roots in Oct. & by seeds sown as directed for annuals.

**SPECIES CULTIVATED:** A. vernalis (Pheasant's Eye), crimson, June, 1 ft., S. Europe (annual); amurensis, yellow, Jan., 1 ft., China (perennial); autumnalis (Red Chamomile), scarlet, May to Sept., 1 ft., Britain (annual); distorta, yellow, May, 12 in., Alps (perennial); pyrenaica, yellow, July, 1 ft., Pyrenees (perennial); vernalis (Ox-eye), yellow, March to May, 18 in., S. Europe (perennial).

**Adonis Flower** (Adonis autumnalis).—See Adonis.

**Æchmea**.—Ord. Bromeliaceæ. Evergreen stove-flowering plants. First introduced 1824.

**CULTURE:** Compost, equal parts of fibrous loam, rough peat, leaf-mould. Pot, March. Water freely always. Good drainage essential. Temp., Sept. to March  $60^{\circ}$  to  $70^{\circ}$ ; March to Sept.  $70^{\circ}$  to  $80^{\circ}$ . Propagate by offshoots inserted in small pots at any time.

**SPECIES CULTIVATED:** Barbei, purple, Aug. 2 to 3 ft., British Honduras; bracteata, yellow, July, 2 ft., W. Indies; celestis, blue, July, 18 in., Brazil; fasciata, pink and blue, Aug. 18 in., Brazil; fulgens, scarlet, Aug. and Sept., 18 in., French Guiana; fulgens, discolor, scarlet and purple, June, 2 ft., Brazil; Lindenii, scarlet and purple, Aug., 2 ft., Brazil; Mariæ-Reginæ, violet and crimson, Aug. to Dec., 2 ft., Costa Rica; rosea, rose, July, 18 in., Brazil; Veitchii, red, July to Sept., 18 in., Colombia.

**Æranthus**.—See Angraecum.

**Ærides** (Air-plant).—Ord. Orchidaceæ. Stove-flowering orchids. Evergreen. First introduced 1800.

**CULTURE:** Compost, sphagnum moss, charcoal, broken potsherds. Position, pots, hanging baskets, or pieces of wood. Pot, after flowering. Water moderately in winter, freely at other times. Shade from sun. Temp., Sept to March  $65^{\circ}$  to  $75^{\circ}$ ; March to Sept.  $75^{\circ}$  to  $85^{\circ}$ . Flowers appear in axil of third or fourth leaf from top of stem.

Resting period, winter. Propagate by division of plant with roots attached.

**SPECIES CULTIVATED:** *Æ. crassifolium*, purple, May and June, 2 ft., Burma; crispum, white and rose, June and July, 4 ft., S. India; expansum, white and purple, June, 2 ft., Burma; falcatum, white and rose, June, 3 ft., India; Feildingii, white, brown and rose, May and June, 3 ft., Sikkim; houlletianum, Luff and magenta, May, 2 ft., Cochin China; japonicum, green, white, and purple, July, 5 to 6 ft., Japan; Lawrenceæ, green, yellow, and purple, Sept., 3 ft., Philippines; Lawrenceæ sanderianum, yellow and purple; multiflorum Lobbi, white and purple, July, 18 in., India; odoratum, white and lilac, July, 2 ft., Trop. Asia; quinquevulnerum, pink, July, 3 ft., Philippines; suavissimum, white and lilac, Aug., 2 ft., Malacca.

**Æschynanthus** (Blush-wort).—Ord. Gesneriaceæ. Stove trailing and flowering plants. Evergreen. First introduced 1838.

**CULTURE:** Compost, equal parts fibrous peat, sphagnum moss, charcoal. Position, hanging baskets, pots, or on blocks of wood or tree fern stumps. Plant, March. Water freely in summer, moderately in winter. Temp., Sept. to March 60° to 70°; March to Sept. 70° to 80°. Propagate by cuttings 3 in. long of firm shoots, inserted in pots of above compost mixed with sand in temp. 85°, Feb.

**SPECIES CULTIVATED:** *Æ. atrosanguinea*, red, July, 1 ft., Guatemala; bracteata, scarlet and yellow, Aug., 18 in., India; fulgens, scarlet and yellow, June, 1 ft., E. Indies; grandiflora, scarlet, Aug., 5 ft., India; Hildebrandii, scarlet, July, 10 in., Burma; lobbiana, scarlet, June, 1 ft., Java; Paxtonii, scarlet, April, 2 ft., Khasea; purpurescens, purple and yellow, March, 1 ft., Java; tricolor, red and yellow, July, 1 ft., Borneo.

**Æsculus** (Horse Chestnut; Buck-eye).—Ord. Sapindaceæ. Hardy deciduous flowering trees & shrubs. The genus *Pavia* (Buck-eye) is now merged in the present one. First introduced 1629. Timber not of much value. Used chiefly for making packing cases, carving, etc. Deer are fond of the nuts.

**CULTURE:** Soil, ordinary, deep. Position, shrubberies, woods, lawns, parks. Plant, Oct. to March. Prune away dead wood in winter. Propagate by seeds sown 3 in. deep in open border, March; layering, Feb.; grafting, choice varieties in March, or budding in July.

**SPECIES CULTIVATED:** *Æ. californica* (Syn. *Pavia californica*), white, July, 20 ft., California; carnea (Red Horse Chestnut), pink, June, 20 ft., hybrid (*floribunda*, *rubicunda*, and *spectabilis* are synonyms); flava (Sweet Buck-eye), yellow, May, 20 ft., Georgia; glabra, yellow, May, 12 ft., United States; *Hippocastanum* (Horse Chestnut), white, May, 30 to 40 ft., S.E. Europe, and its varieties, *crispum*, *flore pleno*, *foliis aureis variegatis*, *laciniata* and *pyramidalis*; *parviflora* (Syn. *Pavia alba*), white, May, 8 ft., United States; *Pavia* (Red Buck-eye) (Syn. *Pavia rubra*), red, June, 10 to 20 ft., United States.

**Æthlonema** (Candy Mustard; Lebanon Candytuft).—Ord. Cruciferae. Hardy perennials, biennials, and annuals. Perennials evergreen. First introduced 1778.

**CULTURE:** Soil, ordinary, light. Position, sunny rockery, well drained. Plant, Oct. or March. Propagate annuals and biennials by seed sown 1-16 in. deep in boxes, temp. 65°, March, or in open border, May; perennials by cuttings of shoots inserted in pots of sandy soil in cold frame, July or Aug.

**SPECIES CULTIVATED:** *Æ. cappadocicum* (Syn. *Æ. Buxbaumii*), red, June, 6 in., Orient (annual); *coridifolium* (Lebanon candytuft); rose, June, 3 in., Orient (perennial); *gracile*, red, June, 6 in., Carniola (annual); *grandiflorum*, rose, May, 1 ft., Persia (perennial); *heterocarpum*, purple, July, 6 in., Armenia (perennial); *monospermum*, purple, July, 6 in., Spain (biennial); *saxatile*, flesh, June, 6 in., S. Europe (annual).

**African Blue Lily** (*Agapanthus umbellatus*).—See *Agapanthus*.

**African Corn Flag**.—See *Antholyza*.

**African Corn Lily**.—See *Ixia*.

**African Cypress** (*Widdringtonia Whytei*).—See *Widdringtonia*.

**African Hare-bell** (*Roella ciliata*).—See *Roella*.

**African Hemp** (*Sparmannia africana*).—See *Sparmannia*.

**African Lily**.—See *Agapanthus*.

**African Marigold** (*Tagetes erecta*).—See *Tagetes*.

**African Steel Bush** (*Diosma ericoides*).—See *Diosma*.

**African Tulip**.—See the genus *Hæmanthus*.

**African Violet** (*Saintpaulia ionanthe*).—See *Saintpaulia*.

**Agalmyla** (*Scarlet Root-blossom*).—Ord. Gesneriaceæ. Stove trailing plant. Evergreen. First introduced 1846.

**CULTURE:** Compost, equal parts peat, sphagnum moss, & charcoal. Position, hanging baskets. Plant, March. Water freely March to Sept., moderately Sept. to March. Temp., Sept. to March 60° to 70°; March to Sept 70° to 80°. Propagate by cuttings of firm shoots under bell-glass, in temp. 80°, July or Aug.

**SPECIES CULTIVATED:** *A. longistyla*, crimson, July, 1 ft., Java; *staminea*, scarlet, June, 6 in., Java.

**Aganisia**.—Ord. Orchidaceæ. Stove epiphytal orchids. First introduced 1836.

**CULTURE:** Compost, fibry peat, charcoal. Position, pots well drained, blocks of wood. Require exposure to sun. Water freely when growing, moderately when at rest. Resting period, winter. Flowers appear at base of new pseudo-bulb. Temp., Sept. to March 65° to 70°; March to Sept. 75° to 85°. Propagate by division of pseudo-bulbs when new growth begins.

**SPECIES CULTIVATED:** *A. graminea*, yellow and red, Jan., 6 in., Guiana; *ionopectera*, white and purple, July, 1 ft., Peru; *pulchella*, cream, June, 6 in., Demerara; *tricolor*, blue and orange, 1 ft., Amazon.

**Agapanthus** (*African Lily*).—Ord. Liliaceæ. Cool greenhouse herbaceous plant. Hardy S. England, Ireland. Evergreen. Nat. Cape of Good Hope. First introduced 1692.

**CULTURE:** Compost, two parts loam, one part leaf-mould, dried cow manure, river sand, pots or tubs, greenhouse; sunny. Position, well-drained border or rockery out-doors. Pot or plant, March. Water freely March to Sept., moderately afterwards. Temp., greenhouse, Sept. to March 32° to 40°; March to Sept. 45° to 55°. Propagate by division of plant in March.

**SPECIES CULTIVATED:** *A. umbellatus*, blue, April, 3 ft., and its varieties, *alba*, white, Aug., 2 ft.; *flore pleno*, double; *giganteus*, blue summer, 3 ft.; *Leitchlinii*, blue, June, 1 ft.; *maximus*, white, 3 ft.; *minor*, blue, 2 ft.; *mooreanus*, blue, Sept., 18 in., hardy; *variegatus*, leaves variegated, blue, April, 2 ft.; *elobosus*, dwarf.

**Agaricus** (*Mushroom*).—Ord. Fungi. Hardy esculent vegetable.

**CULTURE:** Suitable manures: (1) Two-thirds fresh horse droppings, one-third short, stained straw; remove long unstained straw. Place this in a heap outdoors & turn over six days afterwards. Turn again on four alternate days, then use. (2) Peat-moss litter, after use as bedding for horses. Prepare as advised for horse manure. Suitable soil: (1) Well-decayed turfy top-spit loam. (2) Old chrysanthemum mould. (3) Ordinary garden soil enriched with 1½ lb. of bone meal or 1 oz. of superphosphate of lime to every bushel. (4) Light sandy soil with ¼ lb. of common salt added to every bushel. Position for beds: In the open or against walls facing south, sheltered from N. & E. winds; sheds, cellars, stables, cupboards, greenhouses. Period for forming

beds: Outdoors, July, Aug., Oct., Dec., or Jan.; sheds, etc., July to Feb. Temp. for indoor culture: Sept. to May, 55° to 65°. Dimensions of beds: Outdoors, 2½ ft. wide at base, 2½ ft. high, 6 in. wide at apex; indoors, 3 to 4 ft. wide, 9 in. deep, no limit as to length. Tread or beat manure quite firm in beds. Spawning: Insert portions of spawn nearly level with surface, smooth side outwards and 9 in. apart. Temp. for insertion of spawn: 80° 1 in. below surface. Quantities of spawn: Divide each brick into eight portions. Size of bricks: 9 in. long, 6 in. wide, 2 in. deep. Bushel of spawn consists of 16 bricks. Period for covering beds with soil: Three days after insertion of spawn. Depth of soil: 1 in. if heavy; 1½ in. if medium; 2 in. if light or sandy. Make soil firm. Water previously if dry. Cover beds afterwards with 6 in. of straw or litter in summer or autumn; 12 to 18 in. of similar material in winter. Complete darkness essential. Apply tepid water moderately when surface is dry only. Suitable stimulants: 2 oz. of common salt to 1 gallon; ¼ oz. nitrate of soda to 1 gallon; ¼ oz. of nitrate of potash to 1 gallon; 1 oz. of sulphate of ammonia to 4 gallons of water, each to be applied in a tepid state occasionally after the beds commence bearing. Bearing commences six weeks after spawning. Duration of bearing: Two to three months. Gather mushrooms with whole of stem attached; do not leave stump in bed. Average cost of forming outdoor bed (2½ ft. high, 2½ ft. wide at base, 6 in. wide at apex) 5s. per lineal yard. Average value of produce per lineal yard, 15s. Average yield of bed 25 yards long, 350 to 450 lb.

**CULTURE IN COLD FRAMES:** Insert spawn 1 in. deep & 9 in. apart in cucumber or melon bed in July. Keep frame closed after cucumbers & melons have ceased growth. Water occasionally. Apply one of above stimulants when mushrooms appear.

**CULTURE ON SIDES OF HOTBEDS:** Insert spawn 2 in. deep & 9 in. apart in manure. Cover with 1 or 2 in. of soil 10 days afterwards, & protect with layer of straw or litter.

**CULTURE IN POTS OR BOXES:** Prepare manure as advised for beds. Fill 10 in. pots or boxes (9 in. deep, 2 to 3 ft. wide & long) to within 1 in. of top with manure. Beat this quite firm. Spawn & cover with soil & litter as advised for beds. Place pots, etc., in cool cellar, cupboard, or greenhouse; protect from light. Keep soil moderately moist & cover with straw always. Temp. in winter 55° to 65°.

**CULTURE IN GRASS:** Cut out pieces of turf 6 to 12 in. square, 1 in. thick, and 3 ft. apart. Stir soil below and press into it three or four lumps of spawn, about the middle of June. Replace turf and water occasionally if dry. Best results obtained where herbage is short, soil loamy and dry, and position sunny.

**SPECIES CULTIVATED:** *A. campestris*, Europe (Britain).

**Agathæa** (Blue Marguerite; Cape Aster). — Ord. Compositæ. Greenhouse herbaceous perennial. First introduced 1753.

**CULTURE:** Compost, sandy loam two parts, leaf-mould, & sand one part. Position, pots, sunny greenhouse, or warm beds outdoors, May to Sept. Pot, March. Water freely in summer, moderately other times. Propagate by cuttings of young shoots March or Aug., in sandy soil, temp. 55° to 65°.

**SPECIES CULTIVATED:** *A. œlestis*, blue, June to Aug., 12 to 18 ins., S. Africa.

**Agave** (American Aloe; Century-plant; Mexican Soap-plant). — Ord. *Amaryllidacææ*. Greenhouse plants. Ornamental foliage & flowering. Evergreen. Nat. Mexico. First introduced 1640. Flowers,

yellowish green or red, borne on spikes 1 to 40 ft. high when plants attain 10 to 60 years of age; plant dies after flowering.

**CULTURE:** Compost, two parts loam, one part old mortar & river sand. Position, pots or tubs in greenhouses; may be stood outside June to Sept. Water moderately April to Aug., little afterwards. Pot, every five or six years; good drainage essential. Temp., winter 50° to 55°; summer 55° to 65°. Propagate by offsets inserted in small pots at any time.

**SPECIES CULTIVATED:** *A. americana*, 20 to 30 ft., and its varieties *picta*, leaves yellow, edged with green; also *variegata*, leaves edged with yellow; *albicans*, 5 ft.; *atrovirens*, 30 ft.; *attenuata*, 12 ft., *dasyliroides*, 10 ft.; *filifera*, 4 ft.; *filifera filamentosa*, 4 ft.; *Kerchovoi*, 1 ft.; *horrida*, 8 ft.; *maculata*; *polycantha*, 12 ft.; *Scolymus*, 14 ft.; *Shawii*, 12 ft.; *Sartorii*, 8 ft.; *striata*, 8 ft.; *utahensis*, 5 ft., Utah; *vivipara*, 20 ft.; *Victoriæ-Reginæ*, 10 ft.; *yuccæfolia*, 20 ft. There are many more species. We only give the most attractive ones.

**Ageratum** (Bastard Agrimony; Floss-flower).—Ord. Compositæ. Half-hardy annuals. First introduced 1822.

**CULTURE:** Soil, ordinary. Position, sunny beds or borders. Plant 6 to 8 in. apart in June. Propagate by seeds sown in light soil in temp. 65° to 70° in March, or by cuttings of young shoots from plants stored in temp. 55° during winter. Plants to produce cuttings keep in pots all the year, and do not allow them to flower.

**SPECIES CULTIVATED:** *Mexicanum*, blue, summer, 18 in. to 2 ft., Tropics. Numerous dwarf forms of this species will be found in seed lists.

**Aglaonema** (Poison-dart).—Ord. Aroideæ. Stove perennials. First introduced 1863. Flowers, arum-shaped. Leaves, variegated, green, blotched with grey.

**CULTURE:** Compost, two-thirds loam, one-third leaf-mould, river sand. Position, well-drained pots, shady. Water freely when growing, little afterwards. Syringe foliage daily. Pot, March. Temp., Sept. to March 60° to 70°; March to Sept. 70° to 80°. Propagate by division of roots in March.

**SPECIES CULTIVATED:** *A. angustifolium*, greenish white, July, 18 in., Straits Settlements; *commutatum*, white, July, 1 ft., Manila; *costatum*, white, July, 6 in., Perak; *Mannii*, greenish white, July, 18 in., Tropical Africa; *oblongifolium*, crimson, July, 4 ft., and its variety *Curtisii*, greenish white, Malaya; *pictum*, white, Aug., 18 in., Malaya; *pumilum*, greenish white, Aug., 6 in., Malaya; *simplex*, white, July, 18 in., Java.

**Agrostemma.**—See *Lychnis*.

**Agrostis** (Cloud-grass; Spear-grass).—Ord. Gramineæ. Hardy annual-flowering grasses. Inflorescence light and graceful and valuable for cutting for mixing with flowers in summer; or drying for winter decoration.

**CULTURE:** Soil, ordinary. Position, sunny border. Propagate by seed sown 1-16 in. deep April in open borders where plants are to grow.

**SPECIES CULTIVATED:** *A. alba* (Fine-top Grass), July, 2 ft., Europe; *nebulosa* (Cloud Grass), July, 18 in., Spain; *pulchella*, July, 1 ft., Sicily.

**Ailanthus** (Tree of Heaven; Tree of the Gods).—Ord. Simarubaceæ. A handsome hardy deciduous tree. Ornamental foliage. First introduced 1751.

**CULTURE:** Soil, light, rich. Position, sheltered, moist. Plant, Nov. Propagate by inserting portions of roots in pots of light soil in warm greenhouse or window in March, planting them out following Nov.

**SPECIES CULTIVATED:** *A. glandulosa*, flowers white, leaves pinnate, 30 to 60 ft., China. *Pendula* is a variety with weeping branches. A grand tree for town gardens.

**Air-plant** (*Ærides odorata*).—See *Ærides*.

**Ajuga** (Bugle; Gout Ivy).—Ord. Labiatæ. Hardy perennials.

**CULTURE:** Soil, ordinary. Position, margins of shady beds or borders. Propagate by seeds sown outdoors in April; division of roots Oct. or March.

**SPECIES CULTIVATED:** *A. genevensis*, blue, rose, and white, June, 6 to 12 ins., Europe, and its variety *pyramidalis*, with denser spikes; *orientalis*, blue, June, 12 to 18 ins., E. Europe; *reptans*, blue, white, or rose, June, 6 in., Britain. *Atropurpurea* is a variety with purplish leaves.

**Akebia.**—Ord. Berberidaceæ. Half-hardy climbing flowering shrub. Evergreen. First introduced 1845.

**CULTURE:** Soil, loam, peat, & sand in equal parts. Position, south wall in S. England & Ireland; cool greenhouse other parts. Plant, Oct., Nov., in border. Prune straggling shoots after flowering. Propagate by division of roots in Oct.; cuttings, inserted in sandy soil in cold frame in Sept.

**SPECIES CULTIVATED:** *A. quinata*, violet or purple, fragrant, May and June, 8 to 10 ft., China and Japan.

**Alabama Snow Wreath** (*Neviusa albamiensis*).—See *Neviusa*.

**Albizia.**—Ord. Leguminosæ. Greenhouse evergreen flowering shrub. First introduced 1803. Formerly included in the genus *Acacia*.

**CULTURE:** Compost equal parts loam, peat, leaf-mould & sand. Position, pots, or in a bed with shoots trained up wall or roof of greenhouse; in beds outdoors during summer. Pot in March. Water freely during spring and summer, moderately at other seasons. Prune straggly growths in Feb. Temp., Sept. to March 55° to 65°; March to Sept. 55° to 65°. Propagate by seeds sown in sandy peat, leaf-mould & sand in a temp. of 75° in spring.

**SPECIES CULTIVATED:** *A. lophantha* (Syn. *Acacia lophantha*), 16 to 29 ft., yellow, spring, Australia, leaves fine, fern-like.

**Albica.**—Ord. Liliaceæ. Half-hardy bulbous plants. Nat. S. Africa. First introduced 1774.

**INDOOR CULTURE:** Compost, two parts loam, one part of equal proportions of peat, leaf-mould, & silver sand. Position, cool greenhouse. Pot in Nov., placing five bulbs 3 in. deep in a 4½ in. pot. Cover pot with cocoanut-fibre refuse until growth begins, then expose to light. Water freely from time bulbs begin to grow until flowers fade, after which keep dry until Nov.

**OUTDOOR CULTURE:** Soil, light ordinary. Position, well-drained border at base of south greenhouse or hothouse wall. Plant 6 in. deep in Oct. Propagate by seeds or offsets in spring.

**SPECIES CULTIVATED:** *A. aurea*, yellow, June, 12 to 18 in., S. Africa; *Nelsonii*, white and red, fragrant, June, 2 to 3 ft., Natal.

**Alder** (*Alnus glutinosa*).—See *Alnus*.

**Alder-Buckthorn** (*Rhamnus Frangula*).—See *Rhamnus*.

**Alexanders** (*Smyrniium Olusatrum*).—See *Smyrniium*.

**Alexandrian Laurel** (*Ruscus racemosus*).—See *Ruscus*.

**Algerian Iris** (*Iris stylosa*).—See *Iris*.

**Algerian Wax-Bean** (*Phaseolus vulgaris*).—See *Phaseolus*.

**Alisma** (Water Plantain; Deil's Spoons).—Ord. Alismaceæ. Hardy aquatic perennials.

**CULTURE:** Soil, ordinary. Position, margins of shallow lakes, ponds, ditches. Plant, March. Propagate by seeds sown ¼ in. deep in March in a pan of sandy peat, plunged below the surface of the water, or by division of roots in April.

SPECIES CULTIVATED: *A. natans* (now known as *Elisma natans*), white and yellow, Aug., Britain; *Plantago* (Water Plantain), pink or rose, summer, Britain; *ranunculoides*, purple, May to Sept., Britain.

**Alkanet** (*Anchusa tinctoria*).—See *Anchusa*.

**Allamanda**.—Ord. Apocynaceæ. Stove climbing plant. Evergreen. First introduced 1785.

CULTURE: Compost, two parts fibry loam, one part leaf-mould, charcoal, & coarse sand. Position, pot, tub, or planted in prepared border; shoots to be trained close to roof. Pot, Feb. Water freely April to Aug., then moderately. Temp., Sept. to March 60° to 70°; March to Sept. 70° to 80°. Prune shoots, in Jan., to within one joint of main branch. Propagate, in Jan., by cuttings of shoots of previous year's growth, 3 in. long, inserted in pots of sandy soil, temp. 80°.

SPECIES CULTIVATED: *A. cathartica*, yellow, July, 5 to 10 ft., Trop. America; *Chelsoni*, yellow, summer, hybrid; *grandiflora*, yellow, June, 6 to 10 ft., Brazil; *Schottii*, yellow, Sept., 8 to 10 ft., Brazil, and its varieties, *Hendersoni* and *Magnifica*; *Williamsii*, yellow, summer, hybrid.

**Alleghany Vine** (*Adlumia cirrhosa*).—See *Adlumia*.

**Alligator Apple** (*Anona palustris*).—See *Anona*.

**Alligator Pear** (*Persea gratissima*).—See *Persea*.

**Allium** (Chives; Leek; Onion; Shallot).—Ord. Liliaceæ. A genus of hardy and greenhouse bulbous-rooted perennials.

CULTURE OF HARDY FLOWERING SPECIES: Soil, sandy loam. Position, sunny borders or rockeries. Plant bulbs 3 in. deep and 4 in. apart in Oct. or Nov. Mulch with rotten manure in summer. Propagate by seeds sown in cold frame in spring; offsets after flowering.

CULTURE OF GREENHOUSE SPECIES: Compost, two parts loam, one part leaf-mould, and a little silver sand. Plant six bulbs in a 4½ in. pot in Oct. Cover pots with cocoanut-fibre refuse or ashes in a cold frame till growth begins, then remove to a cool greenhouse. May be flowered in a cold house, or forced into flower in a temp. of 55° to 65°. Water freely whilst growing. After blooming gradually withhold water and keep dry and cool till new growth begins. Repot annually in Oct. Propagate by seeds in cold frame or cool house in spring; offsets at potting time.

CULTURE OF ONION: Soil, light, rich, and deeply dug. Position, sunny part of garden. Manures, fowl, pig, cow, or horse dung, well decayed, and applied liberally in autumn; also 1 lb. kainit and 7 lb. of basic slag per square rod, applied at same time; or, where above manures cannot be liberally given, 3 lb. superphosphate, 1½ lb. soda per square rod, applied ten days before sowing and 1½ lb. of nitrate of soda per square rod when plants are 3 in. high; or, 1 lb. nitrate of soda, ¼ lb. of guano, 3 oz. kainit, and 3 oz. of sulphate of iron, half the above to be applied to a square rod when plants are 3 in. high, and remainder a month afterwards. Sow spring onions in March or April; autumn ones end of Aug. or early in Sept. Depth to sow, about ½ in. Distances apart for drills, 8 in. Spring onions may also be sown in heat in Feb., hardening off seedlings cold frames in April, and planting out in May. Rows best to run from N. to S. Firm soil essential. Transplant autumn-sown onions into rich soil following March. Thin seedlings out early to 8 in. apart. Bend over the stems early in Aug. to promote ripening of the bulbs. Lift, dry thoroughly, & store away in cool, airy place in Aug. or Sept. Crop takes 24 weeks to reach maturity. Seeds retain their germinating powers for two

years only. Seeds germinate in 7 to 10 days. Quantity of seed required to sow a row 50 ft. long,  $\frac{1}{4}$  oz.; for a bed 9 square yards, 1 oz.

**MARKET CULTURE:** Soil, sandy, deeply dug or ploughed previous autumn. Manures, 30 to 40 tons of farmyard manure per acre and 3 cwt. of kainit per acre, applied in autumn. Just before sowing, apply 3 cwt. of superphosphate per acre, and when plants are 3 in. high,  $1\frac{1}{2}$  cwt. of nitrate of soda per acre. Sow spring onions in March in drills 1 ft. apart; White Lisbon onions, for selling young, in Aug. Keep crops well hoed. Thin out spring-sown crops to 6 in. apart; picklers to 2 in. Lift spring crop in Aug. or Sept. Quantity of seed to sow an acre, 9 to 10 lb.; White Lisbon variety, 30 to 40 lb. Average yield per acre, 300 to 500 bushels. Average returns per acre, £40 to £50. Cost of cultivation: Hoeing, 10s. per acre; hand-weeding, 26s. per acre; pulling, washing, & bunching autumn-sown onions, 3d. to 4d. per dozen bunches. Market spring-sown bulbs in bags; autumn-sown in bunches tied with withies.

**CULTURE OF LEEK:** Soil, light rich. Grow in trenches 15 in. wide & 18 in. deep, containing 6 in. of decayed manure and 6 in. of soil on top; or in drills 6 in. deep and 1 ft. apart, without any manure, except that previously dug into the soil; or on the flat, holes  $3\frac{1}{2}$  in. wide at top & 4 in. deep, & 9 in. apart in rows 1 ft. asunder, the leek roots being pressed to bottom of hole and just covered with an inch of soil, leaving upper space free of soil. Sow seeds in heat in Feb. for planting out in June; outdoors in March or April for planting out in July or Aug. Earth up gradually with soil, as plants grow, to blanch the stems. Water freely in dry weather. Liquid manure should be frequently given prior to earthing up. Suitable liquid manure: 1 oz. of kainit, 1 oz. of superphosphate, and 1 oz. of nitrate of soda per gallon of water. Crop reaches maturity 165 days from time of sowing seeds. Seeds retain their germinating power for three years. Seeds germinate in seven to ten days.

**MARKET CULTURE:** Soil, light, rich. Manures: 12 tons of decayed manure & 2 cwt. of kainit per acre, ploughed in in autumn; 4 cwt. of superphosphate per acre, applied before planting; & 1 cwt. of nitrate of soda per acre a month after planting. Sow seeds in heat in Feb., and plant out the seedlings 6 in. apart in rows 8 in. asunder in April. Sow outdoors in March and again in May for successional crops. Keep well hoed and watered. Market the roots in flat bunches of eight, wash clean, & trim off leaves. Sell by the dozen bunches. Quantity of seed to sow an acre, 12 to 14 lb. Average yield per acre, 10,890 bunches of eight roots. Average returns (gross) per acre, £30 to £40. Average price per doz. bunches, 1s. 6d. to 2s. 6d.

**CULTURE OF SHALLOT:** Soil, light, rich. Position, warm, sunny spot. Manure as for onion crop. Plant bulbs (cloves) half their depth, 9 in. apart in rows, 1 ft. asunder, in Feb. or March. Draw soil away from base of bulbs when fully grown. Lift, dry, & store in Aug. Increased by seeds sown in drills 8 ft. apart in March, thinning out seedlings to 8 in. apart; also by division of the bulbs at planting time.

**MARKET CULTURE:** Soil as above. Manures: 10 tons of rotten manure per acre, ploughed in in autumn; 3 cwt. of superphosphate per acre, applied before planting; & 1 cwt. of nitrate of soda per acre, six weeks after planting. Lift, dry, & store in July or Aug. Market in pecks of 12 lb. Quantity of seeds to sow an acre, 8 to 10 lb. Average yield per acre, 300 to 400 bushels.



**CULTURE OF GARLIC:** Soil, light, rich. Position, sunny spot. Plant bulbs (cloves) 2 in. deep and 6 in. apart in Feb. No manure required. Lift & store July or Aug. Increase by division of bulbs Feb.

**CULTURE OF CHIVES:** Soil, ordinary. Plant 6 in. apart each way in March. Lift, divide, & replant every third year. Used for salads & seasoning.

**CULTURE OF WELSH ONION OR CIBOULE:** Soil, ordinary. Sow seeds in March or April in drills  $\frac{1}{2}$  in. deep & 1 ft. apart. Thin seedlings to 6 or 8 in. apart. May also be increased by division of plants in March, but best grown from seed. Leaves used for seasoning. Ready to use three months after sowing.

**CULTURE OF POTATO ONION:** Soil, ordinary. Plant bulbs half their depth 10 in. apart in rows 15 in. asunder in March. Lift & store bulbs in Aug. Used like ordinary onions. Increased by offsets at planting time.

**CULTURE OF TREE ONION:** Soil, ordinary. Plant bulbs borne on top of stems 1 in. deep and 4 in. apart, in rows 8 in. asunder in March; or root bulbs 1 in. deep and 12 in. apart each way. Support stems by stakes. Gather stem bulbs when fully grown & store in cool, dry place. Used for pickling.

**CULTURE OF ROCAMBOLE:** Soil as for garlic. Plant cloves 6 in. apart each way, & similar depth to shallots, in Feb., March, or April. Lift & store in Aug. Bulbs in soil & on stem used for similar purpose to garlic, but milder in flavour. Use soil bulbs only for planting.

**HARDY FLOWERING SPECIES:** *A. acuminatum*, rose, July, 9 in., N. America; *cæruleum*, blue, June, 2 ft., Siberia; *Moly*, yellow, May, 2 ft., Europe; *ostrowskianum*, rose, July, 1 ft., Turkestan; *roseum*, rose, June, 1 ft., S. Europe; *triquetrum*, white, June, 15 in., Europe; *Schubertii*, lilac, June, Orient.

**GREENHOUSE SPECIES:** *A. neapolitanum* (Daffodil Garlic), white and green, June, 1 ft., S. Europe.

**EDIBLE BULBOUS-ROOTED SPECIES:** *A. ascalonicum* (Shallot), Native habitat not known; *Cepa* (Onion), Central or Western Asia; *Cepa aggregatum* (Potato Onion); *Cepa proliferum* (Tree or Egyptian Onion); *fistulosum* (Welsh or Ciboul Onion), Siberia; *Porrum* (Leek), native country not known; *Schoenoprasum* (Chives), N. Hemisphere; *zativum* (Garlic), S. Europe; *Scorodoprasum* (Rocambole; Spanish Garlic; Sand Leek), flesh, July, Denmark.

**Allosorus.**—See *Cryptogramme*.

**Allspice.**—See *Calycanthus* and *Pimenta*.

**Almond** (*Prunus Amygdalis*).—See *Prunus*.

**Almond-scented Orchid** (*Odontoglossum madrense*).—See *Odontoglossum*.

**Ainus** (Aar; Alder).—Ord. *Cupuliferæ*. Hardy trees and shrubs. Deciduous. Timber of little value, except for making charcoal for gunpowder.

**CULTURE:** Soil, ordinary. Position, damp places for *A. glutinosa*; drier spots for the others. Plant, Nov. Propagate by seeds sown 1 in. deep in damp soil in March, transplanting the seedlings when a year old; or by suckers springing from the roots in Nov.

**SPECIES CULTIVATED:** *A. glutinosa*, 30 to 40 ft., Britain, Europe, N. Africa and Asia, and its varieties, *aurea* (golden-leaved), *laciniata* (cut-leaved), and *quercifolia* (oak-leaved); *incana*, 10 to 20 ft., N. Temperate Zone, and its varieties *aurea*, *pendula nova* and *pinnatifida*. There are others, but they are of no special interest.

**Alocasia.**—Ord. *Aroideæ*. Stove plants. Orn. foliage. First introduced 1854.

**CULTURE:** Compost, equal parts peat, sphagnum moss, fibry loam, with a little silver sand & charcoal. Pot, March, keeping base of plant above rim of pot; good drainage essential. Position, pots, shady.

Water freely March to Sept., moderately afterwards. Temp., Sept. to March 60° to 70°; March to Sept. 70° to 80°. Propagate by division of rhizomes in March.

**SPECIES CULTIVATED:** *A. alba*, 18 in., Java; *cuprea*, 18 in., Borneo; *illustris*, 2 ft., India; *longiloba*, 1 ft., Malaya; *Liudonii*, 2 ft., New Guinea; *Lowii*, 2 ft., Borneo; *sanderiana*, 18 ins., Philippines; *zebrina*, 18 in., Manila.

**Aloe** (Medicinal Aloes).—Ord. Liliaceæ. Greenhouse succulent plants. Orn. foliage. Evergreen. Leaves fleshy & more or less prickly or spiny. First introduced 1596.

**CULTURE:** Compost, two parts loam, one part peat, old mortar, river sand. Position, pots or tubs, sunny greenhouse. Water moderately April to Aug., little afterwards. Pot, March; good drainage indispensable. Temp., winter 50° to 55°; summer 55° to 65°. Propagate by seeds sown in well-drained pans of sandy soil, temp. 70°.

**SPECIES CULTIVATED:** *A. abyssinica*, Abyssinia; *alispina*, S. Africa; *arborescens*, S. Africa; *humilis*, and its varieties, *echinata*, *incurva*, and *subturberculata*, S. Africa; *mitræformis*, and its varieties *flavispina* and *spinulosa*, S. Africa; *striata*, S. Africa; *socorotina*, S. Africa; *variegata*, a favourite window plant, S. Africa; *vera*, Mediterranean Region. There are very many more species, but the foregoing are the most attractive ones. The flowers are red or yellow, and borne on slender spikes.

**Alonsoa** (Mask-flower).—Ord. Scrophulariaceæ. Half-hardy shrubby perennials. First introduced 1790.

**CULTURE:** Compost, two parts loam, one part leaf-mould & sand. Position, pots, greenhouse, windows, or sunny beds outdoors, May to Sept. Water moderately always. Pot, March. Plant, May. Temp., Sept. to May 50° to 55°. Propagate by seeds sown 1-16 in. deep, March, temp. 60°, in sandy soil; cuttings, in pots of sandy soil, Aug.

**SPECIES CULTIVATED:** *A. albiflora*, white and yellow, summer, 1 ft., Mexico; *incisifolia*, scarlet, summer, 18 in., Chili; *linearis*, scarlet, summer, 1 to 2 ft., Peru; *linifolia*, scarlet, summer, 1 to 2 ft., Mexico; *myrtifolia*, scarlet, and its variety, *alba*, white, 2 to 3 ft., Mexico; *Warscewiczii*, scarlet, summer, 18 in. to 2 ft., Chili.

**Aloysia**.—See *Lippia*.

**Alpine Azalea** (*Loiseleuria procumbens*).—See *Loiseleuria*.

**Alpine Bell-flower** (*Campanula alpina*).—See *Campanula*.

**Alpine Bladder Fern** (*Cystopteris alpina*).—See *Cystopteris*.

**Alpine Catch-fly** (*Silene alpestris*).—See *Silene*.

**Alpine Eryngo** (*Eryngium alpinum*).—See *Eryngium*.

**Alpine Forget-me-not** (*Myosotis alpestris*).—See *Myosotis*.

**Alpine Pink** (*Dianthus alpinus*).—See *Dianthus*.

**Alpine Poppy** (*Papaver alpinum*).—See *Papaver*.

**Alpine Rose** (*Rhododendron ferrugineum* & *R. hirsutum*).—See *Rhododendron*.

**Alpine Toad-flax** (*Linaria alpina*).—See *Linaria*.

**Alpine Violet** (*Viola montana*).—See *Viola*.

**Alpine Wallflower**.—See *Erysimum*.

**Alpine Wind-flower** (*Anemone alpina*).—See *Anemone*.

**Alpinia** (Indian Shell-flower).—Ord. Scitamineæ. Stove herbaceous perennials. First introduced 1792.

**CULTURE:** Compost, equal parts peat, leaf-mould & loam. Position, large pots, tubs, or beds. Plant, March. Temp., March to Sept. 55° to 65°; Sept. to March 70° to 80°. Water freely March to Aug., moderately other times. Propagate by division of roots in March.

**SPECIES CULTIVATED:** *A. Allughas*, red, Feb., 2 ft., India; *mutica*, white, red, and yellow, July and Aug., 5 ft., Malaya; *nutans*, pink and yellow, May, 4 to 6 ft., India.

**Alsophila** (Grove Fern; Norfolk Island Fern).—Ord. Filices. Stove and greenhouse tree ferns. First introduced 1833.

**CULTURE:** Compost, two parts peat, one part loam, silver sand & charcoal. Pot, March. Water freely March to Sept., moderately afterwards. Position, pots or tubs, shady. Temp., stove 60° to 70° Sept to March, 70° to 80° March to Sept.; greenhouse 50° to 55° Sept. to March, 55° to 60° March to Sept. Propagate by spores, similar to *Adiantum*.

**STOVE SPECIES:** *A. aspera*, 6 to 8 in., W. Indies; *atrovirens*, Brazil; *infesta* Van Gheortii, 3 to 4 ft., Trop. America.

**GREENHOUSE SPECIES:** *A. australis*, 15 to 20 ft., Tasmania; *Colensoi*, 4 to 5 ft., New Zealand; *Cooperi*, 3 to 5 ft., Queensland; *exoelsa*, 6 to 8 ft., Norfolk Island; *pruinata*, 3 to 6 ft., W. Indies; *Rebecca*, 8 ft., Queensland.

**Alstromeria** (Herb Lily).—Ord. Amaryllidaceæ. Hardy & half-hardy tuberous-rooted perennials. First introduced 1754.

**CULTURE:** Compost, sandy loam, peat, leaf-mould, equal parts. Plant, Oct. Position, sunny, well-drained border; or pots in cool greenhouse. Water freely in summer, moderately in winter. Propagate by seeds sown  $\frac{1}{4}$  in. deep, in sandy soil, in pans in cold frame, March; division of roots, April or Oct.

**SPECIES CULTIVATED:** *A. aurantiaca*, orange, red, and carmine, summer, 2 to 3 ft., Chili; *braziliensis*, red, yellow, and brown, summer, 3 to 4 ft., Brazil; *chilensis*, orange red, summer, 2 to 3 ft., Chili; *Errembaulti*, white and crimson, 2 ft., Hybrid; *hæmanthi*, red, green, and purple, summer, 2 to 3 ft., Chili; *pelegrina* (Lily of the Incas), lilac, red and purple, summer, 1 ft., Chili, and its variety *alba*, pure white; *pulchella*, red, green and brown, summer, 2 to 3 ft., Brazil; *pulchra*, purple, white, yellow and pink, summer, 2 ft., Chili; *versicolor*, purple, maroon and green, summer, 2 to 3 ft., Peru.

**Altaian Primrose** (*Primula altaica*).—See *Primula*.

**Altaian Violet** (*Viola altaica*).—See *Viola*.

**Alternanthera**.—See *Telanthera*.

**Aithæa** (Hollyhock).—Ord. Malvaceæ. Hardy perennials. Hollyhock first introduced 1573.

**CULTURE OF HOLLYHOCK:** Soil, rich loam, or good ordinary mould, not too light. Trench the soil three spits deep in Oct. & work in plenty of decayed manure between second & third spits. Plant singly 3 ft. apart each way, or in groups of three, 12 in. from plant to plant, 4 ft. apart, in April. Mulch surface of soil to width of 18 in. from stem to stem. Support the stems with stakes standing 6 ft. out of ground. Water copiously in dry weather. Apply liquid manure once a week from May until blooms expand. Remove flowers directly they fade. Cut off tops of spikes where fine blooms are required for exhibition as soon as lower blooms show signs of expanding. Offshoots should be removed from base of plants in June if fine spikes are desired. Young plants yield finest plants for exhibition. Cut flower stems down to within 6 in. of soil after flowering. Manures,  $\frac{1}{4}$  oz. nitrate of soda,  $\frac{1}{4}$  oz. each of superphosphate, kainit, & sulphate of ammonia to 2 gallons of water, applied to the roots at intervals of a month from May to Sept.; or liquid drainings or solutions of animal manures, applied in a diluted state occasionally during summer. Propagate by seeds sown in drills 1 in. deep & 12 in. apart on a south border in June. Thin seedlings to 6 in. apart in July. Lift in Sept., and place in pots in a compost of two parts loam & one part peat & leaf-mould; put in cold frame for the winter, or plant in similar soil in frame. On warm soils seedlings may be transplanted direct into flowering positions in Sept. Sow seeds in good soil in temp. 55° to 65° in Jan. or Feb., grow in pots, harden off in April, and plant out in May. Increased also by cuttings of young shoots growing out of base of flower stems inserted

singly in small pots plunged in a gentle hotbed in spring. Likewise by cuttings of young shoots consisting of two joints with lower leaves removed, inserted in small pots placed in a close frame in Aug. Lastly, by the division of the old plants after flowering.

**CULTURE OF OTHER SPECIES:** Soil, ordinary. Position, sunny borders. Plant, Oct. or March. Increased by seeds sown outdoors in April.

**SPECIES CULTIVATED:** *A. cannabina*, rose, June, 6 ft., Europe, and its variety *narbonensis*, red; *ficifolia* (Fig-leaved Hollyhock), yellow, June, 6 ft., biennial species, Siberia; *rosea* (Hollyhock), rose, 5 to 6 ft., summer, China.

***Althæa frutex***.—See *Hibiscus*.

**Alum-root**.—See *Heuchera*.

**Alyssum** (Madwort; Gold-dust; Golden-tuft; Gold Basket; Sweet Alysson).—Ord. Cruciferæ. Hardy annuals and perennials. First introduced 1710.

**CULTURE:** Soil, ordinary. Position, open border or rockery. Plant, Oct. or April. Propagate annual & perennial species by seeds sown  $\frac{1}{2}$  in. deep outdoors in April; perennial species by cuttings of young shoots inserted in sandy soil in cold frame April & May.

**ANNUAL SPECIES:** *A. maritimum*, white, fragrant, summer, 6 to 10 ins., Britain and Europe. *compactum* is a dwarf and *variegatum* a variegated variety. Strictly this species is a perennial.

**PERENNIAL SPECIES:** *A. alpestre*, yellow, June, 3 in., Europe; *gemonense*, yellow, spring, 1 ft., Europe; *montanum*, yellow, fragrant, summer, 2 to 4 ins., Europe; *olympicum*, yellow, summer, 2 to 3 in., Greece; *orientale*, yellow, May, 1 ft., Greece; *pyrenaicum*, white, summer, 8 to 10 ins.; Pyrenees; *saxatile*, yellow, May, 1 ft., E. Europe, and its varieties *compactum*, *variegatum*, *sulphureum*, *flore pleno* (double), *serpyllifolium*, yellow, June, 3 in., S. Europe; *spinosum*, white, June, 4 to 6 in., S. Europe; *Wiersbeckii*, yellow, summer, 18 in., Asia Minor; *wulfeniana*, golden yellow, summer, 3 in., E. Europe.

**Amaranth Feathers** (*Humea elegans*).—See *Humea*.

**Amaranthus** (Love-lies-Bleeding; Prince's Feather; Velvet-flower).—Ord. Amarantaceæ. Half-hardy annuals. First introduced 1596. Foliage, orange-red, crimson, green.

**CULTURE:** Soil, ordinary. Position, sunny bed. Plant, June. Propagate by seeds sown 1-16 in. deep, in temp. 65° to 75°, March; seedlings to be placed in cool greenhouse a few weeks before planting out.

**SPECIES CULTIVATED:** *A. caudatus* (Love-lies-Bleeding), crimson-purple, summer, 2 to 3 ft., Tropics; *hypochondriacus* (Prince's Feather), crimson, summer, 4 to 5 ft., N. America; *salicifolia*, leaves, orange, crimson and purple and willow shaped, 2 to 3 ft., Philippines; *Henderi*, leaves tinted with rosy-carmine, orange-yellow, and green; *sanguineus*, leaves blood-red, flowers purple, 2 to 3 ft., E. Indies; *tricolor*, leaves carmine and yellow, India; *melancholicus ruber*, leaves crimson.

**Amaryllis** (Belladonna Lily; Daffodil Lily).—Ord. Amaryllidaceæ. Hardy bulbous plant. Deciduous. First introduced 1712.

**CULTURE:** Compost, sandy loam, enriched with leaf-mould & cow manure. Position, well-drained border foot of south wall. Plant bulbs 9 in. deep & 12 in. apart in June. Water freely in dry weather whilst growing. Mulch with decayed manure in spring. Propagate by offsets in June. For greenhouse *amaryllis* see *Hippeastrum*.

**SPECIES CULTIVATED:** *A. Belladonna*, rose, fragrant, Aug. and Sept., 18 in., Cape Colony. *Blanda*, pale rose, and *pallida*, flesh, are varieties of it. The flowers appear before the new leaves.

**Amasonia**.—Ord. Verbenacæ. Stove evergreen flowering perennial. Inflorescence, red bracts, red calyx, & yellow corolla; autumn.

**CULTURE:** Compost, equal parts loam & leaf-mould, little silver sand. Pot, March. Position, in small pots near glass, well exposed to light; shade in summer. Water freely in spring and summer,

moderately other times. Temp., March to Sept, 70° to 85°; Sept. to March 58° to 65°. Propagate by division of the plants in March.

**SPECIES CULTIVATED:** *A. calycina* (Syn. *A. punicea*), yellow and red, Sept., 12 to 18 ins., British Guiana; erecta, white and pink, July, 18 in., S. America.

**Amazon Lily** (*Eucharis grandiflora*).—See *Eucharis*.

**Ambyolepis**.—See *Helenium*.

**Amelanchier** (Grape-pear; Snowy Mespilus; June-berry).—Ord. Rosaceæ. Hardy spring-flowering trees & shrubs. Deciduous. First introduced 1596.

**CULTURE:** Soil, ordinary. Position, open shrubbery. Plant, Nov. Prune after flowering. Propagate by grafting in March on the quince or hawthorn; also by seeds, layers, & cuttings.

**SPECIES CULTIVATED:** *A. alnifolia*, white, April, 8 ft., N.W. America; *canadensis* (June-berry), white, April, 10 to 20 ft., N. America; *vulgaris*, white, April, 6 ft., Europe. The leaves of *A. canadensis* are prettily tinted in autumn.

**American Aloe** (*Agave americana*).—See *Agave*.

**American Bell-bind** (*Ipomœa pandurata*).—See *Ipomœa*.

**American Blackberry** (*Rubus laciniatus*).—See *Rubus*.

**American Black Larch** (*Larix pendula*).—See *Larix*.

**American Carnation**.—See *Dianthus*.

**American Centaury** (*Sabbatia campestris*).—See *Sabbatia*.

**American Cowslip** (*Dodecatheon Meadia*).—See *Dodecatheon*.

**American Cranberry** (*Oxycoccus macrocarpus*).—See *Oxycoccus*.

**American Cress** (*Barbarea præcox*).—See *Barbarea*.

**American Cud-weed** (*Anaphalis margaritacea*).—See *Anaphalis*.

**American False Heath** (*Hudsonia ericoides*).—See *Hudsonia*.

**American Fox-grape** (*Vitis Labrusca*).—See *Vitis*.

**American Gooseberry** (*Pereskia aculeata*).—See *Pereskia*.

**American Ground Laurel** (*Epigœa repens*).—See *Epigœa*.

**American Laurel** (*Kalmia latifolia*).—See *Kalmia*.

**American Maidenhair Fern** (*Adiantum pedatum*).—See *Adiantum*.

**American May Apple**.—The genus *Podophyllum*.

**American Meadow Sweet** (*Spirœa salicifolia*).—See *Spirœa*.

**American Plane Tree** (*Platanus occidentalis*).—See *Platanus*.

**American Star Grass**.—See *Hypoxis*.

**American Swamp Laurel** (*Kalmia glauca*).—See *Kalmia*.

**American Witch Elder** (*Fothergilla Gardeni*).—See *Fothergilla*.

**American Wood Lily** (*Trillium grandiflorum*).—See *Trillium*.

**American Wych Hazel** (*Hamamelis virginica*).—See *Hamamelis*.

**Amethyst Hyacinth** (*Hyacinthus amethystinus*).—See *Hyacinthus*.

**Amethyst Speedwell** (*Veronica amethystinus*).—See *Veronica*.

**Amethyst Squill** (*Scilla amethystina*).—See *Scilla*.

**Ammobium** (Everlasting Sand-flower).—Half-hardy annual. Ord. Compositæ. First introduced 1822. Flowers valuable for cutting

& drying for winter decoration. Gather when fully grown & hang heads downwards to dry in a cool place.

**CULTURE:** Soil, light, rich. Position, warm border. Plant, May, 6 in. apart. Propagate by seeds sown  $\frac{1}{2}$  in. deep in light soil, temp.  $65^{\circ}$ , March; or outdoors early in May.

**SPECIES CULTIVATED:** *A. alatum*, white, summer, 2 ft., Australia. *Grandiflorum* is a variety with larger flowers.

**Amorpha** (Bastard Indigo).—Ord. Leguminosæ. Hardy deciduous-flowering shrubs. First introduced 1724.

**CULTURE:** Soil, ordinary. Position, in the mixed shrubbery. Plant, Oct. to Feb. Prune after flowering, thinning shoots that have borne blossoms. Propagate by cuttings in autumn; layering in summer; suckers in winter; seeds sown in cold frame.

**SPECIES CULTIVATED:** *A. canescens* (Lead Plant), blue, July, 3 ft., Missouri; *frutescens*, bluish purple, July, 6 ft., Carolina.

**Amorphophallus**.—Ord. Aroidæ. Stove tuberous-rooted perennials. Flowers with purple or white spathes and brown spadices; fœtid; appearing before leaves. Leaves more or less ornamental.

**CULTURE:** Compost, equal parts turfy loam, peat, leaf-mould, decayed manure & silver sand. Position, well-drained pots in shade. Pot moderately firm in pots just large enough to take tubers in Feb. to March, transfer to larger pots in April or May. Water moderately Feb. to April & Sept. to Nov.; freely April to Sept.; keep quite dry Nov. to Feb. Temp., Feb. to Sept.  $70^{\circ}$  to  $80^{\circ}$ ; Sept. to Nov.  $65^{\circ}$  to  $75^{\circ}$ ; Nov. to Feb.  $55^{\circ}$  to  $65^{\circ}$ . Propagate by dividing the tubers in Feb. or March.

**SPECIES CULTIVATED:** *A. campanulatus* or *viosus*, purple spathe, India; *Rivieri*, purple spathe, Cochinchina; *Titanum*, purple spathe, Sumatra.

**Ampelopsis**.—See *Vitis*.

**Amur Vine** (*Vitis amurensis*).—See *Vitis*.

**Amygdalis**.—See *Prunus*.

**Anacampseros**.—Ord. Portulacacææ. Greenhouse succulent-leaved plant. Nat. S. Africa.

**CULTURE:** Compost, two parts sandy loam, one part of equal proportions of old mortar, small brick rubble & sand. Position, in not too large pots on shelves near the glass; no shade. Water moderately in spring & summer; keep nearly dry in autumn & winter. Dry atmosphere needed. Repot in March. Temp., 45 to  $50^{\circ}$  in winter;  $50^{\circ}$  to  $60^{\circ}$  in summer. Propagate by seeds sown in a mixture of fine rubble & sandy loam, in heat, in spring; by cuttings, exposed to the air for a few days after removal from the plant, then inserted in fine sand in a gentle heat.

**SPECIES CULTIVATED:** *A. arachnoides*, pink, July, 12 to 18 ins.; *filamentosa*, pink, Sept., 1 ft.; *telephiastrum*, pink, summer, 1 ft.

**Anagallis** (Pimpernel).—Ord. Primulacææ. Hardy annuals & perennials. Trailing.

**CULTURE:** Soil, light, rich. Position, sunny, well-drained borders for annuals; moist & boggy places for perennials. Propagate annuals by seeds sown  $\frac{1}{2}$  in. deep in temp.  $65^{\circ}$  March, transplanting seedlings outdoors in June; perennials by division of roots in March, or by seeds sown outdoors in April.

**ANNUAL SPECIES:** *A. fruticosa*, vermilion, May to Aug., 2 ft., Morocco; *grandiflora*, blue and red, May to Sept., 4 to 6 in.; *indica*, blue, July, 1 ft. India.

**PERENNIAL SPECIES:** *A. collina alba*, white and yellow, April to June, 6 in., Europe; *linifolia*, blue, July, 1 ft., Europe, and its varieties, *Breweri* (red), *lilacina* (lilac), *Parksi* (red), and *sanguinea* (blood-red); *tenella*, rosy, July and Aug., Britain; *webbiana*, blue, July, 4 in., Portugal.

**Ananas** (Pine-apple).—Ord. Bromeliaceæ. Stove plants, bearing the well-known fruit—pine apples. Orn. foliage. Evergreen. First introduced 1690.

**CULTURE:** Compost, two parts decomposed fibry loam, one part well-decayed manure, another part  $\frac{1}{2}$  in. bones & pounded oyster shells. Position, pots plunged in a tan hotbed in stove facing south. Temp., Sept. to March  $65^{\circ}$  to  $75^{\circ}$ ; March to Sept.  $75^{\circ}$  to  $90^{\circ}$ . Full exposure to sun essential. Water moderately in winter, freely in summer. Moist atmosphere most essential in spring and summer, and a slightly dry one in winter. When fruit begins to ripen withhold water. Supply freely with liquid manure plants in fruiting pots. Plants come into bearing when two years old. Propagate by suckers, or crowns of fruit inserted in small pots in temp.  $80^{\circ}$ , spring.

**SPECIES CULTIVATED:** *A. sativus*, 3 ft., Trop. America; *A. sativus variegatus*, leaves edged with yellow or red.

**Anaphalis** (Pearly Everlasting or Immortelle).—Ord. Compositæ. Hardy perennial. Flowers, white, useful for cutting in August and drying for winter use.

**CULTURE:** Soil, ordinary. Position, sunny borders. Plant in Oct. or March. Increased by division in autumn or spring; seeds sown outdoors in April.

**SPECIES CULTIVATED:** *A. margaritacea*, white, July and Aug., 1 ft., N. America.

**Anastatica** (Rose of Jericho; Resurrection Plant).—Ord. Cruciferae. Half-hardy annual. Possesses the peculiar property in its native country of withering up in dry weather, and when rain comes of spreading itself out again, as though alive.

**CULTURE:** Soil, ordinary. Sow seeds in a cold frame in spring & plant in sunny border in May.

**SPECIES CULTIVATED:** *A. Hierochuntica*, white, summer, 1 ft., Orient.

**Anchor Plant** (*Colletia cruciata*).—See *Colletia*.

**Anchusa** (Alkanet; Sea Bugloss).—Ord. Boraginaceæ. Hardy biennials & perennials.

**CULTURE:** Soil, ordinary. Position, sunny borders. Plant, Oct. or March. Propagate biennials by seeds sown  $\frac{1}{2}$  in. deep in March in pans or boxes of sandy soil, temp.  $55^{\circ}$  to  $65^{\circ}$ , or outdoors in April; perennials by division in Oct.

**SPECIES CULTIVATED:** *A. Barrelieri*, blue and white, June, 2 ft., Europe, perennial; *capensis*, blue, July, 12 to 18 in., S. Africa, biennial; *italica*, blue, July, 3 to 4 ft., S. France, perennial; *sempervirens*, blue, June, 2 ft., Europe, perennial.

**Anderson's Speedwell** (*Veronica Andersoni*).—See *Veronica*.

**Andre's Flamingo-plant** (*Anthurium andreanum*).—See *Anthurium*.

**Andromeda** (Marsh Rosemary; Wild Rosemary).—Ord. Ericaceæ. Hardy flowering shrub. Evergreen.

**CULTURE:** Soil, boggy peat. Position, moist, shady borders or beds. Plant, Oct. No pruning required except to cut away dead wood. Propagate by layering shoots in Sept.; seeds sown in peaty soil in a cold frame.

**SPECIES CULTIVATED:** *A. polifolia*, pink, June, 1 ft., North Temperate Regions. *angustifolia*, *rosmarinifolia* and major are varieties. See *Pieris*, *Cassandra*, *Leucothœ* and *Zenobia* for other species formerly included in this genus.

**Andropogon** (Lemon Grass).—Ord. Gramineæ. Stove & hardy ornamental flowering grasses. First introduced 1786.

**CULTURE OF STOVE SPECIES** (*A. Schoenanthus*): Compost, two parts loam, one part leaf-mould & sand. Position, pots in stove. Pot, March. Water freely March to Oct., moderately afterwards. Temp., March to Oct. 75° to 85°; Oct. to March 55° to 65°. Increased by division in March.

**CULTURE OF HARDY SPECIES**: Soil, ordinary, light, & dry. Position, sunny border. Plant, Oct., March, & April. Apply liquid manure occasionally in summer. Propagate by division.

**STOVE SPECIES CULTIVATED**: *A. Schoenanthus* (Syn. *A. citratus*), the Lemon Grass, 2 ft., foliage lemon-scented, India.

**HARDY SPECIES CULTIVATED**: *A. furcatus*, 18 in., N. America.

**Androsace** (Rock Jasmine).—Ord. Primulacæ. Hardy perennial alpine plants. First introduced 1755.

**CULTURE**: Soil, sandy peat & loam, with small pieces of limestone. Position, sunny rockeries, in fissures of stones or under ledges of rock. Plant, March or April. Propagate by seeds sown 1-16 in. deep, in sandy peat in cold frame; cuttings in pots of sandy soil in frames in Sept. & Oct.; division of roots in April; seeds in pots in cold frame.

**SPECIES CULTIVATED**: *A. carnea*, pink, July, 3 in., Europe; *foliosa*, flesh, June, 4 in., W. Himalayas; *Laggori*, pink, March, 3 in., Transylvania; *lanuginosa*, rose, July, 8 to 9 in., Himalayas; *sarmentosa*, rose, May, 3 in., Himalayas; *sempervivoides*, purple, May, 3 in., Himalayas; *villosa*, rose, May, 3 in., Europe.

**Anemia** (Flower-fern; Ash-leaf Fern).—Ord. Filices. Stove & greenhouse ferns. First introduced 1793.

**CULTURE**: Compost, equal parts loam, peat, leaf-mould, sand, & charcoal. Position, shady, moist; useful for wardian cases. Pot, Feb., March. Water freely spring & summer, moderately other times. Temp., stove, March to Sept. 70° to 85°, Sept. to March 60° to 65°; greenhouse, March to Sept. 55° to 60°, Sept. to March 45° to 50°. Propagate by spores similar to *Adiantum*.

**STOVE SPECIES CULTIVATED**: *A. adiantifolia*, 12 to 18 in., Trop. America; *collina*, 8 to 12 in., Brazil; *dregeana*, 9 in., Natal; *rotundifolia*, 6 to 9 in., Brazil.

**GREENHOUSE SPECIES CULTIVATED**: *A. Phillitidis*, 1 ft., Cuba, Peru; *tomentosa* (Syn. *chelianthoides*, *deltoides* and *flexuosa*), 1 to 2 ft., Mexico, etc.

**Anemone** (Wind-flower).—Ord. Ranunculacæ. Hardy herbaceous & tuberous-rooted perennials.

**CULTURE OF HERBACEOUS SPECIES**: Soil, good ordinary, well enriched with decayed manure. Position, sunny or partially shady borders. Plant, autumn or spring. Increased by seeds sown in sandy soil in cold frame in spring; division of roots in Oct. or March; root cuttings in spring.

**CULTURE OF TUBEROUS-ROOTED SPECIES**: Soil, moderately light, liberally mixed with leaf-mould & decayed manure. Position, partially shaded beds or borders. Plant tubers 3 in. deep & 6 in. apart in Oct. or Nov.; or in Feb. & March. Lift tubers when foliage dies, & store away in cool place till planting time. Increased by seeds sown in prepared beds of above soil in Jan. or Feb. or in July.

**HERBACEOUS SPECIES CULTIVATED**: *A. alpina*, white, May, 1 ft., Europe; *angulosa* (Syn. *Hepatica angulosa*), blue, March, 1 ft., E. Europe; *apennina*, blue, rose, and white, 6 in., March, Europe; *blanda*, blue, Jan. to March, 6 in., Asia Minor; *Hepatica*, blue, Feb. and March, 6 in., N. Hemisphere, and its varieties *alba* (white), *cærulea* (blue), *cærulea plena* (double blue), *rubra* (red), *rubra plena* (double red), *Barlowii* (blue) and *rosea* (rose); *japonica* (Japanese Wind-flower), red, Sept., 2 ft., Japan, and numerous varieties described in trade lists; *nemerosa* (Wood Anemone), white, March, 6 in., Britain; *nemerosa robinsoniana*, blue; *Pulsatilla* (Pasque Flower), blue, April, 1 ft., Britain; *palmata*, white, May, 9 in., S. France; *rivularis*, white, May, 2 to 3 ft., Himalayas; *sylvestris* (Snowdrop Anemone), white, April, 1 ft., Europe.



**TUBEROUS-ROOTED SPECIES CULTIVATED:** *A. coronaria* (Poppy Anemone), various colours, spring, 1 ft., S. Europe; *hortensis*, various colours, spring, 1 ft., S. Europe; *hortensis fulgens* (Scarlet Wind-flower), crimson, May, 1 ft., S. Europe; *hortensis pavonina* or *stellata* (Peacock Anemone), double-flowered, ranunculoides (Yellow Wood Anemone), golden yellow, March, 1 ft., Britain, etc.

**Anemonopsis** (*Yerba Mansa*).—Ord. Ranunculaceæ. Hardy herbaceous perennial. First introduced 1869.

**CULTURE:** Soil, deep rich loam. Position, partially shaded border. Plant, Oct., Nov., March. Propagate by division of roots in Oct. or March; seeds sown in heat in March, planting seedlings out in May.

**SPECIES CULTIVATED:** *A. macrophylla*, lilac and purple, June and July, 2 to 3 ft., Japan.

**Angel's Tears** (*Narcissus triandrus*).—See *Narcissus*.

**Angel's Trumpet** (*Datura suaveolens*).—See *Datura*.

**Angelica** (Holy Ghost).—Ord. Umbelliferae. Perennial herbaceous herb used for flavouring confectionery & liquors.

**CULTURE:** Soil, ordinary, deep, moist loam. Position, shady. Propagate by seeds sown  $\frac{1}{2}$  in. deep in March where plants are to remain. When seedlings are 3 in. high thin them to 6 in. apart.

**SPECIES CULTIVATED:** *A. officinalis*, green, July, 4 to 5 ft., Europe.

**Angelica Tree** (*Aralia spinosa*).—See *Aralia*.

**Angelonia**.—Ord. Scrophularineæ. Stove & greenhouse herbaceous perennials. First introduced 1818.

**CULTURE:** Compost, equal parts of loam, peat, leaf-mould & a little sand. Position, pots in sunny parts of stove or greenhouse. Pot, March. Water freely March to Oct., moderately afterwards. Temp., March to Oct., 65° to 75°, afterwards 55° to 60° for stove species; March to Oct. 55° to 65°, Oct. to March 45° to 55° for greenhouse kinds. Propagate by division of roots in March; cuttings of young shoots inserted in sand under bell-glass, in temp. 75° in April.

**STOVE SPECIES CULTIVATED:** *A. cornigera*, purple, Aug., 1 ft., Brazil; *floribunda*, purple, Aug., 1 ft., Brazil; *salicariæfolia*, blue, Aug., 2 ft., S. America.

**GREENHOUSE SPECIES CULTIVATED:** *A. angustifolia*, violet, June, 1 ft., Mexico; *Gardneri*, purplish-white, May, 1 ft., Pernambuco; *grandiflora*, purple, Sept., July, 1 ft., Pernambuco.

**Angiopteris** (Turnip-fern).—Ord. Filices. Stove tree fern. Evergreen.

**CULTURE:** Compost, equal parts peat, loam, leaf-mould, sand & charcoal. Pot, Feb., March. Position, pots or tubs, standing in 3 in. of water in shade. Water freely in spring & summer, moderately other times. Temp., March to Sept. 55° to 60°; Sept to March 45° to 50°. Propagate by offsets only.

**SPECIES CULTIVATED:** *A. evecta*, 10 to 15 ft., Tropics.

**Angola Hemp**.—See *Sansevieria*.

**Angræcum**.—Stove epiphytal orchids. Ord. Orchidaceæ. Flowers fragrant. First introduced 1815.

**CULTURE:** Compost, equal parts broken potsherds, charcoal, & sphagnum moss. Position, shady in suspended baskets or well-drained pots. Pot, March. Water freely March to Oct., moderately afterwards. Temp., Sept. to March 60° to 65°; March to Sept. 70° to 80°. Resting period, winter. Flower spikes appear in axils of top leaves when growth is finished. Propagate by division of plant in March.

**SPECIES CULTIVATED:** *A. articulatum*, white, May and June, 8 to 12 in., Madagascar; *caudatum*, white, Aug., 12 to 15 in., Trop. Africa; *citratum*, lemon-yellow, spring, 6 to 8 in., Madagascar; *oburnum*, white, spring, 1 to 2 ft., Mascarene Islands; *Ellisii*, white, May, 1 ft., Madagascar; *falcatum*, white, spring, 4 to 6 in., Japan; *Humboldtii*, white, spring, 8 to 10 in., Comoro Islands; *fasciosum*, white, spring, Madagascar; *scottianum*, white, spring, 1 ft., Comoro

Islands; sanderianum, white, spring, 1 ft., Comoro Islands; sesquipedale, white, Jan. to June, 1 ft., Madagascar.

**Anguloa** (Bull's Head; Cradle Orchid).—Ord. Orchidaceæ. Warm greenhouse orchids. Flowers fragrant. First introduced 1842.

**CULTURE:** Compost, fibrous peat & charcoal. Position, pots, shady part of house. Pot when new growth begins. Water freely May to Sept., very little afterwards. Temp., April to Sept. 60° to 65°; Sept. to March 55° to 60°. Resting period, winter. Flowers appear at base of new growth. Propagate by division of pseudo-bulbs when repotting.

**SPECIES CULTIVATED:** *A. Clowesii*, yellow, May, 12 to 18 in., Colombia; *Ruckeri*, yellow and crimson, May, 18 in., Colombia; *uniflora*, cream, May, 2 to 3 ft., Colombia. Several varieties of each species will be found in trade lists.

**Anhalonium.**—Ord. Cactaceæ. Greenhouse succulent-stemmed perennials. Grown for the beauty of globose stems. Allied to *Mammillarias*.

**CULTURE:** Compost, equal parts sandy loam, rough old mortar, & powdered bricks. Position, sunny, airy greenhouse or window. Pot, March or April, in well-drained pots just large enough to accommodate roots. Repot every third or fourth year only. Water moderately March to Sept., once a fortnight Sept. to Dec., none afterwards. Syringe on evenings of warm days, June to Sept. Apply soot water to healthy plants, June to Sept. Ventilate freely in summer. Temp., March to Sept. 60° to 70°; Sept. to March 50° to 55°. Propagate by seeds sown  $\frac{1}{4}$  in. deep in well-drained pans or pots of sandy soil in temp. 75° in March, keeping soil moderately moist; by cuttings of the tops of the plants inserted in small pots of sandy, gritty compost in spring.

**SPECIES CULTIVATED:** *A. Engelmanni*, 4 to 6 in., Mexico; *prismaticum*, 6 in., Mexico; *Williamsii*, 3 to 4 in., Mexico.

**Anigozanthos.**—Ord. Hæmodoraceæ. Greenhouse herbaceous perennials. Nat. Australia. First introduced 1802.

**CULTURE:** Compost, one part loam, two parts peat, & one part silver sand. Pot in March. Position, pots in cool greenhouse fully exposed to light. Water freely in spring & summer, moderately in autumn & winter. Temp., 40° to 50° in winter; no heat at other times. Propagate by division of the roots in spring.

**SPECIES CULTIVATED:** *A. bicolor*, scarlet and green, May, 3 ft.; *Manglesii*, green and red, July, 3 ft.; *pulcherrima*, yellow and white, May, 2 ft.; *rufa*, purple, June, 2 ft.

**Animated Oat** (*Avena sterilis*).—See *Avena*.

**Anise.**—See *Pimpinella*.

**Aniseed Tree** (*Illicium floridanum*).—See *Illicium*.

**Anæctochilus** (King-plant).—Ord. Orchidaceæ. Stove terrestrial orchids. Orn. foliage. Ht. 3 to 6 in. Leaves, bronze, olive, golden, green.

**CULTURE:** Compost, peat, sand, & sphagnum moss in equal parts. Position, shady, well-drained pans under a bell-glass not fixed down quite close. Water moderately at all times. Pot, Feb. or March. Temp., Sept. to Feb. 55° to 65°; March to Sept. 60° to 75°. Propagate in Feb. by inserting portions of stems in same compost as advised for plants, & under bell-glass.

**SPECIES CULTIVATED:** *A. argyrocneurus*, olive, veins silvery, Java; *concinus*, olive, veins golden, Assam; *Heriotii*, reddish, veins golden, India; *hieroglyphicus*, green, veins silvery, Assam; *Lansbergiæ*, velvety green, veins emerald-green, Malaya; *regalis*, velvety green, veins golden, Ceylon; *regalis albo-marginatus*, edged with white; *regalis cordatus*, edged with gold; *regalis grandifolius*, golden veins; *Veitchii*, velvety green, netted with gold. Numerous other species may be found in specialists' catalogues.

**Anomatheca.**—See *Lapeyrousia*.

**Anona** (Alligator Apple; Custard Apple; Sweet Sop).—Ord. Anonaceæ. Stove evergreen shrubs. First introduced 1690. Leaves fragrant. Fruit of *A. muricata*, *A. reticulata*, & *A. squamosa* edible.

**CULTURE:** Compost, two parts loam, one part peat, & a little silver sand. Pot, March or April. Position, light & sunny. Water freely March to Oct., moderately afterwards. Syringe daily April to Sept. Shade from bright sunshine. Temp., March to Oct. 65° to 85°; Oct. to March 55° to 65°. Propagate by seeds in spring, or by cuttings of firm shoots in moist sand under bell-glass in temp. 75° in summer.

**SPECIES CULTIVATED:** *A. Cherimolia* (Cherimoyer), brown, Aug., 12 to 18 ft., Trop. America; *muricata* (Sour Sop), yellow, summer, 10 ft., Trop. America; *palustris* (Alligator Apple), yellow, summer, 10 ft., Trop. America; *reticulata* (Custard Apple), yellow and brown, summer, 15 to 18 ft., Trop. America; *squamosa* (Sweet Sop), white, summer, 15 to 20 ft., W. Indies.

**Anopterus** (Tasmanian Laurel).—Ord. Saxifragacæ. Greenhouse flowering shrub. Evergreen. First introduced 1823.

**CULTURE:** Compost, two parts loam, one part peat & sand. Pot & prune, March. Position, sunny greenhouse. Temp., Sept. to March 45° to 50°; March to Sept. 55° to 65°. Water moderately in winter, abundantly at other times. Propagate by cuttings of firm shoots 3 in. long, in sandy peat under bell-glass in temp. 65° in summer.

**SPECIES CULTIVATED:** *A. glandulosus*, white or pink, April, 2 to 3 ft., Tasmania.

**Antennaria** (Cat's-ear).—Ord. Compositæ. Hardy herbaceous perennials. Leaves, silvery white; useful for carpet bedding or edgings to borders, clothing dry spots.

**CULTURE:** Soil, ordinary. Position, sunny borders or rockeries. Plant, March or Oct. Propagate by division of roots in March.

**SPECIES CULTIVATED:** *A. dioica*, pink, June, 3 in., Britain; *dioica tomentosa*, white, summer, 1 in., Britain. Last-named is a good carpet bedding plant. A *margaritacea* is now known as *Anaphalis margaritacea*, which see.

**Anthemis** (Chamomile).—Ord. Compositæ. Hardy perennials. Flowers of the Common Chamomile (*A. nobilis*), used for making Chamomile Tea; those of other species for ordinary garden decoration.

**CULTURE:** Soil, ordinary. Position, sunny borders for tall species; rockeries for dwarf ones. Plant, Oct. or March. Common Chamomile to be planted 2 ft. apart in rows 30 in. asunder in April. Gather flowers when fully expanded. Increased by division in March; seeds sown outdoors in April.

**SPECIES CULTIVATED:** *A. biebersteiniana*, white, summer, 1 to 2 ft., Orient; *macedonica*, white, June, 6 to 8 in., Macedonia; *nobilis* (Common Chamomile), white, Aug., 1 ft., Europe; *tinctoria* (Dyer's or Ox-eye Chamomile), white, Aug., 2 ft., Europe. Kelway and Mrs. H. T. Brooks are pretty varieties of the latter species.

**Anthericum** (St. Bernard's Lily).—Ord. Liliacæ. Hardy herbaceous perennials.

**CULTURE:** Soil, light, rich. Position, partially shaded borders. Plant, Oct., Nov. Propagate by seeds sown  $\frac{1}{2}$  in. deep in light soil in cold frame in Sept. or March; division of roots in Oct.

**SPECIES CULTIVATED:** *A. Liliago* (St. Bernard's Lily), white, July and Aug., 12 to 18 in., S. Europe; *Liliago major*, a superior form; *ramosum*, white, June to Aug., 2 ft., S. Europe. See the genus *Paradisea*, *Pulvinella*, and *Chlorophytum* for other species formerly included in this genus.

**Antholyza** (African Corn-flag).—Ord. Iridacæ. Hardy bulbous perennials. First introduced 1756.

**CULTURE:** Soil, light, sandy. Position, sunny border, well drained; pots in cool greenhouse. Plant bulbs 6 in. deep, 6 in. apart in border, or six in a 6 in. pot, Oct. Bulbs to be lifted in Aug., dried,

& stored till Oct. in cool place. Propagate by offsets at planting time; seeds in slight heat in spring.

**SPECIES CULTIVATED:** *A. æthiopica*, red and yellow, June, 3 to 4 ft.; *A. paniculata*, yellow and red, July, 3 to 4 ft. Natives of S. Africa.

**Anthony-nut** (*Staphylea pinnata*).—See *Staphylea*.

**Anthoxanthum** (Sweet Vernal-grass).—Ord. Gramineæ. Hardy perennial flowering grass. Inflorescence has the odour of newly mown hay, and is useful for drying for winter bouquets.

**CULTURE:** Soil, ordinary. Plant, Oct. or March. Position, open border. Propagate by seeds sown  $\frac{1}{2}$  in. deep where plants are to grow in April; division of roots, Oct. or March.

**SPECIES CULTIVATED:** *A. odoratum*, 1 ft., Europe; *Puelii*, 6 in., Europe.

**Anthriscus** (Chervil).—Ord. Umbelliferae. Hardy annual herb used for garnishing & flavouring. First introduced 1656.

**CULTURE:** Soil, ordinary. Position, shady in summer, south border in winter. Sow seeds broadcast  $\frac{1}{2}$  in. deep, or similar depth in drills 6 in. apart in March or Oct.

**SPECIES CULTIVATED:** *A. cerefolium* (Chervil), 6 in., Europe, Asia, etc.

**Anthurium** (Flamingo-plant; Tail-flower).—Ord. Aroideæ. Stove plants. Flowering and orn. foliage. Flowering period, March to Aug. First introduced 1825.

**CULTURE:** Compost, equal parts rough peat, sphagnum moss. Position, pots, well drained, shady. Pot, March. Water freely March to Nov., moderately afterwards. Temp., Sept. to March 60° to 65°; March to Sept. 70° to 80°. Propagate by division of roots in March; seeds sown in a mixture of chopped sphagnum moss, charcoal, & sand in temp. of 80° in spring.

**SPECIES CULTIVATED,** Flowering: *A. andreaenum*, scarlet and white, Colombia; *ornatum*, white and purple, Venezuela; *scherzerianum*, scarlet, Guatemala; *Williamsii*, white and cream. Ornamental-leaved: *Brownii*, green, Colombia; *crystallinum*, green, Peru; *magnificum*, green and white, Colombia; *Veitchii*, green, Colombia; and *warroqueanum*, green and white, Colombia. For varieties, which are numerous, see trade lists.

**Anthyllis** (Kidney Vetch; Lady's Fingers).—Ord. Leguminosæ. Hardy shrubs and perennials.

**CULTURE:** Soil, ordinary. Position, open or partially shaded border. Plant, Oct. Propagate shrubby kinds by cuttings of young shoots under bell-glass in cold frame in March; herbaceous species by seeds sown  $\frac{1}{2}$  in. deep in warm border in April or by division of root in Oct.

**SPECIES CULTIVATED** (Shrubs): *A. Barba-Jovis*, pale yellow, March, 4 ft., Spain; *Hermannia*, yellow, April, 2 to 4 ft., Corsica. Perennial species: *A. montana*, pink, June, 3 to 6 in., Alps; *Vulneraria* (Wound-wort or Lady's Fingers), yellow, June to Aug., 6 to 12 in., Britain.

**Antirrhinum** (Snapdragon).—Ord. Scrophulariaceæ. Hardy herbaceous perennials.

**CULTURE:** Soil, ordinary. Position, warm, dry borders, rockeries, or walls. Plant, April. Propagate by seeds sown in temp. 70° in March or outdoors in April, transplanting seedlings in May; cuttings of young shoots in cold frame in Aug. Best treated as annuals or biennials, fresh plants being raised every year.

**SPECIES CULTIVATED:** *A. Asarina*, yellow, summer, 3 in., Italy; *majus* (Common Snapdragon), pink, July, 1 to 2 ft., Mediterranean Region, naturalised in Britain, and parent of the beautiful forms grown in gardens; *Orontium* (Cornfield Snapdragon), flesh, Aug., 1 ft., Britain.

**Aotus**.—Ord. Leguminosæ. Greenhouse flowering shrub. Ever-green.

**CULTURE:** Compost, equal parts loam, peat, sand, charcoal. Pot in March. Position, pots, well drained, in light & sunny greenhouse. Water moderately in winter, freely summer. Prune shoots back after flowering. Temp., Sept. to March 45° to 50°; March to Sept. 55° to 60°. Propagate by cuttings of firm shoots in pots of sandy soil under bell-glass, temp. 55°.

**SPECIES CULTIVATED:** *A. gracillima*, yellow and crimson, May, 3 ft., Australia. Other species of little merit.

**Apennine Wind-flower** (*Anemone apennina*).—See *Anemone*.

**Apera** (Pheasant's Tail Grass).—Ord. Gramineæ. Greenhouse flowering grass. First introduced 1882. Inflorescence borne in graceful panicles. Stem slender and drooping.

**CULTURE:** Compost, two parts sandy loam, one part leaf-mould & sand. Position, well-drained pots in hanging baskets in sunny greenhouse. Pot or plant in spring. Water freely during spring & summer, moderately autumn & winter. Pretty plant for front row of staging in greenhouse. Propagate by seed sown in a temp. of 55° to 65° in spring; or by division of the roots or tufts at potting time. Hardy in mild districts.

**SPECIES CULTIVATED:** *A. arundinacea*, 2 to 3 ft., New Zealand.

**Aphanostephus**.—Ord. Compositæ. Half-hardy annual. First introduced 1838.

**CULTURE:** Soil, light, ordinary. Position, sunny, well-drained borders. Sow seeds in a temp. of 55° to 65° in March. Transplant seedlings 1 or 2 in. apart in boxes. Gradually harden off, and plant outdoors the end of May.

**SPECIES CULTIVATED:** *A. arkansanus*, white, yellow, and rose, summer, 1 to 2 ft., Texas.

**Aphelandra**.—Ord. Acanthaceæ. Stove flowering shrubs. Evergreen. Flowers surrounded by lovely coloured bracts. First introduced 1733.

**CULTURE:** Compost, equal parts peat, loam, leaf-mould & sand. Position, pots, moist atmosphere. Water freely in summer, moderately in winter. Prune shoots to within inch of base in Feb. & repot in March. Temp., Sept. to March 60° to 65°; March to Sept. 70° to 80°. Propagate by cuttings of firm shoots inserted in sandy soil in bottom-heat (80°) March or April.

**SPECIES CULTIVATED:** *A. aurantiaca*, orange-scarlet, winter, 3 ft., Mexico; *aurantiaca Roezlii*, scarlet, 9 to 12 in.; *Fascinator*, scarlet, Sept., 18 in., Colombia; *fulgens*, autumn, 18 in.; *macedoniana*, leaves purple and green, Brazil; *Margaritæ*, orange, leaves green and rose, Brazil. There are others, but they possess no striking merit.

**Aphelexis**.—See *Helichrysum*.

**Apios** (Ground Nut).—Ord. Leguminosæ. Hardy tuberous-rooted climbing perennial. Deciduous. First introduced 1640.

**CULTURE:** Soil, ordinary. Position, warm border against south wall or trellis. Plant tubers in March. Propagate by division of tubers in March.

**SPECIES CULTIVATED:** *A. tuberosa*, brown and pink, Aug., 6 to 10 ft., N. America.

**Apium** (Celery; Celeriac; Turnip-rooted Celery).—Ord. Umbelliferae. Hardy esculent vegetable. Biennial. Blanched leaf-stalks used as salad; leaves & roots for flavouring soups.

**CULTURE OF CELERY:** Soil, ordinary, well enriched with cow, pig, or horse manure. Position, moist, in trenches running north & south, 4 ft. apart, 15 in. wide, & 9 in. deep for single rows, or 18 in.

wide for double rows. Put 3 in. manure in bottom & 2 in. top soil on this. Plant out first week in June for early crop; end of June for main crop. Distance apart for plants, 8 in. for single row; 9 in. apart in row & 6 in. between rows for double rows. Earth up gradually from Sept. to Nov. in fine weather only. Sow seeds 1-10 in. deep in light soil in temp. 65° to 75° in Feb. & March for early crop; in March in similar temp. for main crop, or in cold frame in April. Seedlings in first two cases to be transplanted 2 in. apart in light soil in boxes, kept in temp. 55° to 65° for few weeks, then planted 6 in. apart in shady bed outdoors till required for planting in trenches. Water liberally until earthed up to ensure crisp, solid hearts. Liquid manure apply once a week from planting till earthing up. Guano at rate of 1 oz. to gallon of water most suitable stimulant. Plants for seed bearing not to be earthed up; protect them in severe weather; transplant following spring; gather seed in Sept. Seeds germinate in 15 to 20 days, & retain their vitality from eight to ten years. Crop reaches maturity in 24 weeks from date seeds are sown. 1 oz. of seed will yield 1,000 plants.

**MARKET CULTURE:** Soil, deep, light, & rich. Manures: 30 to 40 tons of farmyard manure per acre, ploughed in in autumn; or 20 tons of farmyard manure applied in autumn & 4 cwt. superphosphate per acre applied in spring. Plough out trenches 6 in. deep, 1 ft. wide, & 4 ft. apart in May, & plant direct into these; or dig out trenches 1 ft. wide & 18 in. deep, put in 1 ft. of manure, tread firmly, & cover with 4 in. of soil, then plant. Sow for early crops in Feb., main crops in March, and late ones in April. Plant out early crops in May, main-crops in June, late ones in July. Keep moist. Earth up when fully grown. Do this in three operations. Market in bundles (rolls) containing 8 washed or 12 unwashed sticks. Average yield per acre, 1,200 rolls. Average returns (gross) per acre, £40 to £60.

**CULTURE OF TURNIP-ROOTED CELERY OR CELERIAC:** Soil, rich, light. Position, sunny level border. Plant in June 1 ft. apart in rows 18 in. asunder. Keep all side shoots removed. Draw little mould around base of each in Aug. Water freely in dry weather. Lift roots in Oct. & store them in sand in shed till required for use. Sow & treat seedlings as advised for ordinary celery.

**SPECIES CULTIVATED:** *A. graveolens* (Celery), white, July, 3 ft., Britain; *graveolens rapaceum* (Celeriac), white, July.

**Aponogeton** (Cape Pond-weed; Winter Hawthorn).—Ord. Naiadaceæ. Half-hardy floating aquatic. Nat. Cape of Good Hope. First introduced 1788.

**CULTURE:** Soil, ordinary. Position, shallow ponds or lakes, 1 ft. deep where there is a stream of water, or in a cold greenhouse tank or aquaria. Plant in pots, sinking the latter in the water during March. Not hardy in the north. Propagate by offsets.

**SPECIES CULTIVATED:** *A. distachyon*, white, fragrant, summer.

**Apple.**—See *Pyrus*.

**Apple-bearing Rose** (*Rosa villosa pomifera*).—See *Rosa*.

**Apple of Peru** (*Nicandra physaloides*).—See *Nicandra*.

**Apricot.**—See *Prunus*.

**Aquilegia** (Columbine).—Ord. Ranunculaceæ. Hardy perennials. Graceful plants for border or rockery culture & for yielding flowers for cutting.

**CULTURE:** Soil, sandy loam, enriched with leaf-mould. Position, well-drained, partially shady rockeries & borders. Plant, Oct. or

March. Propagate by seeds sown  $\frac{1}{2}$  in. deep in sandy soil in cold frame in Aug., or in open border in April; division of the roots in Oct. or April.

**SPECIES CULTIVATED:** *A. alpina*, blue and white, May to July, 12 to 18 in., Alps; *canadensis*, scarlet and yellow, April to June, 1 to 2 ft., N. America; *cœrulea*, blue and white, May, 12 to 18 in., N.W. America; *chrysantha*, primrose-yellow and purple, May to Aug., 3 ft., New Mexico; *formosa*, red and yellow, summer, 3 ft., N. America; *glandulosa*, blue and white, April to June, 8 to 12 in., Siberia; *olympica*, blue and white, April and May, 18 in., Orient; *pyrenaica*, lilac blue, April to June, 9 to 12 in., Pyrenees; *sibirica*, lilac and white, June and July, Siberia; *Skinneri*, yellow and red, June to Aug., 2 to 3 ft., Mexico; *Stuartii*, blue and white, June, 9 in., hybrid; *vulgaris* (Common Columbine), various colours, single and double, 3 ft., Britain. A number of lovely hybrids exist, which will be found in lists.

**Arabian Jasmine** (*Jasminum Sambac*).—See *Jasminum*.

**Arabis** (Wall Cress; Rock Cress).—Ord. Cruciferæ. Hardy annual, perennial Alpine trailing plants.

**CULTURE:** Soil, ordinary. Position, edgings to well-drained borders or massing on sunny rockeries; carpeting beds of spring-flowering bulbs, etc. Plant, Oct. & Nov. Propagate by seeds sown 1-16 in. deep outdoors in April; cuttings inserted in shady border in Aug.; division of roots in Oct.

**SPECIES CULTIVATED:** *A. albida*, white, spring, 6 to 9 in., Tauria, etc.; *albida flore-pleno*; double-flowered; *albida variegata*, leaves edged with white; *alpina*, white, March, 6 in., Europe; *arenosa*, rose, May, 6 in., Europe; *blepharophylla*, purple, Feb., 6 in., California; *lucida*, or *berbidifolia*, variegata, yellow-edged leaves, 6 in., Europe; *verna*, purple, May, 4 in., S. Europe, an annual species.

**Arachis** (Monkey Nut; Earth Nut; Ground Nut).—Ord. Leguminosæ. Stove annual. Flowers, yellow; May. After flowering the seed pod is gradually forced into the soil to ripen its seeds, which are edible.

**CULTURE:** Compost, loam, leaf-mould & sand. Sow seeds in temp. of 75° to 85° in spring; plant seedlings in small pots and grow in a light position. Water moderately. Temp. 75° to 85°.

**SPECIES CULTIVATED:** *A. hypogæa*, 1 ft., West Indies.

**Aralia** (Angelica Tree).—Ord. Araliacæ. Stove hardy plants & shrubs. Orn. foliage. Evergreen & deciduous. First introduced 1658.

**CULTURE OF STOVE SPECIES:** Compost, equal parts loam, peaty leaf-mould, charcoal, & sand. Pot, Feb. to March. Water freely March to Oct., moderately afterwards. Temp., March to Sept. 70° to 80°; Sept. to March 60° to 70°. Propagate by grafting in heat in spring; inserting portions of roots in light soil in temp. 80° in April.

**CULTURE OF HARDY SPECIES:** Soil, rich, well-drained loam. Position, shady borders for herbaceous species, margins of lakes or ponds, or moist, sheltered shrubberies for shrubby kinds. Plant, Sept. & Oct. or in March & April. Increase by division in Oct. or March in case of herbaceous species; suckers for shrubby species.

**STOVE SPECIES CULTIVATED:** *A. elegantissima*, Polynesia; *kerchoveana*, Polynesian Islands; *Veitchii*, New Caledonia; *Veitchii gracillima*: *filicifolia*, Polynesia. See also *Panax*, *Oreopanax*, *Acanthopanax*, *Pseudo-panax*, *Elæodendron*, and *Fatsia* for other species formerly known as *Aralias*.

**HARDY HERBACEOUS PERENNIALS CULTIVATED:** *A. cachemirica*, white, summer, 6 ft., Himalayas; *cordata* (syn. *edulis*), white, summer, 4 to 6 ft., Japan; *nudicaulis*, greenish, June, 3 to 4 ft., N. America; *racemosa*, greenish white, June, N. America.

**HARDY SHRUBBY SPECIES:** *A. chinensis* (syn. *Dimorphanthus mandschuricus*), 6 to 12 ft., elegant foliage, China; *chinensis folius aureus-variegatus*, variegated with yellow; *spinosa* (*Angelica Tree*), white, autumn, 8 to 12 ft., N. America.

**Araucaria** (Monkey Puzzle; Chilian Pine; Moreton Bay Pine; Norfolk Island Pine; Bunya-Bunya Pine).—Ord. Cruciferae. Hardy & half-hardy trees. Evergreen. Orn. foliage. First introduced 1796.

**OUTDOOR CULTURE:** Soil, deep rich loam. Position, high, dry, & sheltered outdoors away from smoky districts. Plant, Sept. to Nov. Propagate by seeds sown 1 in. deep in light soil, temp. 65°, Feb., March, April.

**CULTURE OF GREENHOUSE SPECIES:** Compost, two parts loam, one part leaf-mould, and one part silver sand. Position, pots or tubs well drained in sunny house. Repot in March. Water freely during spring and summer, moderately at other seasons. Avoid overcrowding; give plenty of room. Temp., March to Oct. 55° to 65°; Oct. to March 45° to 55°. Requires plenty of air in summer. Propagate by means of cuttings of ends of young shoots inserted in sandy loam in a warm greenhouse in autumn; tall, overgrown plants by stem-rooting in spring.

**HARDY SPECIES CULTIVATED:** *A. imbricata* (Chili Pine), 50 to 100 ft., Chili; *imbricata aurea*, golden-tinted foliage.

**GREENHOUSE SPECIES CULTIVATED:** *A. Bidwillii* (Bunya-Bunya Tree), 100 to 150 ft., Queensland; *Cookii*, 150 to 200 ft., New Caledonia; *Cunninghamii* (Moreton Bay Pine), 70 to 100 ft., Queensland; *excelsa* (Norfolk Island Pine), 100 to 120 ft., Norfolk Island; and its varieties *glauca* (goldiana and robusta); *Rulei*, 50 ft., New Caledonia.

**Araujia**.—Ord. Asclepiadaceae. Stove flowering evergreen climbers. Nat. Brazil. First introduced 1837.

**CULTURE:** Compost, equal parts peat, loam & sand. Position, pots or beds; shoots trained up roof or round wire trellis. Pot, Feb. or March. Water freely March to Sept., moderately afterwards. Syringe twice daily March to Aug. Pruned shoots moderately annually in Jan. Apply liquid manure occasionally during May, June, & July. Temp., March to Oct. 65° to 75°; Oct. to March 55° to 65°. Propagate by cuttings of young shoots 4 in. long inserted in sandy soil under propagating glass in temp. 75° to 80° in spring.

**SPECIES CULTIVATED:** *A. grandiflora* (Syn. *A. graveolens* and *Schubertia grandiflora*), white, fragrant, Oct.; *sericifera* (Syn. *Physianthus albens*), white, Aug.

**Arborvitæ** (*Thuja occidentalis*).—See *Thuja*.

**Arbutus** (Strawberry-tree).—Ord. Ericaceae. Hardy orn. foliage & fruit-bearing trees. Evergreen. Fruit, globular, scarlet, strawberry-like; ripe in Oct., year after flowering.

**CULTURE:** Soil, sandy peat. Position, sunny, sheltered. Plant, Sept. to Dec. Propagate by seeds sown 1 in. deep in well-drained pans of sandy peat in cold frame in March; budding in July or Aug.; or inarching in April.

**SPECIES CULTIVATED:** *A. Andraehne*, greenish white, April, 12 to 14 ft., Levant; *hybrida*, white, Sept., 8 to 10 ft., hybrid; *Menziesii*, white, Sept., 10 ft., N. America; *Unedo*, white, Sept., 10 to 20 ft., S. Europe, including Ireland.

**Archangel** (*Angelica officinalis*).—See *Angelica*.

**Arctic Bramble** (*Rubus arcticus*).—See *Rubus*.

**Arctotis**.—Ord. Compositae. Half-hardy herbaceous perennials, adapted for cool greenhouse and outdoor culture.

**OUTDOOR CULTURE:** Soil, loamy, enriched with leaf-mould. Position, preferably sunny, but will do in shade. Plant in April or May. Protect by handlights or frames in winter. Best raised from seed or cuttings annually, & grown outside in summer only.

**INDOOR CULTURE:** Compost, equal parts of loam & leaf-mould with a little sand. Position, well-drained pots in sunny part of greenhouse. Water liberally from March to Oct., moderately at other



seasons. Propagate by seeds sown in a temp. of 55° to 65° in March. Avoid a too damp atmosphere. Also by cuttings of side shoots inserted in pots of sandy soil in a cold frame in early summer.

SPECIES CULTIVATED: *A. acaulis*, red and yellow, summer, 18 in., S. Africa; *aspera*, yellow, July, 2 to 3 ft., S. Africa.

**Ardisia** (Spear-flower).—Ord. Myrsinaceæ. Stove-flowering & berry-bearing plants. Evergreen. First introduced 1809.

CULTURE: Compost, equal parts loam, peat, leaf-mould, & sand. Pot, Feb. to March. Position, pots, in light, sunny part of stove. Water freely in summer, little in winter. Prune straggly shoots back closely in March. Temp., March to Sept. 70° to 80°; Sept. to March 55° to 65°. Propagate by seeds sown  $\frac{1}{4}$  in. deep in above compost in temp. 75° in spring; cuttings of side shoots in similar soil & temp., March.

SPECIES CULTIVATED: *A. crenata*, flowers white, borne in June, followed by pretty red berries, 3 to 4 ft., China; *crenata alba*, a white-berried variety.

**Areca** (Betel-nut Palm).—Ord. Palmaceæ. Stove palms. Orn. foliage. First introduced 1690.

CULTURE: Compost, equal parts loam, peat, leaf-mould, & sand. Position, shady, moist. Water freely at all times. Pot, Feb., March. Temp., March to Sept. 70° to 85°; Sept. to March 60° to 65°. Propagate by seeds.

SPECIES CULTIVATED: *A. Catechu* (Betel-nut Palm), 20 to 30 ft., Trop. Asia. *A. lutescens* is now included in the genus *Chrysalidocarpus*, which see.

**Arenaria** (Sand-wort).—Ord. Caryophyllaceæ. Hardy herbaceous perennials or rocky plants. First introduced 1731.

CULTURE: Soil, ordinary, moist. Position, partially shaded rockeries. Plant, Oct. to March. Propagate by seeds sown 1-16 in. deep in sandy soil in boxes in cold frame, March; cuttings under bell-glass in open, April; division of plants in Oct. or March.

SPECIES CULTIVATED: *A. balearica*, white, 2 to 3 in., June, Balearic Isles; *gothica* (Syn. *A. ciliata*), white, summer, 2 in., Orkney and Shetland Isles; *grandiflora*, white, summer, 6 in., Europe; *montana*, white, April, 3 in., Spain; *purpurascens*, purple, summer, 6 in., Pyrenees; *verna*, white, June, 2 in., Britain, etc.

**Arethusa**.—Ord. Orchidaceæ. Half-hardy terrestrial orchid.

CULTURE: Compost, sphagnum moss, peat & well-decayed manure. Position, damp, shady border. Plant, Oct. to Dec. Protect in winter by covering of decayed leaves. Propagate by offsets in autumn. May also be grown in pots in cold frames or greenhouses.

SPECIES CULTIVATED: *A. bulbosa*, rosy purple, fragrant, May, 8 in., Carolina.

**Argemone** (Mexican Poppy; Devil's Fig; Prickly Poppy).—Ord. Papaveraceæ. Hardy annuals & perennials. First introduced 1592.

CULTURE: Soil, sandy. Position, sunny borders, well drained. Plant in March. Propagate both annuals & perennials by seeds sown  $\frac{1}{4}$  in. deep in sandy soil outdoors in April or in heat in March, planting outdoors in May. Perennials will not flower till following year.

ANNUAL SPECIES CULTIVATED: *A. albiflora*, white, July and Aug., 1 ft., Georgia; *hirsuta*, white, Sept., 2 ft., California; *mexicana*, yellow, June, 2 ft., Mexico; *ochroleuca*, yellow, Aug., 2 ft., Mexico.

PERENNIAL SPECIES CULTIVATED: *A. grandiflora*, white, summer, 2 to 3 ft., Mexico. Best grown as a half-hardy annual.

**Arisæma**.—Ord. Aroidæ. Stove, greenhouse, & hardy tuberous-rooted perennials. First introduced 1759. Flowers, arum-like in shape.

CULTURE OF HARDY SPECIES: Soil, ordinary. Position, sunny borders. Plant, Oct. or March. Top-dress with decayed manure after new growth begins. Apply liquid manure occasionally in summer.

**CULTURE OF STOVE AND GREENHOUSE SPECIES:** Compost, equal parts peat, leaf-mould, loam & sand. Position, pots in stove or greenhouse. Pot, March. Water freely March to Oct., keep dry afterwards. Temp. 70° to 80° March to Oct. & 60° to 65° Oct. to March for stove species; 40° to 50° Oct. to March & 55 to 60° March to Oct. for greenhouse species. Propagate by division of tubers.

**STOVE SPECIES CULTIVATED:** *A. concinnum*, white, June, 1 to 2 ft., Himalayas; *galeatum*, white, July, 1 ft., Himalayas; *tortuosum*, white, April, 4 ft., Himalayas.

**GREENHOUSE SPECIES CULTIVATED:** *A. speciosum*, white, March, 1 to 2 ft., Himalayas; *triphylum* or *atrurubens*, green and purple, June, 1 to 2 ft., N. America.

**HARDY SPECIES CULTIVATED:** *A. Griffithii*, brown, violet, and green, May, 12 to 18 in., Himalayas; *ringens*, white and green, April, 2 ft., Japan.

**Aristea.**—Ord. Iridaceæ. Greenhouse evergreen flowering shrub. First introduced 1803.

**CULTURE:** Compost, two parts good peat, one part sandy loam & little sand. Position, well-drained pots in light, airy greenhouse. Pot, Feb. or March. Water copiously, April to Oct., moderately afterwards. Temp., Oct. to March 40° to 50°; March to Oct. 50° to 60°. An abundance of air required in summer, moderate amount other times. Propagate by seeds sown in sandy loam & peat in temp. 55° to 65° in spring; by offsets removed from parent plant March or April.

**SPECIES CULTIVATED:** *A. corymbosa* (Syn. *Witsenia corymbosa*), purple, summer, 3 ft., S. Africa.

**Aristolochia** (Birth-wort; Dutchman's Pipe).—Ord. Aristolochiaceæ. Stove & hardy climbing or herbaceous plants. Evergreen & deciduous. First introduced 1727.

**CULTURE OF STOVE AND GREENHOUSE SPECIES:** Compost, two-thirds loam, one-third leaf-mould & sand. Position, pots or borders; shoots trained close to roof of stove. Pot in March. Water freely in summer, little in winter. Temp., March to Sept. 70° to 80°, Sept. to March 60° to 65°. Prune straggly shoots only. Propagate by seeds sown in light, rich soil in temp. 75° in March; cuttings in similar soil & temp., Feb.

**CULTURE OF HARDY SPECIES:** Soil, good ordinary, well drained. Position, sunny borders for herbaceous species; south, west, or east walls, or pergolas, trellises, etc., for climbing kinds. Plant in autumn or spring. Increased by cuttings of ripe shoots inserted in sandy soil in slight heat in summer.

**STOVE SPECIES CULTIVATED:** *A. braziliensis*, purple, July, 15 to 20 ft., Brazil; *Duchartrei*, yellow and brown, July, 2 ft., Brazil; *gigas*, purple, June, 8 to 10 ft., Guatemala; *goldieana*, green and yellow, July, 10 ft., Old Calabar; *elegans*, green, white, and red, 8 to 10 ft., Brazil.

**HARDY HERBACEOUS SPECIES:** *A. Clematitis*, yellow, June to Sept., 2 to 3 ft., Europe.

**HARDY CLIMBING SPECIES:** *A. Sipro* (Dutchman's Pipe), yellowish brown, May and June, 15 to 30 ft., N. America; *tomentosa*, purple, July and Aug., 10 to 15 ft., N. America.

**Armeria** (Thrift; Sea-pink; Lady's Pincushion; Cushion-pink).—Ord. Plumbaginaceæ. Hardy perennial.

**CULTURE:** Soil, sandy loam. Position, edgings to or massing on sunny borders or rockeries. Plant, Oct. or March. Propagate by seeds sown 1-16 in. deep in sandy soil in pans in cold frame, April; division of plants in Oct. or March.

**SPECIES CULTIVATED:** *A. cœspitosa*, rose, June, 2 in., Spain and Portugal; *latifolia* (Syn. *A. Cephalotes*), crimson, June, 6 to 12 in., Portugal; *maritima* (Syn. *A. vulgaris*), pink, May and June, 4 in., Europe (Britain); *maritima alba* (white); *maritima lauchœana* (crimson); *mauritanica*, rose, July, 18 in. to 2 ft.; and *plantaginea splendens*, rose, June, 18 in., Europe.

**Arnatto** (*Bixia orellano*).—See *Bixia*.

**Arnebia**.—Ord. Boraginaceæ. Hardy annuals & perennials

**CULTURE:** Soil, ordinary. Position, sunny rockery, well drained. Sow seeds of annual species in light soil in gentle heat in March, & plant out seedlings in May. Plant perennial species in Oct. or March & increase by cuttings or seeds.

**ANNUAL SPECIES:** *A. cornuta*, yellow, spotted with purple, summer, 18 in. to 2 ft., Turkestan; *Griffithii*, yellow, July, 9 in., N.W. India.

**PERENNIAL SPECIES:** *A. macrothyrsa*, yellow, summer, 1 ft., N. Kurdistan. *A. echioides* (Prophet Flower) now included in genus *Macrotomia*, which see.

**Arpophyllum**.—Ord. Orchidaceæ. Warm greenhouse terrestrial orchids. Evergreen. First introduced 1838.

**CULTURE:** Compost, good fibry peat & charcoal. Pot, Feb. or March. Position, well-drained pots in sunny part of house. Temp., Oct. to Feb. 45° to 55°; other times 55° to 65°. Water moderately in winter, freely in summer. Resting period, winter. Flowers appear at base of new pseudo-bulb after resting. Propagate by division of plants when repotting.

**SPECIES CULTIVATED:** *A. cardinale*, rose, summer, 1 ft., New Grenada; *giganteum*, purplish rose, April, 2 ft., Mexico; *spicatum*, purple, April, 1 ft., Mexico and Guatemala.

**Arrow Arum** (*Peltandra virginica*).—See *Peltandra*.

**Arrow-head** (*Sagittaria sagittifolia*).—See *Sagittaria*.

**Arrow-root Plant** (*Maranta arundinacea*).—See *Maranta*.

**Artemisia** (Old Man; Old Woman; Lad's Love; Wormwood; Tarragon; Southernwood).—Ord. Compositæ. Hardy shrubs, herbaceous perennials and annuals, with hoary and fragrant foliage. Evergreen & deciduous.

**CULTURE OF SHRUBBY AND HERBACEOUS SPECIES:** Soil, ordinary. Position, sunny borders or rockeries. Plant, Oct. or March. Increased by cuttings inserted in open ground in summer for shrubby kinds; division in Oct. or March for herbaceous species; seeds sown outdoors in April for annual & other species.

**CULTURE OF TARRAGON:** Soil, light, dryish, ordinary. Position, sunny border. Plant roots 2 to 3 in. deep, 8 in. apart in rows 18 in. asunder, March or April. Replant annually. Cut foliage off in Sept., & dry it for use in winter. Place a few roots in ordinary soil in box or large pot, & put this in warm greenhouse in Oct. to supply young shoots during winter. Propagate by cuttings of shoots inserted in ordinary soil in temp. 55° in March or April, or under hand-light outdoors in July; division of the roots in March or April.

**SHRUBBY SPECIES:** *A. Abrotanum* (Southernwood, Lad's Love, or Old Man), yellow, Aug., leaves fragrant, 2 to 4 ft., Europe; *œrulescens*, blue, Aug., leaves silky white, 2 ft., S. Europe.

**HARDY PERENNIAL SPECIES CULTIVATED:** *A. alpina*, yellow, summer, 6 in., Caucasus; *argentea*, yellow, July, 18 in.; *Madeira*; *cana*, yellow, Aug., 2 to 3 ft., N. America; *lanata*, silvery leaved, pretty, 6 in., Europe; *dranunculoides* (Tarragon), 2 ft., N. America; *pontica*, grey foliage, 2 ft., Austria; *Absinthum* (Wormwood), yellow, Aug., 18 in., Europe.

**ANNUAL SPECIES:** *A. annua*, yellow, summer, 5 to 6 ft., E. Europe.

**Arthropodium**.—Ord. Liliaceæ. Greenhouse herbaceous perennials. First introduced 1800.

**CULTURE:** Compost, two parts sandy loam, one part peat, & a liberal quantity of silver sand. Position, well-drained pots in sunny part of greenhouse. Pot, March or April. Water freely spring & summer, moderately autumn & winter. Temp., Oct. to March 40° to 45°; March to Oct. 55° to 65°. Propagate by seeds sown in a mixture

of equal parts sandy loam, peat, leaf-mould & sand, in a temp. of 55° to 65° in spring; also by off-sets or suckers removed in spring.

**SPECIES CULTIVATED:** *A. cirrhatum*, white, May, 3 ft., New Zealand; *neocaledonicum*, white, May, 18 in., New Caledonia; *paniculatum*, white, May, 3 ft., New South Wales.

**Artichoke.**—See *Cynara*, *Helianthus*, & *Stachys*.

**Artillery Plant** (*Pilea muscosa*).—See *Pilea*.

**Artocarpus** (Bread-fruit or Jack-tree).—Ord. *Urticaceæ*. Stove evergreen trees. Orn. foliage. First introduced 1793. Leaves, large, crimson or green.

**CULTURE:** Compost, two parts loam, one part leaf-mould & sand. Pot, Feb., March. Position, shady & moist. Prune into shape, Feb. Water freely in summer, moderately in winter. Temp., March to Sept. 65° to 75°; Sept. to March 55° to 60°. Propagate by stem-rooting firm shoots in Feb., March; suckers at any time.

**SPECIES CULTIVATED:** *A. incisa* (Bread Fruit Tree), 50 ft., Malaya; *integrifolia* (Jack Tree), 50 ft., India and Malaya.

**Arum** (Cuckoo-pint; Lords & Ladies; Italian Arum).—Ord. *Aroideæ*. Hardy or half-hardy tuberous-rooted perennials. Grown more for their curiously formed flowers and showy red, poisonous berries than for their beauty.

**CULTURE OF HARDY SPECIES:** Soil, ordinary. Position, partially shady shrubbery borders or grassy spots. Plant, autumn or spring. Increased by offsets in autumn.

**CULTURE OF HALF-HARDY SPECIES:** Compost, two parts loam, one part decayed manure, & one part sand. Position, well-drained border at base of south wall, or pots in a cool greenhouse. Plant or pot in autumn. Water freely whilst growing in pots; keep dry when foliage dies. Protect those outdoors with a covering of leaves in winter.

**HARDY SPECIES CULTIVATED:** *A. italicum* (Italian Arum), creamy white, spring, 12 to 18 in., S. Europe; *italicum marmoratum*, leaves marbled with yellow; *maculatum* (Cuckoo-pint), yellowish green, spotted purple, 6 in., Britain.

**HALF-HARDY SPECIES CULTIVATED:** *A. palæstinum* (Syn. *A. sanctum*), yellow and purple, May, 2 ft., Syria. For other species formerly known as Arums see *Arisæma*, *Helicodicerus*, *Dracunculus*, and *Richardia*.

**Arum Lily** (*Richardia africana*).—See *Richardia*.

**Arundinaria** (Bamboo).—Ord. *Gramineæ*. Hardy Japanese shrubby plants with slender stems furnished with graceful grassy foliage.

**CULTURE:** Soil, loam, leaf-mould & sand. Position, sheltered, in isolated groups or masses on lawns or shrubberies; not hardy N. of England. Plant, April. Propagate by division of roots in April.

**SPECIES CULTIVATED:** *A. anceps*, 6 to 8 ft., Japan; *aristata*, 6 to 10 ft., Himalayas; *auricompa* (Syn. *A. Fortunei aurea*), 3 to 4 ft., Japan; *chrysantha* (Syn. *Bambusa chrysantha*), 3 to 4 ft., Japan; *falcata* (Syn. *Bambusa falcata*), 7 to 10 ft., Himalayas; *Falconeri*, 7 to 8 ft., Himalayas; *Fortunei*, 2 to 4 ft., Japan; *Fortunei variegata*, leaves striped with white; 12 to 18 in.; *Fortunei aurea*, leaves striped yellow; *Hindsii* (Syn. *Bambusa erecta*), 6 to 12 ft., Japan; *japonica* (Syn. *Bambusa Metake*), 10 to 15 ft., Japan; *Laydeckeri* (Syn. *Bambusa Laydeckeri*), 3 ft., Japan; *nitida*, 6 to 12 ft., China; *nobilis*, 12 to 24 ft., China; *palmata* (Syn. *Bambusa palmata*), 6 to 10 ft., Japan; *pumila* (Syn. *Bambusa pumila*), 12 to 18 in., Japan; *pygmæa* (Syn. *Bambusa pygmæa*), 3 to 4 in., Japan; *Simoni* (Syn. *Bambusa Simoni*), 20 to 25 ft., China; *Veitchii*, 2 to 3 ft., Japan.

**Arundo** (Reed-grass).—Ord. *Gramineæ*. Hardy perennial grasses. Flowering & orn. foliage.

**CULTURE:** Soil, well-drained sandy loam. Position, moist & sheltered in isolated groups on lawns; margins of water for *A. Phragmites*. Plant, April. Protect crowns with covering of tree leaves in winter. Propagate by division of roots in spring.

**SPECIES CULTIVATED:** *A. Donax*, reddish white, Aug., 12 ft., S. Europe; *Donax versicolor* or *variegata*, leaves striped with white, 3 ft.; *Phragmites communis* (Syn. *Phragmites communis*), purplish, Aug., 6 to 10 ft., Britain. The species formerly known as *A. conspicua* is now placed in the genus *Cortadeira*, which see.

**Asclepias** (Swallow-wort).—Ord. Asclepiadiaceæ. Hardy herbaceous perennials. First introduced 1690.

**CULTURE:** Soil, rich, light peat. Position, sunny & moist borders. Plant, Oct. or April. Propagate by division of roots in Oct. or April; also by seeds sown in cold frames in spring. All require protection in severe weather.

**SPECIES CULTIVATED:** *A. acuminata*, red and white, July, 2 ft., New Jersey; *amœna*, purple, July, 2 to 3 ft., New England; *incarnata*, red, 2 ft., N. America; *phytolaccoides*, purple and white, July, 3 to 4 ft., Virginia; *obtusata* (Syn. *A. purpurascens*), purple, July, 2 to 3 ft., Virginia; *quadrifolia*, lilac-white, July, fragrant, 1 ft., America; *speciosa* (Syn. *A. Douglasii*), purple-lilac, fragrant, July, 2 to 3 ft., N.W. America; *rubra*, purple-red, July, 1 to 2 ft., Virginia; *syriaca*, purple, fragrant, July, 3 to 5 ft., N. America; *tuberosa*, orange, July to Sept., 1 to 2 ft., N. America; *variegata*, white and purple, July, 3 to 4 ft., Carolina; *verticillata*, yellow and white, July, 1 to 2 ft., New Jersey.

**Ash** (*Fraxinus excelsior*).—See *Fraxinus*.

**Ash-leaf Fern**.—See *Marattia* & *Anemia*.

**Asparagus**.—Ord. Liliaceæ. Greenhouse & hardy climbers, including the popular edible *Asparagus*. Foliage of the greenhouse species, fern-like, green, and extensively used as a substitute for fern fronds in floral decorations.

**CULTURE OF GREENHOUSE SPECIES:** Compost, two parts loam, one part of equal proportions of leaf-mould, peat & silver sand. Position, pots, tubs, or beds, for climbers, shoots trained up roof or back walls of greenhouse; dwarf kinds in pots suspended from roof. Pot or plant in March. Water and syringe freely during the summer, moderately at other seasons. Apply weak liquid manure occasionally to established plants. Increased by seeds sown in above compost in temp. 70° in spring; cuttings of shoots in propagating frame in March; division of roots in March. Temp., Sept to March 50° to 55°; March to Sept. 55° to 60°.

**CULTURE OF HARDY SPECIES:** Soil, sandy loam. Position, sunny walls or arbours. Plant Oct. or March. Propagate by seeds sown in cold frame in spring; division of roots in Oct. or March.

**CULTURE OF EDIBLE ASPARAGUS:** Soil, deep rich sandy loam. Position, open & sunny preferably; will succeed, however, in partial shade. Size of beds, 3 ft. wide, 12 in. high; alleys 2 ft. wide. Preparation of soil: In Oct. or Nov., trench two spits deep & break up third spit with fork. Put a thick layer of manure over third spit & work in a liberal quantity of old mortar, decayed vegetable matter, & rotten manure among upper spots. In March, double dig the soil again and add layer of decayed manure between first and second spits. In case of heavy wet soils put a thick layer of brick rubble under second spit in Oct. Plant in April. Mark out two rows on each bed, each row being 9 in. from alley. Open a trench 12 in. deep on each side of row thus A, and spread out roots on each side; plants to be 15 in. apart. Fill up trenches with soil & make level. "Crowns" or points of each plant to be 5 in. below surface. Mulch with decayed manure. Three-year-old plants best for planting. Cutting: No shoots to be removed first year, moderate quantity second year, freely afterwards. Shoots should not be less than 6 in. long when cut. Cease cutting end of June. General treatment: Apply manures as advised below.

Keep beds free of weeds. Cut down stems early in Nov. Top-dress with decayed manure in Nov., previously lightly forking up surface, & cover with sprinkling of soil. In March, lightly fork over surface, rake off rough particles into alley, & leave smooth & neat. Solid manures: Decayed horse manure for heavy soils; cow or pig manures for light soils; seaweed mixed with above manures & applied as a top-dressing in Nov.; common salt, 1 oz. to a square yard, applied once a month, May to Sept.; Peruvian guano 1 oz. to a square yard, applied once a month, April to Sept.; 3 lb. common salt, 1½ lb. superphosphate, 1½ lb. nitrate of soda, 1 lb. kainit, mixed together, and applied at rate of 2 oz. per square yard in April and 2 oz. in July. Liquid manures: 2 oz. potash, 2 oz. superphosphate, & 1 oz. sulphate of ammonia to each gallon of water, applied in June; common salt, 2 oz. to each gallon of water, applied in May and July; nitrate of soda, ½ oz. to each gallon of water applied in May, July, & Aug.; drainings from manure heap applied frequently in April to Sept.

**FORCING IN BOXES:** Place strong shoots not less than three years old in deep boxes containing a few inches of mould. Cover crowns with four inches of mould. Place boxes in temp. of 65° to 75° any time between Nov. & March. Cover closely & keep moist. When shoots show, moisten with tepid water containing 2 oz. of salt to each gallon.

**FORCING IN FRAMES:** Prepare hotbed of manure in usual way. Cover with 3 in. of light soil. Place roots on this and cover to depth of 5 in. Keep soil moist & frame closed until shoots appear, when admit a little air. Temp., 60° to 75°. Roots of no use after forcing.

**PROPAGATION OF EDIBLE ASPARAGUS.**— Propagate by seeds sown in groups of three or four in holes 1 in. deep & 15 in. apart in rows formed as advised for planting; or in drills 1 in. deep & 12 in. apart in ordinary soil—both in March or April. Thin seedlings raised by the first method to one in each group in May; those by the second method to a foot apart when 3 in. high. Transplant latter into permanent beds when two or three years old. Seedlings ready to cut fourth year after sowing. Seeds take 20 days to germinate. A quarter-pint of seed will sow a row 50 ft. long. Five pounds of seed required to sow an acre, or yield 14,000 plants.

**MARKET CULTURE OF EDIBLE ASPARAGUS:** Soil, rich loam or sandy loam, deeply ploughed or trenched. Manures: 40 tons of farm-yard manure and 3 cwt. of kainit per acre applied in autumn. Apply annually in April 2 cwt. of nitrate of soda or 1 cwt. Peruvian guano per acre to established beds; or 40 bushels of soot per acre applied in March. Nitrate of soda preferable to salt. Sow seeds in drills 2 in. deep and 12 in. apart in March. Following March or April dig out trenches 10 in. deep and 4 ft. apart, plant seedling crowns 2 ft. apart in these, and cover with 2 in. of soil. Leave remainder of trench unfilled. Horse-hoe land between frequently; the trenches will gradually fill up. Mow off foliage in autumn. In autumn of second year apply 20 tons of manure per acre. Third year commence to gather the shoots. Break, not cut, them off just beneath surface. Gather when 6 to 7 in. long. Grade into sizes, & market in bundles 4 in. in diameter and 7 in. long. Average yield per acre, 3 to 10 cwt., or 200 to 600 bundles of 100 shoots. Quantity of seed to sow an acre, 5 lb.; plants or crowns, 14,000. Prices for forced, 2s. 6d. to 10s.; outdoor, 1s. to 2s. 6d. per bundle.

**GREENHOUSE SPECIES:** *A. æthiopicus*, 10 ft., S. Africa; *medeolioides* (*Syn. Myrsiphyllum* or *Medeola asparagoides*), commonly called "Smilax," 6 to 10 ft., S. Africa; *plumosus*, 4 to 10 ft., S. Africa, and its varieties, *nanus* and *tenuissimus*; *scandens*, S. Africa; *Sprengeri*, 1 to 3 ft., Natal; *verticillatus*, 10 ft., S. Africa.

**HARDY SPECIES:** *A. Broussonetii*, 10 ft., red berried, Canary Islands; *officinalis* (*Edible Asparagus*), Europe.

**Aspen** (*Populus tremula*).—See *Populus*.

**Asperula** (*Woodruff*; *Squinancy-wort*).—Ord. Rubiaceæ. Hardy herbaceous perennials & annuals. Foliage fragrant when dry.

**CULTURE:** Soil, light, rich. Position under the shade of trees or rockeries or in open borders. Plant, Oct., Nov. Propagate perennial species by division of roots in March; perennials & annuals by seeds sown  $\frac{1}{2}$  in. deep in open border in April.

**PERENNIAL SPECIES CULTIVATED:** *A. arcadiensis*, pink, April, 3 in., Greece; *cyananctica* (*Squinancy-wort*), white, June, 9 in., Europe (Britain); *odorata* (*Sweet Woodruff*), May, 6 in., Europe (Britain).

**ANNUAL SPECIES CULTIVATED:** *A. azurea*, blue, summer, fragrant, 6 to 10 in., Syria.

**Asphodel** (*Asphodelus luteus*).—See *Asphodelus*.

**Asphodeline** (*Yellow Asphodel*).—Ord. Liliaceæ. Hardy herbaceous perennials. First introduced 1596.

**CULTURE:** Soil, ordinary, rich. Position, open or shady borders.

Plant, Oct. or March. Propagate by division of roots, Oct. or March.

**SPECIES CULTIVATED:** *A. imperialis*, pink, July and Aug., 6 to 8 in., Cilicia; *lutea*, yellow, July and Aug., 3 to 4 ft., Mediterranean Region; *lutea flore-pleno*, flowers double; *taurica* (*Syn Asphodelus taurica*), white July, 1 to 2 ft., Orient.

**Asphodelus** (*Asphodel*; *King's Spear*; *Silver Rod*).—Ord. Liliaceæ. Hardy herbaceous perennials. First introduced 1596.

**CULTURE:** Soil, ordinary. Position, shady or open borders. Plant in autumn or spring. Propagate by division of roots Oct. or April; seeds sown in a cold frame in March.

**SPECIES CULTIVATED:** *A. acanthis*, pink, May, 12 to 18 in., N. Africa; *albus*, white, May, 2 ft., Europe; *ramosus*, white, May, 4 to 5 ft., S. Europe.

**Aspidistra** (*Parlour Palm*).—Ord. Liliaceæ. Greenhouse or dwelling-room plants. Evergreen. Orn. foliage. First introduced 1822. Leaves, large, green, or variegated with white.

**CULTURE:** Compost, two parts loam, one part leaf-mould & sand. Repot in March. Water freely in summer, moderately in winter. Room plants best watered by immersing pot for quarter of an hour in tepid water. Temp. March to Sept. 55° to 60°; Sept. to March 50° to 55°. Propagate by division of roots in March.

**SPECIES CULTIVATED:** *A. elatior*, 1 to 2 ft., Japan, leaves green; *elatior variegata*, leaves variegated; *lurida*, leaves green, 1 to 2 ft., China; *lurida variegata*, leaves striped yellow. Last two those generally grown.

**Aspidium** (*Buckler*, *Shield* or *Wood Fern*).—Ord. Filices. Stove, greenhouse, & hardy ferns. Ht., 1 to 3 ft.

**CULTURE OF STOVE AND GREENHOUSE SPECIES:** Compost, two parts peat, one part loam, silver sand, & charcoal. Pot, March. Water freely in summer, moderately in winter. Shade from sun. Temp. for stove species, Sept. to March 60° to 70°; March to Sept. 70° to 80°; greenhouse, Sept. to March 50° to 55°, March to Sept. 55° to 65°. Propagate by spores sown in sandy peat at any time; division in March.

**CULTURE OF HARDY SPECIES:** Compost, equal parts loam, peat, leaf-mould & coarse silver sand. Position, shady or partially shady spots. Plant in April. Water freely in dry weather. Propagate by division of crowns in April, also by spores sown in cold frame.

**STOVE SPECIES CULTIVATED:** *A. amabile*, India and Japan; *anomalum*, Ceylon; *auriculatum*, India; *muconatum*, Jamaica; *trifoliatum*, West Indies; *viviparum*, West Indies.

**GREENHOUSE SPECIES CULTIVATED:** *A. capense*, Cape of Good Hope, Tropical America, etc.; *falcatum* (Syn. *Cyrtomium falcatum*), Japan, China, etc.; *falcatum* *caryotideum*, Japan; *falcatum* *Fortunei*, Japan; *falcinellum*, Madeira; *frondosum*, Madeira; *laserpitii folium* (Syn. *Lastrea Standishii*), Japan; *lipidicaulon*, Japan; *pungens*, Cape Colony; *triangularum ilicifolium*, N. India; *vestitum*, New Zealand, Chili, etc.

**HARDY SPECIES CULTIVATED:** *A. acrostichoides* (Syn. *Polystichum acrostichoides*), N. America, and its varieties *grandiceps* and *incisum*; *aculeatum* (Syn. *Polystichum aculeatum*), the Prickly Shield Fern, Britain, etc., and its varieties, *proliferum* *angulare* (Soft Shield Fern), *lobatum*, *setosum*, etc.; *Lonchitis* (Syn. *Polystichum Lonchitis*), the Holly Fern, Britain, etc.; *munitum* (Syn. *Polystichum munitum*), N. America. See hardy fern specialists' lists for names of varieties.

**Asplenium** (Spleenwort; Lady Fern; Bird's-nest Fern; Wall-rue Fern; Scale Fern, etc.)—Ord. Filices. Stove greenhouse & hardy ferns. Ht. 6 in. to 4 ft.

**CULTURE OF STOVE AND GREENHOUSE SPECIES:** Compost, equal parts peat, loam, leaf-mould & sand. Pot, March. Water freely in summer, moderately in winter. Temp., Stove species, Sept. to March 60° to 70°, March to Sept. 70° to 80°; greenhouse, Sept. to March 50° to 55°; March to Sept. 55° to 65°. Propagate by spores sown in sandy peat at any time.

**CULTURE OF HARDY SPECIES.**—Compost, equal parts peat, loam, leaf-mould, sand & old mortar rubbish. Position, old walls for Scale, Wall-rue & Maidenhair Spleenworts; moist, shady borders for Lady Fern; rockeries for other kinds. Plant in April. Increased by spores when ripe & division in April.

**STOVE SPECIES CULTIVATED:** *A. attenuatum*, N.S. Wales, etc.; *Baptistii*, S. Sea Islands; *Belangeri*, Java, Borneo, etc.; *caudatum*, India, Brazil, etc.; *formosum*, Trop. America; *longissimum*, Java, etc.; *lunulatum*, Tropics; *Nidus* (Bird's-nest Fern), Tropics; and its varieties, *australasicum* and *mussefolium*; *obtusilobum*, New Hebrides; *rutæfolium prolongatum*, S. India; *viviparum*, Mauritius.

**GREENHOUSE SPECIES CULTIVATED:** *A. bulbiferum*, New Zealand and Australia, and its varieties *Fabianum* and *laxum*; *Colensoi*, New Zealand; *dimorphum*, Norfolk Island; *ebenum*, Cape Colony; *flaccidum*, Australia, etc.; *Goringianum pictum* (Syn. *Athyrium Goringianum tricolor*), Japan, hardy in warm districts; *Hemionitis* (Syn. *A. palmatum*), Madeira; *incisum*, Japan; *obtusatum lucidum* (Syn. *A. lucidum*), New Zealand; *monanthemum*, Temperate Zone, *præmorsum*, West Indies, etc.; *Sandersonii*, Natal.

**HARDY SPECIES CULTIVATED:** *A. Adiantum nigrum* (Black Maiden-hair Spleenwort or "French Fern" of the markets), Northern and Southern Temperate Zones, including Britain; *Ceterach* (Syn. *Ceterach officinarium*), the Scale Fern, a British and European species; *Filix-femina* (Syn. *Athyrium Filix-femina*), the Lady Fern, Britain, and its numerous varieties as *Frizellia*, *cristatum*, *plumosum*, *Victoriae*, etc.; *fontanum* (Rock Spleenwort), Britain, Europe; *marinum* (Sea Spleenwort), Europe, Britain; *germanicum* (German Spleenwort), Europe, Britain; *lanceolatum*, Europe, Britain; *Ruta-muraria* (Wall-rue Fern), Britain; *septrionale* (Forked Spleenwort), Britain; *Trichomanes* (Maidenhair Spleenwort), Europe, Britain; *thelypteroides* (Syn. *Athyrium thelypteroides*, N. America; *viride* (Green Spleenwort), Europe, Britain. Many varietal forms of the foregoing species will be found in lists in works on British ferns.

**Aster** (Starwort; Michaelmas Daisy; Perennial Aster).—Ord. Compositæ. Hardy herbaceous perennials, flowering freely in autumn and yielding an abundance of flowers for cutting.

**CULTURE:** Soil, good ordinary. Position, sunny borders or wild gardens for tall species; rockeries for dwarf ones. Plant in Oct. or spring. Lift, divide, & replant every third year. Propagate by seeds sown in heat or in a cold frame in spring; cuttings of young shoots in heat or cold frame in spring or summer; division of roots in autumn or spring. See *Callistephus* for China Aster.



**SPECIES CULTIVATED:** *A. acris*, lilac-purple, Aug., 3 ft., S. Europe; alpinus, purple, July, 6 in., Europe; *Amellus* (Italian Starwort), purple, Aug., 2 ft., Europe, and its variety *bessarabicus*; *Bellididistrum*, white, July, 1 ft., Europe; *cordifolius*, mauve, July, 2 ft., N. America; *diffusus*, white, Oct., 2 ft., N. America, and its variety *horizontalis*; *dumosus*, mauve, Oct., 18 in., N. America; *ericoides*, white, Oct., 2 to 3 ft., N. America; *grandiflorus*, violet, Nov. 2 to 3 ft., Virginia; *levis*, blue, Sept., 2 ft., N. America; *Linosyris* (Syn. *Chrysocoma Linosyris*), the Goldlocks, yellow, Aug., 1 ft., Europe; *Novæ-Angliæ*, purple, Sept., 5 to 6 ft., N. America, and its numerous varieties; *Novi-Belgii*, blue, Sept., 4 ft., North America, and its numerous forms; *ptarmicoides*, white, Aug., 18 in., N. America; *punicus*, blue, Sept., 6 ft., N. America; *Shortii*, blush, 3 ft., Sept., United States; *Tradescantea*, white, Oct., 4 ft. (True Michaelmas Daisy), N. America; *turbiniellus*, mauve, Aug., 3 ft., N. America; *versicolor*, pink and white, Sept., 3 ft., N. America; *vimineus*, white, Sept., 3 ft., N. America. Scores of varieties of many of the foregoing species will be found in trade lists.

**Astilbe** (False Goat's-beard).—Ord. Saxifragaceæ. Hardy herbaceous and shrubby perennials. Used also for forcing for flowering early in greenhouses.

**CULTURE OUTDOORS:** Soil, loamy. Position, moist, shady borders, or margins of lakes or ponds. Plant in Oct. or spring. Require plenty of water in dry weather.

**INDOOR CULTURE:** Compost, two parts loam, one part of well-rotted manure or leaf-mould, & one of silver sand. Pot roots in Sept. or Oct. Place pots in cold frame & cover with cocoanut-fibre refuse till Dec., when introduce to a temp. of 45° for a week or so, then transfer to temp. of 55° to 60°. Water freely when growth begins. Apply weak liquid manure when flower spikes show. After flowering harden off in cold frame till May, then plant out in garden. Lift, divide, & replant following April, & lift & repot in autumn. Retarded roots will flower in six weeks from potting in cold house. Increased by division.

**SPECIES CULTIVATED:** *A. astilboides* (Syn. *Spiræa astilboides*), white, May, 3 ft., Japan; and its variety *floribunda*; *chinensis*, white, July, 2 ft., China and Japan; *japonica* (Syn. *Spiræa japonica*), white, May, 2 ft., Japan, and its varieties, *reticulata* (variegated leaves) and *foliis-purpureis* (purple leaves and stems); *rivularis*, white, July, Himalayas; *Thunbergii*, white, May, 1 to 2 ft., Japan a shrubby species. *A. astilboides* and *A. japonica* and varieties are the kinds used for forcing.

**Astragalus** (Milk Vetch).—Ord. Leguminosæ. Hardy perennial or shrubby herbs. Evergreen & deciduous. Siberia, Persia, N. America, Levant. Introduced 1570.

**CULTURE:** Soil, ordinary. Position, open border for tall, & rockery for dwarf species. Plant, Oct., Nov., March. Propagate by seeds sown ¼ in. deep in light soil in cold frame in March; shrubby kinds by cuttings in a cold frame in summer; division of roots in autumn or spring.

**SPECIES CULTIVATED:** *A. adsurgens*, purple, June, 1 ft., Siberia; *alopeuroides*, yellow, June, 3 to 5 ft., Siberia; *danicus* (Syn. *A. hypoglottis*), blue, June, 3 to 4 ft., Europe; *danicus albus*, white; *maximus*, yellow, June, 2 to 3 ft., Armenia; *monspeulanus*, rosy lilac and white, June, trailing, S. Europe; *onobrychioides*, purple, July, 9 to 12 in., Persia; *Tragacantha*, violet, June, 2 to 3 ft., an evergreen shrubby species, Levant; *vimineus*, purple, rose, and white, June, 6 to 12 in., Siberia; *vulpinus*, pale yellow, June, 2 to 3 ft., Caucasus.

**Astrantia** (Master Wort).—Ord. Umbelliferæ. Hardy herbaceous perennials. First introduced 1596.

**CULTURE:** Soil, ordinary. Position, shady borders or margins of woodland walks. Plant, Oct. or March. Propagate by seeds sown in sandy loam in cold frame in April; division of roots in Oct. or March.

**SPECIES CULTIVATED:** *A. Biebersteinii*, white, May, 2 ft., Caucasus; *carniolica*, white, May, 1 ft., E. Europe; *holleborifolia*, pink, July, 2 ft., Caucasus; *major*, 2 ft., Europe.

**Athyrium**.—See *Aspidium*.

**Atriplex** (*Orache*).—Ord. *Chenopodiaceæ*. Hardy annuals. *A. hortensis* (*Orache*, or *Mountain Spinach*) occasionally grown as a substitute for *Spinach*. *A. hortensis rubra* (*Red Orache*) used for border decoration.

**CULTURE OF ORACHE**: Soil, ordinary. Sow seeds at intervals of a few weeks from March onwards in drills an inch deep & 2 ft. apart. When seedlings are 3 in. high, thin them to 18 in. apart. Gather youngest and most succulent leaves for cooking as required.

**CULTURE OF RED ORACHE**: Soil, ordinary. Position, sunny borders in wild garden. Sow seeds broadcast where required to grow in March or April. Usually reproduces itself freely from seeds.

**SPECIES CULTIVATED**: *A. hortensis*, green, summer, 3 to 5 ft., Tartary; *hortensis rubra*, foliage red.

**Aubergine** (*Solanum melongana*).—See *Solanum*.

**Aubrietia** (*Purple Rock-cress*).—Ord. *Cruciferae*. Hardy trailing perennial. Evergreen. First introduced 1710.

**CULTURE**: Soil, ordinary. Position, sunny rockery or border. Plant, Oct. or spring. Propagate by slips dibbled in shady border in June, transplanting them in Nov.; seeds sown in shady border in April. This plant may be grown on old walls if seeds are sown in mossy chinks in March; useful for edgings to borders & for spring bedding. Straggly plants best trimmed in closely after flowering.

**SPECIES CULTIVATED**: *A. deltoidea*, purple, spring, 2 to 3 ins., S. Europe. The following are varieties of the foregoing species: *Bougainvillea*, violet-purple; *Campbellii*, violet; *græca*, purple; *Eyrei*, violet-purple; *grandiflora*, purple; *Leitchlinii*, red; *Leitchlinii rosea*, rose; *purpurea*, purple; and *violacea*, violet-purple.

**Aucuba** (*Spotted Laurel*; *Variegated Laurel*).—Ord. *Cornaceæ*. Hardy evergreen shrub. Orn. foliage. First introduced 1783.

**CULTURE**: Soil, ordinary. Position, open or in shade; grand town shrub. Plant, Oct., Nov., April. Propagate by seeds sown  $\frac{1}{4}$  in. deep in cold frame in Oct.; cuttings inserted in sandy soil in sheltered border or cold frame in Sept., Oct., Nov. Female *aucubus* bear red berries freely in winter if a male plant be planted close to them, or if a branch of male blossom be placed on female plant when in bloom. *Aucubas* useful for pot culture in cool greenhouses or windows in winter.

**SPECIES CULTIVATED**: *A. japonica*, 6 to 10 ft., Japan; and its varieties, *albo-variegata*, *aurea*, *fructo-alba*, *limbata*, *maculata*, *vera nana*, *viridis*, etc.

**Auricula** (*Primula auricula*).—See *Primula*.

**Australian Bee-flower** (*Kennedya coccinea*).—See *Kennedya*.

**Australian Blue-bell Creeper** (*Sollya heterophylla*).—See *Sollya*.

**Australian Currant** (*Leucopogon Reichi*).—See *Leucopogon*.

**Australian Everlasting**.—See *Helipterum*.

**Australian Feather-palm** (*Ptychosperma elegans*).—See *Ptychosperma*.

**Australian Flea-bane** (*Erigeron mucronatus*).—See *Erigeron*.

**Australian Fuchsia**.—See *Correa*.

**Australian Giant Lily** (*Doryanthes excelsa*).—See *Doryanthes*.

**Australian Heath**.—See *Epacris*.

**Australian Honeysuckle**.—See *Banksia*.

**Australian Hop** (*Daviesia alta*).—See *Daviesia*.

**Australian Ivy** (*Muhlenbeckia adpressa*).—See *Muhlenbeckia*.

**Australian Lilac.**—See *Hardenbergia*.

**Australian Native Rose** (*Boronia serrulata*).—See *Boronia*.

**Australian Pitcher-plant** (*Cephalotus follicularia*).—See *Cephalotus*.

**Australian Tree Fern** (*Dicksonia antarctica*).—See *Dicksonia*.

**Austrian Briar** (*Rosa lutea*).—See *Rosa*.

**Austrian Leopard's Bane** (*Doronicum austriacum*).—See *Doronicum*.

**Austrian Pine** (*Pinus Laricio nigra*).—See *Pinus*.

**Autumn Catch-fly** (*Silene Schaftæ*).—See *Silene*.

**Autumn Crocus** (*Colchicum autumnale*).—See *Colchicum*.

**Autumn-flowering Squill** (*Scilla autumnalis*).—See *Scilla*.

**Autumn Sneezewort** (*Helenium autumnalis*).—See *Helenium*.

**Avena** (Animated Oat).—Ord. Gramineæ. Hardy orn. flowering grass. Awns susceptible to change of weather and more or less animated.

**CULTURE:** Sow seeds outdoors in April in ordinary soil in borders. Gather when fully developed and dry for winter decoration.

**SPECIES CULTIVATED:** *A. sterilis*, 2 ft., Barbary.

**Avens.**—See the genus *Geum*.

**Avocado Pear** (*Persea gratissima*).—See *Persea*.

**Ayrshire Rose** (*Rosa arvensis*).—See *Rosa*.

**Azalea.**—See *Rhododendron* & *Loiseluria*.

**Azara.**—Ord. Bixineæ. Hardy evergreen shrub. Orn. foliage. First introduced 1873. Flowers unattractive but very fragrant. Foliage, dark green, finely divided, drooping, graceful.

**CULTURE:** Soil, ordinary. Position, against south wall; or in warm shrubberies in mild districts. Plant, Oct. or April. Propagate by cuttings inserted in sandy soil in temp. 65° in March.

**SPECIES CULTIVATED:** *A. dentata*, yellow, June, 10 to 12 ft., Chili; *Gilliesii*, yellow, May, 12 to 15 ft., Chili; *microphylla*, greenish-white, May, 10 to 12 ft., berries orange-red, Chili.

**Azolla.**—Ord. Rhizocarpeæ. Hardy floating aquatic perennials with delicate fern-like foliage.

**CULTURE:** Grow in shallow ponds or in indoor aquaria. Requires no soil, merely to float on surface of water. Increased by division.

**SPECIES CULTIVATED:** *A. caroliniana*, Carolina.

**Azorean Forget-me-not** (*Myosotis azorica*).—See *Myosotis*.

**Azorean Thyme** (*Thymus azoricus*).—See *Thymus*.

**Babiana** (Baboon-root).—Ord. Iridaceæ. Half-hardy bulbous plants. Nat. Cape of Good Hope. First introduced 1752. Flowers fragrant.

**OUTDOOR CULTURE:** Soil, light sandy. Position, sunny, well-drained border. Plant, Sept. to Jan., placing bulbs 4 in. deep and 2 in. apart. Lift and replant bulbs annually.

**INDOOR CULTURE:** Compost, two parts sandy soil & one part leaf-mould or decayed cow manure. Pots, 4½ in. in diameter, well drained. Place five bulbs 3 in. deep in each pot in Nov., & cover pots with cocoanut-fibre refuse until growth begins. Water moderately from time bulbs begin to grow until flowers fade, then gradually withhold it, keeping bulbs dry from Sept. to Jan. Temp., Sept. to Feb. 40° to 50°; other times 50° to 60°. Propagate by offsets, treated as advised for bulbs.

**SPECIES CULTIVATED:** *B. disticha*, blue, June, 6 in.; *plicata*, blue, June, 6 in.; *ringens*, scarlet, June, 6 to 8 in.; *stricta*, white and blue, May, 6 to 8 in. There are also a number of pretty varieties mentioned in trade lists.

**Babylonian Centaury** (*Centaurea babilonica*).—See *Centaurea*.

**Bachelor's Button**.—See *Silene* & *Ranunculus*.

**Bactris** (Marajah Palm; Tobago Cane).—Ord. *Palmaceæ*. Stove palms. Orn. foliage. First introduced 1825. Ht. 20 to 50 ft.

**CULTURE:** Compost, equal parts loam, leaf-mould & sand. Pot, Feb., March. Water moderately Sept. to March, freely afterwards. Position, shady & moist in summer. Temp., Sept. to March 60° to 70°; March to Sept. 70° to 80°. Propagate by removing young plants from base of old one in March, & placing these in small pots; also by seeds.

**SPECIES CULTIVATED:** *B. caryotæfolia*, Brazil; *Maraja*, Brazil; *pallidispina*, Guiana.

**Bæria**.—Ord. *Compositæ*. Hardy annual. First introduced 1835.

**CULTURE:** Soil, ordinary. Position, sunny border. Propagate by seeds sown  $\frac{1}{2}$  in. deep in April where plants are to flower.

**SPECIES CULTIVATED:** *B. chrysostoma*, yellow, May, 8 to 12 in., California.

**Bahia** (Woolly Bahia).—Ord. *Compositæ*. Hardy perennial herb. Leaves grey.

**CULTURE:** Soil, ordinary. Position, sunny border. Plant, Oct. to April. Propagate by seeds sown  $\frac{1}{2}$  in. deep outdoors in April or division of old plants in March.

**SPECIES CULTIVATED:** *B. lanata*, yellow, May to Aug., 12 to 18 in., N. America.

**Bald Cypress** (*Taxodium distichum*).—See *Taxodium*.

**Baldmoney** (*Meum athamanticum*).—See *Meum*.

**Baleaic Box Tree** (*Buxus balearica*).—See *Buxus*.

**Balm** (*Melissa officinalis*).—See *Melissa*.

**Balm of Gilead** (*Cedronella triphylla*).—See *Cedronella*.

**Balsam**.—See *Impatiens*.

**Balsam Apple** (*Momordica balsaminea*).—See *Momordica*.

**Balsam Fir** (*Abies balsamea*).—See *Abies*.

**Balsam Poplar** (*Populus balsamifera*).—See *Populus*.

**Balsam-scented Geranium** (*Pelargonium radula*).—See *Pelargonium*.

**Bamboo**.—See *Bambusa*, *Arundinaria* & *Phyllostachys*.

**Bambusa** (Bamboo).—Ord. *Gramineæ*. Hardy evergreen plants with slender, graceful stems and elegant grassy foliage. First introduced 1730. Grown in groups in the garden, also in pots or tubs for greenhouse decoration.

**OUTDOOR CULTURE:** Soil, deep, rich loam. Position, warm, sheltered nook or dell in garden. Plant May or June. Protect in winter with covering of leaves at base. Mulch with cow manure in spring. Water freely in dry weather.

**INDOOR CULTURE:** Compost, equal parts loam, leaf-mould & sand. Position, large pots or tubs in cool greenhouse (winter temp. 40° to 45°). Water freely spring & summer, moderately other times. Increased by seeds sown in sandy soil in heat in spring; cuttings of rhizomes in heat in spring; division in April or May.

**SPECIES CULTIVATED:** *B. arundinacea*, 10 to 50 ft.; *aurea*, 6 to 10 ft.; *disticha* or *nana*, 6 to 8 ft.; *marmorata*, 3 to 4 ft.; *tessellata*, 3 to 4 ft. See also *Arundinaria* and *Phyllostachys* for other species of Bamboos.

**Banana** (*Musa sapientum*).—See *Musa*.

**Baneberry** (*Actæa spicata*).—See *Actæa*.

**Banksia** (Australian Honeysuckle). — Ord. Protacææ. Green-house shrubs. Orn. foliage. Evergreen. Nat. Australia. First introduced 1788. Leaves, large, dark green, downy beneath.

**CULTURE:** Compost, equal parts peat, loam, & sand. Pot in March in well-drained pots. Water moderately in winter, freely in summer. Temp., Sept. to March 60° to 55°; March to Sept. 55° to 65°. Propagate by cuttings of firm shoots in well-drained pots of sandy soil in July under bell-glass in temp. 55° to 65°.

**SPECIES CULTIVATED:** *B. collina*, 6 ft.; *dryandroides*, 6 ft.; *grandis*, 30 to 40 ft.; *speciosa*, 6 ft.

**Banksian Rose** (*Rosa Banksia*).—See *Rosa*.

**Ban-Nut** (*Juglans regia*).—See *Juglans*.

**Banyan Tree** (*Ficus indica*).—See *Ficus*.

**Baptisia** (False-indigo).—Ord. Leguminosæ. Hardy herbaceous perennials. First introduced 1724.

**CULTURE:** Soil, ordinary. Position, sunny, well-drained border. Plant, Oct. to April. Propagate by seeds sown  $\frac{1}{2}$  in. deep in sandy soil in shallow boxes in cold frame in April, or in sunny border outdoors in May; division of old plants in March.

**SPECIES CULTIVATED:** *B. alba*, white, June, 2 ft., N. America; *australis*, blue, June, 3 to 4 ft., N. America; *australis minor*, blue, 18 in.; *tinctoria*, yellow, July, 2 ft., N. America.

**Barbados Gooseberry** (*Pereskia aculeata*).—See *Pereskia*.

**Barbados Lily** (*Hippeastrum equestre*).—See *Hippeastrum*.

**Barbados Pride**.—See *Adenantha*.

**Barbarea** (Winter or American Cress; Double Yellow Rocket).—Ord. Cruciferæ. Hardy perennial herbs and salad vegetables.

**CULTURE OF FLOWERING SPECIES.**—Soil, ordinary. Position, open garden; edgings to beds or sunny rockeries for variegated kind. Propagate Double Rocket by division of roots in March; Golden-leaved variety by seed sown outdoors in March.

**CULTURE OF WINTER CRESS:** Soil, ordinary. Position, moist, partially shaded border. Sow seeds in shallow drills 9 in. apart in Sept. for winter use; in March & June for summer use. Gather tops or young leaves for salading.

**SPECIES CULTIVATED:** *B. præcox* (Winter or Land Cress), Britain; *B. vulgaris flore-pleno* (Double Yellow Rocket), yellow, summer, 1 to 2 ft.

**Barberry**.—See *Berberis*.

**Barberton Daisy** (*Gerbera Jamesoni*).—See *Gerbera*.

**Barkeria**.—See *Epidendrum*.

**Barleria**.—Ord. Acanthaceæ. Stove flowering shrubs. Evergreen. First introduced 1759.

**CULTURE:** Compost, two parts peat & loam, one part decayed manure & sand. Plant in March in well-drained pots. Temp., Sept. to March 55 to 65°; March to Sept. 70° to 85°. Water moderately in winter, freely in summer. Prune shoots back after flowering. Syringe daily during spring & summer. Propagate by cuttings of young shoots inserted in sandy peat under bell-glass in temp. 85°, March to July.

**SPECIES CULTIVATED:** *B. cristata*, purple, white, July, 2 ft., India; *flava*, yellow, winter, 18 in., Trop. Africa; *involucrata*, blue, winter, 1 to 2 ft., Ceylon; *lupulina*, yellow, Aug. 2 ft., Mauritius.

**Barnardia**.—Ord. Liliacææ. Hardy bulbous perennial. First introduced 1826.

**CULTURE:** Soil, equal parts peat & loam. Position, warm, sunny rockery or border. Plant, Sept. or Oct. Depth to plant, 3 to 4 in. Leave bulbs undisturbed in ground. Mulch in well-decayed manure

in summer. Water occasionally in very dry weather. Propagate by offsets removed in the autumn, & replant at same time.

SPECIES CULTIVATED: *B. scilloides*, blue, autumn, 6 in., China. Also known as *Scilla chinensis*.

**Barrelier's Bellflower** (*Campanula Barrelieri*).—See *Campanula*

**Barren Strawberry** (*Waldsteinia fragarioides*).—See *Waldsteinia*.

**Barren-wort**.—See *Epimedium*.

**Bartonia**.—See *Mentzelia*.

**Barton's Flower** (*Mentzelia aurea*).—See *Mentzelia*.

**Basil**.—See *Ocimum*.

**Basil Thyme** (*Calamintha Acinos*).—See *Calamintha*.

**Basket Fern** (*Nephrodium Filix-mas*).—See *Nephrodium*.

**Basket Fuchsia** (*Fuchsia procumbens*).—See *Fuchsia*.

**Bastard Agrimony** (*Ageratum mexicanum*).—See *Ageratum*.

**Bastard Balm** (*Melittis melissophyllum*).—See *Melittis*.

**Bastard Cedar** (*Cedrela sinensis*).—See *Cedrela*.

**Bastard Indigo**.—See *Amorpha*.

**Bastard Jasmine**.—See *Cestrum*.

**Batatas**.—See *Ipomœa*.

**Batemannia**.—Ord. Orchidaceæ. Stove orchids. Evergreen. First introduced 1834.

CULTURE: Compost, equal parts fibry peat & sphagnum moss. Position, shallow basket or on blocks of wood. Repot, March. Water three times weekly April to Aug.; once a week other times. Temp., Sept. to March 55° to 65°; March to Sept. 75° to 85°. Propagate by division of old plants at potting time.

SPECIES CULTIVATED: *B. Colleyi*, purple and green, Aug., 6 to 8 in., British Guiana.

**Bat Willow** (*Salix alba cœrulea*).—See *Salix*.

**Bauhinia**.—Ord. Leguminosæ. Stove flowering shrubs. Evergreen. Shy bloomers of no great value. First introduced 1690.

CULTURE: Compost, equal parts peat & loam, one-sixth sand. Pot firmly in March. Position, light, sunny, moist in summer. Water freely March to Sept., moderately other times. Temp., Sept. to March 60° to 70°; March to Sept. 70° to 80°. Propagate by cuttings inserted in well-drained pots of sandy peat under bell-glass in temp. 75° in July.

SPECIES CULTIVATED: *B. Galpinii*, white, July, 6 ft., S. Africa; *grandiflora*, white, July, 6 ft., Peru; *natalensis*, white, Sept., Natal.

**Bayonet Plant** (*Aciphylla squarrosa*).—See *Aciphylla*.

**Bay-tree** (*Laurus nobilis*).—See *Laurus*.

**Bead-tree** (*Melia Azedarach*).—See *Melia*.

**Beal's Barberry** (*Berberis Beali*).—See *Berberis*.

**Beam Tree** (*Pyrus Aria*).—See *Pyrus*.

**Bean Tree** (*Ceratonia siliqua*).—See *Ceratonia*.

**Beard Tongue**.—See *Pentstemon*.

**Bear Grass** (*Camassia esculentea*).—See *Camassia*.

**Bear's-breech** (*Acanthus mollis*).—See *Acanthus*.

**Bear's Ear** (*Primula auricula*).—See *Primula*.

**Bear's Foot**.—See *Acanthus*.

**Bear's-foot Fern** (*Davallia Tyermannia*).—See *Davallia*.

**Bear's Paw Fern** (*Polypodium meyenianum*).—See *Polypodium*.

**Beaucarnea**.—Ord. Liliaceæ. Greenhouse ornamental-leaved

plants. Evergreen. First introduced, 1845. Leaves, long, narrow, green.

**CULTURE:** Compost, two parts fibrous loam, one part silver sand. Pot, March, in well-drained pots. Water freely March to Sept., moderately other times. Temp., Sept. to March  $45^{\circ}$  to  $50^{\circ}$ ; March to Sept.  $55^{\circ}$  to  $65^{\circ}$ . Propagate by seeds sown in sandy loam in temp.  $65^{\circ}$  in Feb. or March.

**SPECIES CULTIVATED:** *B. glauca*, leaves glaucous or milky-white, 3 to 5 ft.; *glauca latifolia*, leaves broader than those of the species: *recurvata*, leaves recurved. Natives of Mexico.

**Beaufortia** (Beaufort Myrtle).—Ord. Myrtaceæ. Greenhouse flowering shrubs. Evergreen. First introduced 1803. Natives of Australia.

**CULTURE:** Compost, equal parts loaf-mould, loam, & peat, one-sixth sand. Pot & prune, March; make soil quite firm & drain pots well. Water freely May to Aug., moderately at other times. Temp., Sept. to March  $45^{\circ}$  to  $50^{\circ}$ ; March to Sept.  $55^{\circ}$  to  $65^{\circ}$ . Propagate by cuttings of firm shoots inserted in sandy soil in temp.  $55^{\circ}$  to  $65^{\circ}$  in summer.

**SPECIES CULTIVATED:** *B. decussata*, scarlet, May, 3 ft.; *carinata*, scarlet, June, 3 ft.; *purpurea*, purple, July, 2 to 3 ft.; *sparsa*, red, June, 2 to 3 ft.

**Beaumontia** (Nepaul Trumpet-flower).—Ord. Apocynaceæ. Stove climber. Nat. E. Indies. First introduced 1820.

**CULTURE:** Compost, equal parts peat & loam one-sixth sand. Position, large tub or border, well drained. Shoots to climb roof. Pot or plant, March. Water abundantly May to Aug., moderately afterwards. Temp., Sept. to March  $60^{\circ}$  to  $70^{\circ}$ ; March to Sept.  $70^{\circ}$  to  $80^{\circ}$ . Propagate by cuttings inserted in sandy soil in temp.  $75^{\circ}$  in March.

**SPECIES CULTIVATED:** *B. grandiflora*, white, July to Aug., 15 to 20 ft.

**Bee Balm** (*Monarda didyma*).—See *Monarda*.

**Beech.**—See *Fagus*.

**Beech-fern** (*Polypodium phegopteris*).—See *Polypodium*.

**Beef-suet Tree** (*Shepherdia argentea*).—See *Shepherdia*.

**Bee Orchis** (*Ophrys apifera*).—See *Ophrys*.

**Beet.**—See *Beta*.

**Bee-tree** (*Tilia heterophylla*).—See *Tilia*.

**Begonia.**—Ord. Begoniaceæ. Warm greenhouse fibrous and tuberous-rooted perennials. Ornamental-leaved & flowering.

**CULTURE OF TUBEROUS-ROOTED TYPE.**—Compost, equal parts loam & leaf-mould & one part of equal proportions of dried cow manure & silver sand. Start tubers to grow in Feb. or March by placing them in leaf-mould in shallow boxes in temp.  $65^{\circ}$  to  $70^{\circ}$ . When rooted plant in small pots & afterwards transfer to large ones. Water moderately at first, fully afterwards. Feed with weak liquid manure when growth is active. Shade from sun. After flowering gradually withhold water & keep dry till Feb. Store in pots on their sides in temp.  $50^{\circ}$  to  $55^{\circ}$  in winter. For outdoor culture start tubers in March, and when rooting begins transplant into boxes, grow in heat till May, then plant out early in June in rich soil in partial shade. Lift tubers in Sept., place in boxes to ripen off, then store as advised for pot tubers. Propagate by seeds sown on surface of fine sandy compost in temp.  $65^{\circ}$  to  $75^{\circ}$  in Feb. and grow seedlings on as advised for tubers; also by cuttings of young shoots in spring.

**CULTURE OF FIBROUS-ROOTED SPECIES:** Compost, same as advised for tuberous-rooted species. Sow seeds in Jan. or Feb. in

temp. of 65° to 75°, or insert cuttings in pots in a similar temp. in spring. Grow the seedlings or rooted cuttings on first in small & then larger pots in temp. 55° to 65°. Water moderately. Syringe daily. Shade from sun. Apply weak liquid manure when flowers form. Ventilate freely when in flower. May be planted out in beds in garden end of May. Fresh stock best reared annually from seed or cuttings.

**CULTURE OF WINTER-FLOWERING SPECIES:** Compost, two parts loam & one of equal proportions of leaf-mould, dried cow manure, & silver sand. Insert cuttings in sandy compost in temp. 65° to 70° in Feb. or March. When rooted grow on in small pots, then gradually transfer to larger ones. Nip off points of shoots occasionally to induce sturdy growth. Water moderately. Keep moist during earlier stages of growth. In autumn keep air drier & maintain temp. of 55°. Feed occasionally with liquid manure. After flowering gradually withhold water, & keep rather dry till March, when begin to give water & repot to grow & make larger plants. Increased also by seeds.

**CULTURE OF ORNAMENTAL-LEAVED KINDS:** Compost as advised in previous case. Pot in spring. Grow in shady position. Water freely in spring & summer, moderately in winter. Winter temp. 45° to 55°; summer temp. 55° to 65°. Feed with weak liquid manure in summer. Increased by leaf cuttings in spring or summer.

**TUBEROUS-ROOTED SPECIES CULTIVATED:** *B. bolivensis*, scarlet, Bolivia; *Davisi*, red, Peru; *Clarkii*, red, Peru; *Pearceii*, red, Bolivia; *rosæflora*, rose, Peru; *Veitchii*, carmine, Peru. The foregoing were the original parents of the present race of single and double-flowered tuberous-rooted begonias grown in gardens. For names of varieties of latter see trade lists.

**FIBROUS-ROOTED SPECIES CULTIVATED:** *B. ascotiana* (hybrid), white, Aug., 2 ft.; *Dreigei*, white, July, 2 ft., S. Africa; *Frœbellii incomparabilis*, scarlet, July, 2 ft., Ecuador; *semperflorens* and its varieties *rosea* and *rubra*, and numerous other hybrids and varieties mentioned in trade lists.

**WINTER-FLOWERING SPECIES CULTIVATED:** *B. albo-coccinea*, scarlet and white, winter, 18 in., India; *coccinea*, scarlet, April, 3 ft., Brazil; *evansiana*, pink, Sept., China; *fuchsioides*, scarlet, winter, 4 to 6 ft., Mexico; *incarnata*, pink, Sept., 2 ft., Mexico; *haageana*, rose, autumn, 4 ft., Brazil; *manicata*, pink, April, 3 ft., Mexico; *nitida*, pink, Sept., 18 in., Jamaica; *socotrana*, rose, Nov., 1 ft., Socotra; *weltoniensis*, pink, Dec., 18 in. (hybrid), and numerous other hybrids and varieties as *Gloire de Lorraine*, etc.

**ORNAMENTAL-LEAVED SPECIES CULTIVATED:** *B. Rex*, a native of the Himalayas, and a number of varieties to be found in trade lists.

**Belamacanda** (Leopard-flower).—Ord. Iridacææ. Half-hardy bulbous plant. First introduced 1823.

**OUTDOOR CULTURE:** Soil, light, rich, sandy. Position, sunny, well-drained border. Plant, Sept. to Jan., placing tubers 4 in. deep & 2 in. apart. Lift & replant tubers annually. Mulch surface of bed in March with cow manure.

**POT CULTURE:** Compost, two parts sandy loam, one part leaf-mould or decayed cow manure. Pots, 4½ in. in diameter, well drained. Place five tubers 3 in. deep in each pot in Nov., & cover with cocoanut-fibre refuse in cold frame or under cool greenhouse stage until growth begins. Water moderately from time growth begins until flowers fade, then gradually cease, keeping dry till Jan. Temp., Sept. to March 40° to 50°; other times 50° to 60°. Propagate by offsets treated as advised for tubers.

**SPECIES CULTIVATED:** *B. punctata* (Syn. *Pardanthus sinensis*), yellow and red, summer, 2 ft., China.

**Belladonna Lily** (*Amaryllis belladonna*).—See *Amaryllis*.

**Bellflower**.—See *Campanula*.

**Bell Heather** (*Erica tetralix*).—See *Erica*.



**Bellidastrum**.—See Aster.

**Bellis** (Daisy; Hen & Chickens Daisy).—Ord. Compositæ. Hardy herbaceous perennials. Double-flowered varieties only cultivated. Neat & pretty spring-flowering plants.

**CULTURE**: Soil, ordinary. Position, sunny or shady. Plant, Oct. or March. Propagate by division of old plant in June, inserting divisions 3 in. apart in shady border; seeds sown  $\frac{1}{2}$  in. deep in boxes of light soil in cold frame in March, transplanting seedlings in open border in July.

**SPECIES CULTIVATED**: *B. perennis* flore-pleno, and its numerous varieties. Native of Britain, etc.

**Bellisle Cress** (*Barbarea præcox*).—See *Barbarea*.

**Bellium** (False Daisy).—Ord. Compositæ. Hardy annuals & perennials. First introduced 1772.

**CULTURE**: Soil, sandy loam. Position, rockery or border sheltered from north-east winds. Plant, April. Propagate by division of plants in March; annuals by seeds sown similar to *Bellis*.

**SPECIES CULTIVATED**: *B. bellidioides*, white, July, 3 in., Mediterranean Region, annual; *crassifolium*, yellow, June, 6 in., Sardinia, perennial; *minutum*, white, Aug., 3 in., Greece, perennial.

**Bellwort**.—See *Uvularia* & *Codonopsis*.

**Beloperone**.—Ord. Acanthaceæ. Stove flowering shrubs. Evergreen. Nat. New Grenada, Brazil. First introduced 1832.

**CULTURE**: Compost, equal parts leaf-mould, loam & sand. Pot, March, moderately firm. Position, shady, moist. Temp., Sept. to March 60° to 70°; March to Sept. 70° to 80°. Water freely May to Sept., moderately afterwards. Remove points of shoots occasionally in summer to induce dwarf growth. Propagate by cuttings inserted singly in small pots of light sandy soil in temp. 75° in Feb., March, or April.

**SPECIES CULTIVATED**: *B. atropurpurea*, purple, Sept., 3 ft., Brazil; *oblongata*, rosy purple, 3 ft., Aug., Brazil; *violacea*, violet, Aug., 3 ft., Brazil.

**Bengal Rose** (*Rosa bengalensis*).—See *Rosa*.

**Benjamin Bush** (*Lindera Benzoin*).—See *Lindera*.

**Benthamia**.—See *Cornus*.

**Berberidopsis** (Coral-berry).—Ord. Berberidaceæ. Hardy climbing shrub in S. of England; half-hardy only in Midlands and North. Evergreen. Flowering. Nat. Chili. First introduced 1862.

**CULTURE**: Soil, sandy loam. Position, against south or west wall; protect in severe winter with straw or mats. Good wall shrub for cool greenhouse. Plant, Oct. or April. Prune straggly shoots only in April. Propagate by seeds sown  $\frac{1}{2}$  in. deep in well-drained pots of sandy soil, in temp. 55° in March; cuttings of young shoots in similar soil & temp.; layering of shoots in the open in Sept., Oct., or Nov.

**SPECIES CULTIVATED**: *B. corallina*, crimson, summer, 5 to 10 ft., Chili.

**Berberis** (Barberry; Jaundice-berry; Jaundice-tree).—Ord. Berberidaceæ. Hardy flowering & ornamental-leaved shrubs. Evergreen & deciduous.

**CULTURE**: Compost, two parts loam, one part peat & sand for choice species; ordinary soil for common ones. Position, sunny or shady. Plant, Sept., Oct., March. April. No pruning required. Propagate by seeds sown 1 in. deep in sheltered border in Oct. or Nov.; cuttings of firm shoots in sandy soil in cold frame in Sept.; layering shoots in Oct. Berries of Common Barberry (*Berberis vulgaris*) make excellent preserves, candy, or pickle. Inner bark forms a yellow dye for tanning leather.

**DECIDUOUS SPECIES:** *B. aristata*, yellow, May, 6 ft., Himalayas; *canadensis*, yellow, May, 5 ft., Canada; *Thunbergii*, yellow, April, 3 ft., Japan; *vulgaris*, yellow, April, 10 to 12 ft., Europe (Britain), fruit, black, white, purple, or yellow; *vulgaris foliis purpureis*, leaves purple.

**EVERGREEN SPECIES:** *B. aquifolium* (Syn. *Mahonia aquifolium*), yellow, April, 5 to 6 ft., N. America; *buxifolia*, yellow, March, 6 to 8 ft., Chili; *Darwinii*, orange, May, 8 to 10 ft., Chili; *empetrifolia*, yellow, May, 2 ft., Chili; *Fortunei*, yellow, May, 3 to 4 ft., China; *glumacea*, yellow, May, 1 ft., N. America; *ilicifolia*, yellow, July, 3 ft., Straits of Magellan; *stenophylla*, yellow, May, 3 ft., hybrid; *wallichiana*, yellow, May, 6 ft., Himalayas; *nepalensis* (Syn. *B. japonica*), yellow June, 3 ft., Kashmir.

**Berchemia** (Supple Jack).—Ord. Rhamnaceæ. Hardy and greenhouse climbing shrubs. Deciduous. First introduced 1714.

**CULTURE OF HARDY SPECIES:** Soil, sandy loam. Position, against south wall, well-drained border. Plant, Oct. to Feb. Prune, Feb., cutting off soft points of strong shoots & removing weak shoots altogether. Propagate hardy species by cuttings of shoots 6 in. long inserted half their depth & 3 in. apart in sheltered border in Oct.; greenhouse species by cutting at any time.

**CULTURE OF GREENHOUSE SPECIES:** Compost, equal parts loam & peat, with a little sand. Position, pots or beds in cool greenhouse, shoots trained up roof. Pot or plant in March. Water moderately in winter, freely at other seasons. Prune straggly growths in autumn. Temp. 45° to 55° Oct. to March; 55° to 65° afterwards.

**HARDY SPECIES CULTIVATED:** *B. volubilis*, white, July, 10 to 12 ft., United States.

**GREENHOUSE SPECIES CULTIVATED:** *B. floribunda*, white, July, 8 to 10 ft., Nepal; *lineata*, green, June, 10 ft., China.

**Bergamot** (*Monarda didyma*).—See *Monarda*.

**Bermuda Cedar** (*Juniperus bermudiana*).—See *Juniperus*.

**Bermuda Lily** (*Lilium longiflorum eximium*).—See *Lilium*.

**Bermuda Satin-flower** (*Sisyrinchium bermudianum*).—See *Sisyrinchium*.

**Bertolonia**.—Ord. Melastomaceæ. Stove trailing plants. Orn. foliage. First introduced 1850. Leaves, upper sides dark green, white, purple; under sides pink, purple.

**CULTURE:** Compost, equal parts peat, leaf-mould, & sand. Position, well-drained pans covered with bell-glass in shade. Pot, Feb. or March. Temp., Sept. to March 60° to 70°; March to Sept. 75° to 85°. Water daily April to Sept., once or twice a week at other times. Propagate by cuttings inserted in light soil in pots or pans under bell-glass in temp. 75° in spring.

**SPECIES CULTIVATED:** *B. houtteana*, leaves green and carmine, 6 in.; *maculata*, leaves pink and purple, 6 in.; *marmorata*, leaves silvery white and purple, 6 in. Natives of Brazil.

**Bessera** (Coral Drops).—Ord. Liliaceæ. Half-hardy bulbous plant. First introduced 1850.

**CULTURE:** Compost, equal parts loam, leaf-mould, peat, & coarse silver sand. Position, well-drained pots in cold greenhouse. Pot, Oct. or Nov. Water freely during active growth. Keep more or less dry after foliage dies down until new growth begins. Requires plenty of sun. May be grown in well-drained border outdoors at foot of a south wall. Propagate by offsets removed and treated as old bulbs at potting time.

**SPECIES CULTIVATED:** *B. elegans*, scarlet, summer, 18 in. to 3 ft., Mexico.

**Beta** (Beet-root; Sicilian Beet; Spinach-beet).—Ord. Chenopodiaceæ. Esculent vegetables & orn. foliage plants. First introduced 1548. Leaves, crimson, green, or white.

**CULTURE OF BEET-ROOT:** Sow seeds  $1\frac{1}{2}$  in. deep in drills 15 in. apart in May. Thin seedlings in June to 8 in. apart in row. Sandy soil manured for previous crop best. Beet must not succeed spinach or root crops; may follow cabbage tribe, potatoes, onions, beans, or peas. Lift roots in Nov. & store in cool shed. Suitable artificial manure for beet: Common salt, 3 lb.; nitrate of soda,  $1\frac{1}{2}$  lb.; superphosphate,  $1\frac{1}{2}$  lb.; saltpetre, 1 lb. Season for use, Oct. to April. Crop takes 18 weeks from time of sowing till ready for use. Seeds retain their vitality up to 10 years old. Two ounces of seed will sow a row 50 ft. long.

**MARKET CULTURE OF BEET:** Soil, etc., as above. Requires 12 lb. seed to sow an acre. Average yield per acre, 300 to 400 bushels. Cost of drilling seed, 1s. 6d.; thinning out, 14s.; and hoeing, 8s. to 10s. per acre.

**CULTURE OF SPINACH-BEET:** Sow seeds  $1\frac{1}{2}$  in. deep in rows 18 in. apart in April. Thin seedlings in May to 9 in. apart in row. Use leaves of this only, similar to spinach. Soil & manure as for beet-root.

**CULTURE OF ORNAMENTAL BEET:** Sow seeds  $\frac{1}{4}$  in. deep in boxes of light soil in temp.  $60^{\circ}$  to  $70^{\circ}$  in March; transfer seedlings to cold frame in April & plant in beds in flower garden in May.

**SPECIES:** *B. Cicla* (Silver Beet); *B. vulgaris* parent of edible beetroots; native of S. Europe.

**Betel-nut Palm** (*Areca catechu*).—See *Areca*.

**Betula** (Birch-tree; Queen of the Woods).—Ord. Cupuliferæ. Hardy ornamental trees & shrubs. Deciduous. Timber used for veneering purposes; making fish casks, & bobbins. Bark used for tanning fish nets.

**CULTURE:** Soil, ordinary. Position, sheltered or exposed in valleys, hills, or mountain slopes; good seaside & town trees. Plant, Oct. to March. Propagate by seeds sown on the surface of sandy soil on sheltered borders in March; seeds to be simply pressed in, not covered. Transplant seedlings when one year old. Dwarf birches propagated by layering shoots in Oct. One bushel of seed will produce 16,000 plants. Tree begins to seed when 25 years old. Number of seeds in a pound, 800,000. Average life, 100 years.

**SPECIES CULTIVATED:** *B. alba* (Common Birch), 50 to 60 ft., Northern Hemisphere; *alba pendula Youngii* (Weeping Birch); *alba laciniata pendula* (Cut-leaved Weeping Birch); *alba foliis variegatis* (Variegated Birch); *alba purpurea* (Purple Birch); *alba urticæfolia* (Nettle-leaved Birch); *lenta* (Cherry Birch), 60 to 70 ft., N. America; *nana* (Dwarf Birch), 2 to 3 ft., Northern Hemisphere; *papyrifera* (Paper Birch), 60 to 70 ft., N. America; *populifolia* (Gray Birch), 20 to 30 ft., N. America.

**Bhotan Pine Tree** (*Pinus excelsa*).—See *Pinus*.

**Bidens** (Bur Marigold).—Ord. Compositæ. Hardy annual & perennial herbs.

**CULTURE:** Soil, ordinary. Position, sunny border. Plant, Oct. or April. Propagate perennials by division of old plants in April; annuals by seed sown  $\frac{1}{2}$  in. deep in sandy soil in temp.  $70^{\circ}$  in March, transplanting seedlings outdoors in May.

**SPECIES CULTIVATED:** *B. grandiflora*, yellow, July, 3 ft., Mexico, annual; *humilis*, yellow, July, 2 ft., Mexico, perennial.

**Bignonia** (Cross Vine; Trumpet-flower).—Ord. Bignoniaceæ. Greenhouse & hardy climbing plants. Deciduous. First introduced 1710.

**CULTURE:** Compost, two parts loam, one part peat & silver sand. Pot, Feb. or March. Position, light sunny for greenhouse species;

south wall for hardy kind. Bed or border must not be more than 3 ft. square for one plant & 18 in. deep. Provide good drainage & make soil firm. Prune away one-third of strong shoots & two-thirds of weak shoots in Feb. Water freely April to Sept., very little at other times. Shade must not be given to greenhouse kinds. Temp. for greenhouse species, 45° to 55° Oct. to March; 55° to 65° March to Oct. Propagate by cuttings of young shoots 3 in. long, inserted in well-drained pots of sandy soil in temp. 65° to 70° in April.

**HARDY SPECIES CULTIVATED:** *B. capreolata* (Cross Vine), scarlet, summer, 12 to 15 ft., United States; *capreolata atrosanguinea*, red and purple.

**GREENHOUSE SPECIES CULTIVATED:** *B. venusta*, orange, autumn, 10 to 15 ft., S. America; *tweediana*, yellow, summer, 15 to 20 ft., Buenos Ayres.

**Bilberry** (*Vaccinium myrtillus*).—See *Vaccinium*.

**Bilbergia**.—Ord. Bromeliaceæ. Stove flowering plants. Evergreen. First introduced 1826. Flowering season, spring.

**CULTURE:** Compost, equal parts fibrous loam, rough peat, leaf-mould & silver sand. Pot, March. Water freely always. Good drainage essential. Temp., Sept. to March 65° to 75°; March to Sept. 70° to 80°. Propagate by large-sized offshoots inserted singly in small pots of sandy peat in temp. 85° in April.

**SPECIES CULTIVATED:** *B. Bakeri*, green and violet, 18 in., Brazil; *iridifolia*, scarlet, yellow, and crimson, 18 in., Brazil; *Lietzei*, rosy-pink, 1 ft., Brazil; *Moreli*, blue, pink, and rose, 1 ft., Brazil; *vittata*, red and violet, 18 in. to 2 ft., Brazil; *zebrina*, 1 ft., Brazil.

**Bindweed**.—See *Calystegia*.

**Biota**.—See *Thuya*.

**Birch**.—See *Betula*.

**Bird Cherry** (*Prunus padus*).—See *Prunus*.

**Bird of Paradise Flower** (*Strelitzia Reginae*). — See *Strelitzia*.

**Bird's Eye Maple** (*Acer saccharinum*).—See *Acer*.

**Bird's Eye Primrose** (*Primula farinosa*).—See *Primula*.

**Bird's-foot Fern** (*Pellæa Ornithopus*).—See *Pellæa*.

**Bird's-foot Stonecrop** (*Sedum pulchellum*).—See *Sedum*.

**Bird's-foot Trefoil** (*Lotus corniculatus*).—See *Lotus*.

**Bird's-foot Violet** (*Viola pedata*).—See *Viola*.

**Bird's-nest Fern** (*Asplenium Nidus*).—See *Asplenium*.

**Bird's-nest Orchis** (*Neottia Nidus-avis*).—See *Neottia*.

**Bird's-nest Trefoil**.—See *Lotus*.

**Birth-wort** (*Aristolochia siphon*).—See *Aristolochia*.

**Bishop's Cap** (*Mitella diphylla*).—See *Mitella*.

**Bishop's Hat** (*Epimedium alpinum*).—See *Epimedium*.

**Bitter Almond Tree** (*Prunus Amygdalus amara*). — See *Prunus*.

**Bitter Root** (*Lewisia rediviva*).—See *Lewisia*.

**Bitter Vetch** (*Lathyrus vernus*).—See *Lathyrus*.

**Bitter-wort** (*Gentiana acaulis*).—See *Gentiana*.

**Bixia** (*Arnatto*).—Ord. Bixineæ. Stove flowering tree. Evergreen. Nat. W. Indies. First introduced 1690.

**CULTURE:** Compost, two parts loam, one part peat & silver sand. Pot, March. Water freely March to Sept., moderately other times. Temp., Sept. to March 60° to 70°; March to Sept. 75° to 85°. Propagate by cuttings of shoots six to 12 months old, inserted in small pots of sandy soil in temp. 85°, June to Aug.

**SPECIES CULTIVATED:** *B. orellano*, pink, summer, West Indies.

**Blackberry**.—See *Rubus*.

**Black Dahlia** (*Dahlia Zimipani*).—See Dahlia.

**Black Hellebore** (*Helleborus niger*).—See Helleborus.

**Blackening Plant** (*Hibiscus rosa-sinensis*).—See Hibiscus.

**Black Iris** (*Ferraria undulata*).—See Ferraria.

**Black Lily** (*Lilium Camtschatcense*).—See Lilium.

**Black Maidenhair Fern** (*Adiantum capillus-veneris*).—See Adiantum.

**Black Martagon Lily** (*Lilium dalmaticum*).—See Lilium.

**Black Pine** (*Pinus Laricio nigricans*).—See Pinus.

**Black Poplar** (*Populus nigra*).—See Populus.

**Black Spleenwort** (*Asplenium adiatum-nigrum*).—See Asplenium.

**Black Spruce** (*Picea nigra*).—See Picea.

**Black Thorn** (*Prunus spinosa*).—See Prunus.

**Bladder Fern** (*Cystopteris fragilis*).—See Cystopteris.

**Bladder Herb** (*Physalis Alkekengi*).—See Physalis.

**Bladder Nut** (*Staphylea pinnata*).—See Staphylea.

**Bladder Senna** (*Colutea arborescens*).—See Colutea.

**Bladder Wort** (*Utricularia montana*).—See Utricularia.

**Blæberry** (*Vaccinium myrtillus*).—See Vaccinium.

**Blandfordia**.—Ord. Liliaceæ. Greenhouse bulbous plants. Flowering. Evergreen. Deciduous. First introduced 1803.

**CULTURE:** Compost, equal parts peat, loam & silver or river sand. Pot, Oct. Good drainage, firm potting & moderate size pots essential. Water freely May to Aug., moderately Aug. to Oct. & Feb. to May, none at other times. Temp., Oct. to Feb. 40° to 50°; Feb. to April 50° to 55°; April to Oct. 55° to 65°. Propagate by offsets or division of old plants at potting time.

**SPECIES CULTIVATED:** *B. aurea*, golden yellow, summer, 1 to 2 ft.; Australia; *Cunninghamii*, crimson, July, 2 ft., Australia; *flammea*, yellow, June, 18 in., Australia; *marginata*, crimson, summer, 2 ft., Australia; *nobilis*, orange, July, 2 ft., Australia.

**Blanket Flower** (*Gaillardia grandiflora*).—See Gaillardia.

**Blazing Star** (*Liatris elegans*).—See Liatris.

**Blechnum** (Brazilian Tree Fern).—Ord. Filices. Stove & greenhouse ferns. Evergreen. First introduced 1691.

**CULTURE:** Compost, equal parts loam, peat, leaf-mould, & sand. Pot, Feb. or March. Position, shady. Water abundantly April to Sept., moderately afterwards. Temp., stove species, Sept. to March 60 to 70°, March to Sept. 70° to 80°; greenhouse, Sept. to March 50° to 55°, March to Sept. 55° to 65°. Propagate by spores sown on fine sandy peat in well-drained pans, in temp. 80°, at any time.

**STOVE SPECIES CULTIVATED:** *B. longifolium*, 1 to 2 ft., West Indies; *occidentale*, 1 to 2 ft., West Indies; *unilaterale*, 6 to 12 in., Trop. America.

**GREENHOUSE SPECIES CULTIVATED:** *B. braziliense*, 2 to 3 ft., Brazil and Peru; *braziliense corcovadense*; *cartilagineum*, 1 to 2 ft., Australia; *hastatum*, 1 to 2 ft., S. America; *Lanceola*, 6 to 12 ins., Trop. America.

**Bleeding Heart** (*Dicentra canadensis*).—See Dicentra.

**Bleeding Nun** (*Cyclamen europæum*).—See Cyclamen.

**Blessed Thistle**.—See Carbenia & Silybum.

**Bletia**.—Ord. Orchidaceæ. Stove, hardy, terrestrial, and epiphytal orchids. Deciduous. First introduced 1733.

**CULTURE OF STOVE SPECIES:** Compost, equal parts loam & leaf-mould. Pot, March. Position, pots with 2 in. of drainage in each. Water freely March to Aug., moderately Aug. to Oct., very little afterwards. Temp., March to Sept. 65° to 75°; Sept. to March 60° to 65°.

Resting period, winter Flowers appear at base of new pseudo-bulb. Propagate by division of pseudo-bulbs after flowering.

**CULTURE OF HARDY SPECIES:** Compost, equal parts leaf-mould, loam, & sand. Position, sunny, sheltered rockery in S. of England only; in other parts in cool greenhouse (winter temp. 40° to 50°). Plant or pot, March. Water freely whilst growing. Keep dry when at rest.

**STOVE SPECIES CULTIVATED:** *Sherrattiana*, rosy red and purple and yellow, spring, Colombia; *verecunda*, purple, March, West Indies.

**HARDY SPECIES CULTIVATED:** *B. hyacinthina*, rosy crimson, April, 1 ft.; Japan.

**Blood Berry** (*Rivina humilis*).—See *Rivina*.

**Blood Elder** (*Sambucus ebulus*).—See *Sambucus*.

**Blood Flower** (*Hæmanthus coccineus*).—See *Hæmanthus*.

**Blood Root** (*Sanguinaria canadensis*).—See *Sanguinaria*.

**Bloomeria**.—Ord. Liliaceæ. Half-hardy bulbous plant. First introduced 1869. Ht., 12 in. Flowers, golden-yellow.

**CULTURE:** Soil, light, sandy. Position, warm border or rockery. Plant bulbs 2 to 3 in. deep, & 3 in. apart, Sept. to Nov. Propagate by offsets planted as directed for bulbs.

**SPECIES CULTIVATED:** *B. aurea* (Syn. *Nothoscordum aureum*), yellow, July, 1 ft.; *Clevelandii*, yellow, July, 1 ft. Natives of California.

**Blooming Sally** (*Epilobium angustifolium*).—See *Epilobium*.

**Blue African Lily** (*Agapanthus umbellatus*).—See *Agapanthus*.

**Blue Alpine Daisy** (*Aster alpinus*).—See *Aster*.

**Blue Amaryllis** (*Griffinia hyacinthina*).—See *Griffinia*.

**Blue Bell** (*Scilla festalis* & *Campanula rotundifolia*).—See *Scilla* and *Campanula*.

**Blue Cowslip** (*Pulmonaria angustifolia*).—See *Pulmonaria*.

**Blue Cupidone** (*Catananche cærulea*).—See *Catananche*.

**Blue Daisy** (*Aster tripolium*).—See *Aster*.

**Blue-eyed Peacock Iris** (*Iris pavonia*).—See *Iris*.

**Blue-flowered Bindweed** (*Ipomæa cærulea*).—See *Ipomæa*.

**Blue-flowered Fleabane** (*Erigeron acris*).—See *Erigeron*.

**Blue-flowered Red-root** (*Ceanothus azureus*).—See *Ceanothus*.

**Blue Gum-tree** (*Eucalyptus globulus*).—See *Eucalyptus*.

**Blue Marguerite** (*Agathæa cœlestis*).—See *Agathæa*.

**Blue Moonwort** (*Soldanella alpina*).—See *Soldanella*.

**Blue Rock Bindweed** (*Convolvulus mauritanicus*).—See *Convolvulus*.

**Blue Spider-wort** (*Commelina cœlestis*).—See *Commelina*.

**Blue Spruce** (*Picea pungens*).—See *Picea*.

**Blue Throat-wort** (*Trachelium cæruleum*).—See *Trachelium*.

**Bluets** (*Houstonia cærulea*).—See *Houstonia*.

**Blumenbachia**.—Ord. Loasaceæ. Half-hardy annual & perennial twiners & trailers. First introduced 1826.

**CULTURE:** Soil, ordinary. Position, south bed, border, or wall. Plant perennials in April. Propagate annuals by seeds sown 1-16 in. deep in shallow boxes of light soil in temp. 65° March, transplanting seedlings outdoors in June; perennials by seed as advised for annuals, or division of roots in April.

**SPECIES CULTIVATED:** *B. insignis*, white, July, trailing annual, Monte Video; *lateritia* (Syn. *Loasa lateritia*), red, May, perennial, Tucuman; *multifida*, red, July, annual, Buenos Ayres.

**Blush Wort.**—See *Æschynanthus*.

**Bobartia** (Bobart's Iris).—Ord. Iridaceæ. Half-hardy bulbous plants. Nat. Cape of Good Hope. First introduced 1810. Ht. 1 ft.

**CULTURE:** Position, south bed or border well drained, or on rockery. Plant bulbs 3 in. deep & 3 in. apart in Oct. Lift bulbs after flowering, dry & store away till planting time in cool place. Propagate by offsets planted & treated as large bulbs.

**SPECIES CULTIVATED:** *B. aphylla*, white and purple, summer; *filiformis*, purple, summer; *gladiata*, yellow, summer; *spathacea*, yellow, summer.

**Bocconia** (Plume Poppy; Tree Calandine).—Ord. Papaveraceæ. Hardy herbaceous perennials. Orn. foliage. First introduced 1795. Leaves, finely cut, greyish.

**CULTURE:** Soil, rich loamy, well manured. Position, open, sunny, sheltered from cold winds. Plant, April. Cut down flower stems after blooming. Propagate by cuttings of young shoots growing out of axils of leaves, inserted in small pots of sandy soil, temp. 55° under bell-glass, June to Aug.; by suckers removed from root, placed in pots in cold frame in July. Good plant for pot culture in cool greenhouse or window. Compost, two parts loam, one part leaf-mould & sand. Pot, March. Water freely spring & summer, moderately other times.

**SPECIES CULTIVATED:** *B. cordata*, buff or whitish, July, 6 to 8 ft., China.

**Bog Arum** (*Calla palustris*).—See *Calla*.

**Bog Bean** (*Menyanthes trifoliata*).—See *Menyanthes*.

**Bog Berry** (*Vaccinium oxycoccus*).—See *Vaccinium*.

**Bog Myrtle** (*Myrica Gale*).—See *Myrica*.

**Bog Pimpernel** (*Anagallis tenella*).—See *Anagallis*.

**Bog Trefoil** (*Menyanthes trifoliata*).—See *Menyanthes*.

**Bog Violet** (*Pinguicula vulgaris*).—See *Pinguicula*.

**Boltonia** (False Chamomile).—Ord. Compositæ. Hardy herbaceous perennials. Nat. N. America. First introduced 1758.

**CULTURE:** Soil, ordinary moist loam. Position, sunny or shady borders. Plant, Oct. or April. Propagate by division of roots in April.

**SPECIES CULTIVATED:** *B. asteroides*, white, pink, July, 4 to 5 ft.; *asteroides decurrens*, violet, 4 ft.

**Bomarea**.—Ord. Amaryllidaceæ. Greenhouse climbing perennials. Flowering. First introduced 1806.

**CULTURE:** Compost, equal parts peat, leaf-mould, loam, & sand. Pot or plant, March. Position, large pots, tubs, or beds, well drained.

Water freely April to Sept., moderately other times. Temp. Sept. to March 45° to 50°; March to Sept. 55° to 65°. Propagate by seeds sown  $\frac{1}{2}$  in. deep in pots of light sandy soil in temp. 65° in March; division of roots in March.

**SPECIES CULTIVATED:** *B. acutifolia*, red, yellow, and green, autumn, 5 to 6 ft., Mexico; *Carderi*, rose, autumn, 6 to 8 ft., Colombia; *edulis*, crimson, July, 5 to 6 ft., Trop. America; *patacoensis* (Syn. *B. conferta*) carmine-rose, Aug. 6 to 8 ft., Colombia.

**Bona-Nox** (*Ipomœa Bona-nox*).—See *Ipomœa*.

**Bongardia**.—Ord. Berberidaceæ. Hardy tuberous-rooted perennial. Flowering. Nat. Persia, Syria. First introduced 1740.

**CULTURE:** Soil, light, sandy. Position, south bed or border, well drained. Plant, Oct. or April. Protect in severe weather by covering with handlight or thick layer of cinder ashes. Propagate by division of tubers Oct. or April, or by seeds sown in shallow boxes of light soil, temp. 55° to 65°, in March.

**SPECIES CULTIVATED:** *B. Rawolfii*, yellow, spring, 6 to 12 in.

**Borage**.—See *Borago*.

**Borago** (Borage).—Ord. Boraginaceæ. Hardy annual & perennial plants. Common species (*B. officinalis*) used for flavouring claret-cup and as a bee food.

**CULTURE:** Soil, ordinary. Position, sunny rockeries, dry banks. Sow seeds of common borage annually in March where required to grow, afterwards thinning seedlings to 8 in. apart. Propagate annuals & biennials by seed sown as above; perennials by division of roots in April.

**SPECIES CULTIVATED:** *B. laxiflora*, blue, Aug., 6 in., Corsica, perennial; *officinalis* (Common Borage), blue, summer, 1 to 2 ft., Britain, annual.

**Borecole.**—See *Brassica*.

**Boronia** (Australian Native Rose).—Ord. Rutaceæ. Greenhouse flowering shrubs. Evergreen. Nat. W. Australia. First introduced 1794. Flowers fragrant.

**CULTURE:** Compost, two parts fibrous peat, one part silver sand & pounded charcoal. Pot directly after flowering. Drain the pots well & make compost quite firm. Cut off points of young shoots when 3 in. long to promote bushy growth. Water freely April to Sept., moderately afterwards. Place plants in semi-shady position outdoors June to Aug. Temp., Sept. to March 45° to 50°; March to Sept. 50° to 60°. Propagate by cuttings of firm young shoots inserted in sandy soil, in temp. 55°, June to Aug., under bell-glass.

**SPECIES CULTIVATED:** *B. elatior*, rosy carmine, May, 3 to 4 ft., heterophylla, rose, May, 2 to 3 ft.; *megastigma*, maroon and yellow, April, 18 in.; *serrulata*, rose, June, 2 to 3 ft.

**Boss Fern** (*Nephrodium molle*).—See *Nephrodium*.

**Botrychium** (Moon Fern; Flowering Fern).—Ord. Filices. Hardy ferns. Deciduous.

**CULTURE:** Compost, equal parts sandy loam & peat. Position, moist, shady, rockery, or in grass. Plant, April. Water freely in dry weather during summer. Propagate by division of roots in April.

**SPECIES CULTIVATED:** *B. Lunaria* (Common Moonwort), 4 to 5 in., Britain; *ternatum*, 6 to 12 in., New Zealand; *virginianum*, 16 to 18 in., North Temperate Zone.

**Bottle Gourd** (*Lagenaria vulgaris*).—See *Lagenaria*.

**Bougainvillea.**—Ord. Nyctagineæ. Stove climbing plants. Flowering. Deciduous. First introduced 1829. Coloured bracts chief floral attraction; flowers small and unattractive.

**CULTURE:** Compost, two-thirds turfy loam, one-third leaf-mould & sand. Pot or plant, Feb. Position: *B. glabra* in pots with shoots trained round wire trellis; *B. speciosa* in bed 3 ft. wide & 18 in. deep, branches & shoots being trained up roof. Prune shoots of previous year's growth to within 1 in. of base annually in Feb. Water abundantly March to Sept., moderately Sept. to Nov., none afterwards. Temp., Feb. to May 55° to 60°; May to Sept. 65° to 75°; Sept. to Feb. 50° to 55°. Propagate by cuttings of young shoots 3 in. long, removed with small portion of branch attached, inserted in 2 in. pots of sandy soil, under bell-glass in temp. 70° to 80°, March, April, or May.

**SPECIES CULTIVATED:** *B. glabra*, rose, summer, 5 to 8 ft., Brazil; *glabra sanderiana*, rich rose; *spectabilis*, lilac-rose, summer, 15 ft., Brazil; *spectabilis superba*, deep rose.

**Bourbon Lily** (*Lilium candidum*).—See *Lilium*.

**Bourbon Palm** (*Livistonia sinensis*).—See *Livistonia*.

**Bourbon Rose** (*Rosa bourboniana*).—See *Rosa*.

**Boursault Rose** (*Rosa alpina*).—See *Rosa*.



**Boussingaultia** (Madeira Vine).—Ord. Chenopodiaceæ. Half-hardy tuberous-rooted climber. First introduced 1835. Flowers fragrant.

**CULTURE:** Soil, light, sandy. Position, back wall of greenhouse or south wall or fence outdoors during summer. Plant tubers in small pots in temp. 55° in March, for transplanting outdoors in June, or in bed in Feb. for greenhouse culture. Lift outdoor tubers in Oct. and store in sand during winter; those in greenhouse bed leave undisturbed. Water freely in summer, none in winter. Propagate by inserting tubercles removed from the stems in sandy soil in temp. 55° in spring or autumn.

**SPECIES CULTIVATED:** *B. baselloides*, white, autumn, 6 to 8 ft., Ecuador.

**Bouvardia**.—Ord. Rubiaceæ. Greenhouse flowering shrubs. Evergreen. Flowers, fragrant. First introduced 1794.

**CULTURE:** Compost, equal parts fibrous loam, leaf-mould, peat, & silver sand. Pot, March. Prune, Feb., shortening shoots of previous year's growth to within 1 in. of their base. Water moderately Feb. to May & Aug. to Nov., freely May to Aug., little Nov. to Feb. Temp., Feb. to Sept. 55° to 75°; Sept. to Feb. 55° to 60°. Place plants in cold frame from June to Sept. Propagate by cuttings of young shoots 2 in. long, inserted in pots of sandy compost in March in temp. 65°; cuttings of roots inserted in similar soil in spring; division at potting time.

**SPECIES CULTIVATED:** *B. angustifolia*, red, Sept., 2 ft., Mexico; *flava*, yellow, March, 18 in., Mexico; *Humboldtii*, white, winter, 2 to 3 ft., *Humboldtii corymbiflora*, white; *jasminiflora*, white, winter, 2 ft., S. America; *triphylla*, scarlet, winter, 2 ft., Mexico; and numerous hybrids as, *Alfred Neuner*, pink; *Hogarth flore-pleno*, scarlet; *President Garfield*, double pink; and *Vrielandii*, white.

**Bowman's Root** (*Gillenia trifoliata*).—See *Gillenia*.

**Box Elder** (*Acer Negundo*).—See *Acer*.

**Box Holly** (*Ruscus aculeatus*).—See *Ruscus*.

**Box Thorn** (*Lycium barbarum*).—See *Lycium*.

**Box-tree** (*Buxus sempervirens*).—See *Buxus*.

**Boy's Love** (*Artemisia abrotanum*).—See *Artemisia*.

**Brachycome** (Swan River Daisy).—Ord. Compositæ. Half-hardy annual. Flowering. Nat. W. Australia. First introduced 1843.

**CULTURE:** Soil, ordinary. Position, sunny bed or border. Propagate by seeds sown  $\frac{1}{2}$  in. deep in shallow boxes of light soil in temp. 55° in March, transplanting seedlings outdoors in May; or outdoors in April where plants are to flower.

**SPECIES CULTIVATED:** *B. iberidifolia*, blue or white, summer, 1 ft.

**Brachypodium** (False Brome Grass).—Ord. Gramineæ. Hardy annual flowering grass. Inflorescence, suitable for drying for winter decorations.

**CULTURE:** Soil, ordinary. Position, sunny borders. Sow seeds outdoors in April. Cut inflorescence when in full flower.

**SPECIES CULTIVATED:** *B. distachyon*, summer, 9 in., Europe.

**Brachysema**.—Ord. Leguminosæ. Greenhouse climbing plants. Flowering. Evergreen. Nat. Australia. First introduced 1803.

**CULTURE:** Compost, equal parts loam, peat, leaf-mould, & silver sand. Pot, Feb. Position, well-drained pots or tubs, or beds 3 ft. wide & 18 in. deep; shoots to be trained round wire trellis or up the roof & fully exposed to sun. Water freely April to Aug., moderately other times. Temp., Sept. to March 45° to 50°; March to Sept. 55° to 65°. Propagate by seeds sown 1-16 in. deep in sandy soil in temp. 55°

in March; cuttings of shoots inserted in similar soil & temp. under bell-glass in June, July, or Aug.; layering shoots in Sept.

**SPECIES CULTIVATED:** *B. latifolium*, crimson and scarlet, April, 8 to 10 ft.; *lanceolatum*, scarlet, yellow and white, spring, 3 ft.; *undulatum*, violet, March, 3 to 6 ft.

**Bracken** (*Pteris aquilina*).—See *Pteris*.

**Brahea.**—Ord. Palmaceæ. Greenhouse palm. Orn. foliage. First introduced 1865.

**CULTURE:** Compost, equal parts peat, loam, & sand. Pot, Feb. Water freely in summer, moderately other times. Temp., Sept to March 55° to 60°; March to Sept. 65° to 75°. Propagate by seeds sown  $\frac{1}{2}$  in. deep in light soil in temp. 85° in March.

**SPECIES CULTIVATED:** *B. dulcis*, 3 ft., Mexico.

**Brake Fern** (*Pteris aquilina*).—See *Pteris*.

**Bramble** (*Rubus fruticosus*).—See *Rubus*.

**Bramble-leaved Rose** (*Rosa rubifolia*).—See *Rosa*.

**Bramble Rose** (*Rosa polyantha*).—See *Rosa*.

**Brassavola.**—Ord. Orchidaceæ. Stove, epiphytal orchids. First introduced 1837. Flowers, fragrant.

**CULTURE:** Compost, sphagnum moss. Position, blocks of wood, suspended from roof. Water abundantly March to Sept., moderately other times. Temp., Oct. to Feb. 50° to 55°; Feb. to Oct. 60° to 70°. Resting period, winter. Flowers top of new growth after resting. Propagate by division of plant at potting time.

**SPECIES CULTIVATED:** *B. acaulis*, creamy white and rose, spring, Central America; *cucullata*, cream and red, spring, S. America; *lineata*, white, spring, fragrant, S. America; *venosa*, white, spring, Honduras.

**Brassia.**—Ord. Orchidaceæ. Stove epiphytal orchids. Evergreen. First introduced, 1806.

**CULTURE:** Compost, rough fibrous peat & charcoal. Pot, Feb. Position, well-drained pots in partial shade. Water freely April to Aug., moderately other times. Temp., Oct. to Feb. 50° to 60°; Feb. to Oct. 65° to 85°. Resting period, none. Flowers appear at base of last growth when completed. Propagate by division of plants at potting time.

**SPECIES CULTIVATED:** *B. antherotes*, yellow, May and June, Colombia; *brachiata*, yellow, white and orange, July to Sept., Guatemala; *gireoudiana*, yellow and red, Aug., Costa Rica; *lanceana*, yellow, brown and red, Jan. to Sept., Surinam; *lawrenciana*, yellow, cinnamon and green, spring, Brazil; *maculata*, yellow, red and brown, May, Trop. America; *verrucosa*, white and purple, May and June, Guatemala.

**Brassica** (Borecole; Broccoli; Brussels Sprouts; Cabbage; Cauliflower; Colewort; Couve Tronchuda; Kale; Kohl Rabi; Mustard; Rape; Savoy; Turnip).—Ord. Cruciferæ. Hardy biennials with esulent roots or foliage. Nat. Europe (Britain). Flowers, yellow; May to Aug.

**CULTURE OF BORECOLE OR KALE.**—Sow seeds  $\frac{1}{2}$  in. deep in drills 6 in. apart in April or May. Transplant seedlings when third leaf forms 4 in. apart in nursery bed. Plant out permanently 18 in. apart in rows 2 ft. asunder in June or July. Season of use, Nov. to April.

**CULTURE OF BROCCOLI.**—For autumn use sow seeds  $\frac{1}{2}$  in. deep in shallow boxes of light soil in temp. 65° in Feb., or in cold frame in April; transplant seedlings 3 in. apart in cold frame, light soil, in April or May; plant out 2 ft. apart in rows 2 ft. asunder in June. For winter use sow seeds  $\frac{1}{2}$  in. deep in drills 6 in. apart in open garden in April; transplant seedlings 6 in. apart each way in June; plant

permanently 2 ft. apart all ways in July. For spring use sow seeds end of April as for winter kinds; plant out in July. For summer use sow seeds end of May; plant out in Aug.

**CULTURE OF BRUSSELS SPROUTS:** For early crop sow seeds in temp. of 55° to 65° in March, transplant seedlings when third leaf forms into boxes, keep in heat for a week or so, then harden off in cold frame & plant 4 in. apart on a sheltered border till May, when plant out in permanent position. Sow also outdoors early in April. Transplant seedlings as advised for Broccoli, & plant out permanently 30 in. apart in rows 3 ft. asunder. Season of use, Nov. to April. Cut, not break, off sprouts when gathering. Do not remove heads till sprouts are finished.

**CULTURE OF CABBAGE AND COLEWORT:** For summer use sow seeds  $\frac{1}{2}$  in. deep in boxes of light soil in temp. 65° in Feb.; transplant seedlings 3 in. apart in boxes of light soil & put in cold frame for few weeks; plant out 12 in. apart in rows 18 in. asunder in April. For autumn use sow seeds  $\frac{1}{2}$  in. deep in drills 6 in. apart in open position in March; transplant seedlings 6 in. apart in May; plant out 12 in. apart in rows 18 in. asunder in June. For spring use sow seeds  $\frac{1}{2}$  in. deep in open garden middle of July; transplant seedlings 6 in. apart in Aug.; plant out 12 in. apart in rows 18 in. asunder in Sept. Sow Colewort in July and plant out 12 in. apart each way in Sept.

**CULTURE OF CAULIFLOWER:** For summer use sow seeds as advised for early cabbage. For autumn use sow seeds  $\frac{1}{2}$  in. deep in drills 6 in. apart in April; transplant seedlings 6 in. apart in May, & plant out 18 in. apart in rows 2 ft. asunder in June. For spring use sow, as in last case, outdoors in Aug.; transplant seedlings in cold frame for the winter, & plant out in April. When hearts begin to form snap leaf over them to protect tender flowers from sun and frost.

**CULTURE OF KOHL-RABI:** Sow seeds thinly outdoors in March. Thin seedlings to 3 in. apart in May, and plant out permanently 2 ft. apart in rows 3 ft. asunder in June. Gather swollen stems for use when the size of a turnip.

**CULTURE OF SAVOY:** Sow seeds outdoors in March for early crop & at the end of April for maincrop. Treat seedlings as advised for cabbage. Plant dwarf varieties 12 in. apart in rows 15 in. asunder; tall kinds 18 in. apart in rows 2 ft. asunder. Gather for use after autumn frost.

**CULTURE OF TURNIP:** Sow seeds in Feb., March, April, May, June, & July to furnish a continuous supply. Make drills  $\frac{1}{2}$  in. deep & 1 ft. apart. Dust seedlings occasionally with lime or soot to keep off Turnip Flea. Thin when rough leaf forms to 6 in. apart. Turnips may be easily forced on hotbed in Feb. or March. Sow seeds broadcast & lightly cover with fine soil. Keep moist. Turnips ready to gather eight weeks after sowing.

**CULTURE OF MUSTARD:** Soil, ordinary. Position, open borders. Sow seeds on surface of soil, water, & cover with mats or boards till they germinate; or in drills  $\frac{1}{2}$  in. deep, and 6 in. apart. Make first sowing end of March, follow with successional sowings every five days until Sept., then cease. Gather for salading when 1 in. high. Two crops sufficient off one piece of ground.

**INDOOR CULTURE:** Sow seed on surface of light soil in shallow boxes, moisten with tepid water, cover with sheet of paper, slate or board, & place in warm position in greenhouse or room. Sow for succession

every three days. Two crops may be grown in same soil. Seeds may be sown on flannel kept moist in a warm room, at any time of year.

**MARKET CULTURE:** Prepare beds as follows on the ground or on the staging under glass: Place 2 in. of rough decayed manure on base, 2 in. of sifted manure on top, and 1 in. of fine soil or cocoanut-fibre refuse on this. Soak the seeds for 12 hours in water before sowing. Sow thickly on surface, do not cover with soil, but moisten thoroughly with tepid water. Cover bed with mats till seedlings are 1½ in. high. Cut when 3 in. high & market in punnets. Crop ready to cut about a week after sowing. Average yield, two punnets per square foot. Average price per doz. punnets, 1s. 6d. to 2s. Temp. for early crops 65°. Will grow in cold frames in summer. Rape seed (*Brassica napus*) used instead of White Mustard (*Brassica alba*) by market growers because it is much cheaper.

**CULTURE OF COUVE TRONCHUDA:** Soil, ordinary, rich. Position, sunny. Sow seeds thinly outdoors in April. Transplant seedlings when 3 in. high, 6 in. apart in a nursery bed. Plant out finally 3 ft. apart each way in June. Gather outer leaves first for their mid-ribs, and hearts last of all.

**MISCELLANEOUS DETAILS:** Soil to be deeply dug and well manured for all foregoing crops. Fork in bone meal or superphosphate for turnip crop. Best artificial manure for cabbage tribe: Kainit, 2½ lb.; sulphate of ammonia, 2 lb.; sulphate of soda, 1½ lb.; & superphosphate of lime, 2½ lb. Apply above quantity to each square rod a month after planting. Turnips take eight weeks from time of sowing to arrive at maturity; Brussels sprouts, 30 to 40 weeks; other crops, 18 to 20 weeks. Seeds take eight to ten days to germinate, and retain their germinating powers for six to eight years. One ounce of seeds will yield 2,000 plants.

**MARKET CULTURE:** Soil, deep & rich. Manures: For Borecole, 3 cwt. of superphosphate per acre applied in spring, & ½ cwt. of nitrate of soda per acre applied a month after planting; for Broccoli, 12 tons of decayed manure & 4 cwt. of superphosphate per acre applied before planting, with 1 cwt. of nitrate of soda per acre applied when hearts are developing; for Brussels Sprouts, 20 tons of farmyard manure per acre applied in winter, 4 cwt. of superphosphate per acre applied in spring, & 4 cwt. of nitrate of soda per acre applied when sprouts begin to form; for Cabbage, 30 to 40 tons of farmyard manure per acre applied just before planting, and 2 cwt. of nitrate of soda per acre applied six weeks after planting; for Cauliflower, 30 to 40 tons of rotten manure per acre applied in winter, 3 cwt. of kainit per acre applied in winter, 3 cwt. of superphosphate per acre added in spring, & 1½ cwt. of nitrate of soda per acre applied six weeks after planting; for Savoy, same as for Cabbage; for Turnips, 10 tons of rotten manure per acre applied in winter, 1 cwt. of kainit per acre applied in winter, 5 cwt. of basic slag applied in winter or 3 cwt. of superphosphate per acre applied in spring, and 1 cwt. of nitrate of soda per acre applied after crop is thinned. Sow seeds of Borecole, Broccoli, Brussels Sprouts, Colewort, Cauliflowers, & Savoys in April outdoors; Cabbage in March, April, & July; Turnip, in March, April, July, Aug., & Sept. Plant in June or July. Cabbage again in Sept. Distances for planting: Borecole, 30 in. each way; Broccoli, 2 ft. apart in rows 30 in. asunder; Brussels Sprouts, 30 in. apart in rows 3 ft. asunder; Cabbage, 18 in. apart each way for early crops, & 2 ft. apart for late or main

ones; Cauliflower, 3 ft. by 3 ft.; Colewort, 1 ft. apart each way; Savoy, 18 in. apart in rows 2 ft. asunder. Thin Turnips to 9 in. apart; rows 18 in. apart. Market Borecole in bushel baskets or bags; Broccoli by the tally (5 doz. heads); Brussels Sprouts by the half-bushel or sieve; Cabbage by the tally; Cauliflowers by the tally; Coleworts by the bushel or bag; Savoys by the tally; Turnips by the bunch (20 to 25); Turnip Tops by the bushel. Number of plants required to plant an acre: Borecole, 4,978; Broccoli, 6,969; Brussels Sprouts, 5,808; Cabbage, 19,360; Cauliflowers, 4,840; Coleworts, 27,878; Savoys, 6,969. Cost of planting per acre, 6d. Cost of picking sprouts per half-bushel, 2d. to 2½d. Yield per acre: Cabbage, 1,000 doz.; Broccoli, 10 tons; Cauliflowers, 20 tons; Brussels Sprouts, 350 half-bushels; Coleworts, 250 doz.; Savoys, 12 to 17 tons; Turnips, 500 to 1,000 bushels. Average returns (gross) per acre for Cabbage tribe, £30 to £40; Turnips, £30.

SPECIES: *B. oleracea acephala* (Borecole or Kale); *oleracea botrytis asparagoides* (Broccoli); *oleracea gemmifera* (Brussels Sprouts); *oleracea* (Cabbage); *oleracea botrytis* (Cauliflower); *oleracea Caulo-rapa* (Kohl Rabi); *oleracea bullata* (Savoy); *oleracea costata* (Couve Tronchuda or Portugal Cabbage), Portugal; *rapa* (Turnip); *napus* (Rape); *alba* (Mustard) (Syn. *Sinapis alba*).

**Bravo** (Scarlet Twin-flower).—Ord. *Amaryllidaceæ*. Half-hardy bulbous plant. Deciduous. Nat. Mexico. First introduced 1841.

OUTDOOR CULTURE: Soil, light, sandy. Position, well-drained sunny border. Plant bulbs 4 in. deep in Sept. Protect in winter with a covering of cinder ashes.

GREENHOUSE CULTURE: Put four bulbs in a 5 in. pot, well drained, in Oct. Cover with ashes in cold frame until Jan., then remove to greenhouse. Water moderately until foliage turns yellow, then keep soil dry. Propagate by offsets treated as advised for bulbs.

SPECIES CULTIVATED: *B. geminiflora*, orange red, July, 2 ft., Mexico.

**Brazilian Spider-flower** (*Tibouchina elegans*).—See *Tibouchina*.

**Brazilian Tree Fern** (*Blechnum braziliense*).—See *Blechnum*.

**Bread-fruit Tree** (*Artocarpus incisa*).—See *Artocarpus*.

**Breches Flower** (*Dicentra cucullaria*).—See *Dicentra*.

**Brevoortia** (Brodie's Lily; Californian or Missouri Hyacinth; Vegetable Fire-cracker).—Ord. *Liliaceæ*. Hardy bulbous-rooted plant. First introduced 1870. Formerly known as *Brodiaea coccinea*.

CULTURE: Same as for *Brodiaea*s, which see.

SPECIES CULTIVATED: *B. Ida-Maia* (Syn. *Brodiaea coccinea*), red and green, June, 1 ft., California.

**Briar Rose** (*Rosa canina*).—See *Rosa*.

**Bridal Wreath** (*Francoa ramosa*).—See *Francoa*.

**Bridgesia**.—See *Ercilla*.

**Brisbane Lily** (*Eurycles Cunninghami*).—See *Eurycles*.

**Bristle Fern** (*Trichomanes radicans*).—See *Trichomanes*.

**Brittle Bladder Fern** (*Cystopteris fragilis*).—See *Cystopteris*.

**Briza** (Quaking Grass; Pearl Grass).—Ord. *Gramineæ*. Hardy ornamental flowering grasses, the inflorescence of which is valuable for mixing with cut flowers, or drying for winter decoration.

CULTURE: Soil, ordinary. Position, sunny beds, borders, or banks. Propagate by seeds sown ½ in. deep in April where plants are required to flower. Flowers should be cut & dried for winter decoration when fully developed.

**SPECIES CULTIVATED:** *B. geniculata*, 1 ft., S. Africa; *maxima* (Pearl Grass), 1 ft., Mediterranean Region; *media* (Quaking Grass), 1 ft., Britain; *minor* or *minima*, 6 in., Europe; *rotundata*, 1 ft., Mexico; *spicata*, 9 in. Flowering in June and July.

**Broad Bean** (*Vicia faba*).—See *Vicia*.

**Broad-leaved Bell-flower** (*Campanula latifolia*). — See *Campanula*.

**Broad-leaved Holly** (*Ilex latifolia*).—See *Ilex*.

**Broad-leaved Spindle-tree** (*Euonymus latifolius*).—See *Euonymus*.

**Broad Prickly-toothed Fern** (*Nephrodium dilatata*).—See *Nephrodium*.

**Broccoli**.—See *Brassica*.

**Brodiaea** (*Missouri Hyacinth*).—Ord. Liliaceæ. Hardy bulbous plants. Deciduous. Nat. California, N. America. First introduced 1806.

**OUTDOOR CULTURE:** Soil, rich, sandy loam. Position, warm, well-drained border. Plant bulbs Sept. & Oct., 4 in. deep & 3 in. apart. Lift & replant bulbs annually.

**INDOOR CULTURE:** Compost, two parts sandy loam & one part equal proportions of leaf-mould & sand. Grow in 4½ in. pots, placing bulbs 1 in apart & just below surface of mould. Pot, Oct. Cover with ashes in cold frame till growth begins, then remove to a temp. 45° to 55° Water freely whilst growing. Keep dry when foliage fades.

Propagate by seeds sown ½ in. deep in sandy soil in cold frame in March; by offsets treated as advised for bulbs.

**SPECIES CULTIVATED:** *B. Bridgesii*, purple, blue, June, 1½ ft., California; *californica*, rosy-purple, June, 1½ ft., California; *congesta*, blue, June, 1 ft., N.W. America; *congesta alba*, white; *capitata*, blue, May, 2 ft., N.W. America; *capitata alba*, white; *grandiflora*, blue and purple, June, 1½ ft., N.W. America; *ixioides*, yellow, June, 9 in., California; *Howellii*, blue, July, 2 ft., Oregon; *Howellii lilacina*, lilac; *hyacinthina lactea*, white, July, 2 ft., California; *laxa*, blue, June, 1½ ft., California (Syn. *Milla laxa*); *uniflora* (Syn. *Tritelia uniflora violacea*, pale blue. See *Brevoortia* for *B. coccinea*.) There are others, but above are the best.

**Brodie's Lily** (*Brevoortia Ida-Maia*).—See *Brevoortia*.

**Brome Grass**.—See *Bromus*.

**Bromelia**.—Ord. Bromeliaceæ. Stove herbaceous perennials. Flowering and ornamental leaved plants.

**CULTURE:** Compost, equal parts fibrous loam, rough peat, leaf-mould, & silver sand. Pot, March. Water freely always. Good drainage essential. Temp., Sept. to March 65° to 75°; March to Sept. 70° to 80°. Propagate by large-sized offshoots inserted singly in small pots of sandy peat in temp. 85° in April.

**SPECIES CULTIVATED:** *B. fastuosa*, purple, Aug., 4 ft., Brazil; *Pinguin*, red, March, 3 ft., Trop. America; *sylvestris*, crimson, July, 3 ft., Trop. America.

**Brompton Stock** (*Matthiola incana*).—See *Matthiola*.

**Bromus** (Black Grass; *Brome Grass*).—Ord. Gramineæ. Hardy ornamental grasses. Biennial. Inflorescence suitable for mixing with cut flowers or drying for winter decoration.

**CULTURE:** Soil, ordinary. Position, open borders. Propagate by seeds sown ½ in. deep in Sept or April where plants are required to grow. Flowers useful for drying for winter decoration; cut them when fully developed.

**SPECIES CULTIVATED:** *B. brizæformis*, 2 ft., Caucasus.

**Broom**.—See *Cytisus*.

**Broughtonia**.—Ord. Orchidaceæ. Stove orchid. Evergreen. First introduced 1793.

**CULTURE:** Compost, sphagnum moss. Position, blocks of wood, in partial shade. Water freely April to Aug., moderately other times. Temp., Oct., to Feb. 50° to 60; Feb. to Oct. 65° to 85°. Growing period, spring & summer. Resting period, winter. Flowers appear at apex of new pseudo-bulb after resting.

**SPECIES CULTIVATED:** *B. lilacina*, rosy lilac, summer, San Domingo; *sanguinea*, crimson, Aug., 18 in., Jamaica.

**Broussonetia** (Paper Mulberry).—Ord. Urticaceæ. Hardy deciduous tree. Orn. foliage. Nat. China. First introduced 1751. Leaves, large, lobed, mulberry-shaped.

**CULTURE:** Soil, rich loamy. Position, sheltered shrubberies in S. of England only. Plant, Oct. to March. Propagate by cuttings inserted in sandy soil in cold frame in Oct., or suckers in Oct. or Nov.

**SPECIES CULTIVATED:** *B. papyrifera*, 12 ft., Japan.

**Browallia**.—Ord. Solanaceæ. Greenhouse annuals. Flowering. First introduced 1735.

**CULTURE:** Compost, equal parts loam & leaf-mould, with little sand. Sow seeds 1-16 in. deep in fine light soil in March in temp. 55° to 65°. When seedlings appear transplant three or four into each 5 in. pot, keep on a shelf in greenhouse, & water moderately. Apply weak manure water in May & June. Will flower in cool greenhouse. Temp., March to June 55° to 60°. Seedlings may be planted outdoors in June to flower during summer.

**SPECIES CULTIVATED:** *B. demissa* (Syn. *B. elata*), blue, July, 9 in., Peru; *speciosa*, purple, July, 2 ft., Peru; *speciosa major*, blue; *grandiflora*, lilac, July, 2 ft., Peru.

**Brownea**.—Ord. Leguminosæ. Stove flowering shrubs. Evergreen. First introduced 1820.

**CULTURE:** Compost, equal parts peat & loam, little sand. Pot, Feb. or March. Water moderately in summer, occasionally at other times. Temp., Sept. to March 55° to 60°; March to Sept. 65° to 85°. Propagate by cuttings of firm shoots inserted in sandy peat, in temp. 80° under bell-glass, in spring.

**SPECIES CULTIVATED:** *B. Ariza*, red, June, 10 to 20 ft., Colombia; *Birschellii*, rose, Aug., 10 ft., Venezuela; *Crawfordii*, scarlet, summer, 10 to 12 ft., hybrid; *grandiceps*, red, June, 10 ft., Venezuela.

**Brugmansia**.—See *Datura*.

**Brunfelsia**.—Ord. Solanaceæ. Stove evergreen flowering shrubs. First introduced 1826.

**CULTURE:** Compost, four parts each fibrous peat & leaf-mould, one part loam & sand. Position, pots in plant stove. Pot immediately after flowering; good drainage & firm potting essential. Prune moderately after flowering. Pinch off points of young shoots when latter are 6 in. long. Water moderately Oct. to March, freely afterwards. Syringe freely March to Aug. Apply liquid manure to healthy plants in summer. Temp., Oct. to March 50° to 55°; March to Oct. 60° to 70°. Propagate by cuttings 2 to 3 in. long, inserted in sand under bell-glass in temp. 60° to 70°, Feb. to Aug.

**SPECIES CULTIVATED:** *B. calycina* (Syn. *Francisceca calycina*), purple, fragrant, summer, 2 ft., Brazil.

**Brunsvigia** (Candelabra-flower).—Ord. Amaryllidaceæ. Greenhouse bulbous plants. Deciduous. Nat. Cape of Good Hope. First introduced 1752.

**CULTURE:** Compost, equal parts peat, loam, & sand. Pot., Sept. Water only when new growth begins, then give moderate quantity; cease to give any after leaves turn yellow. Temp., Sept. to Nov. 50° to 55°; Nov. to March, 55° to 65°; March to Sept. 65° to 75°. Plants

must have full exposure to sun. Propagate by offsets inserted in small pots & grown similar to large bulbs.

**SPECIES CULTIVATED:** *B. gigantea*, red, July, 1 ft.; *Josephinæ*, scarlet, July, 18 in.; minor, pink, July, 9 in.; *Radula*, red, June, 6 in.

**Brussels Sprouts.**—See *Brassica*.

**Bryanthus.**—Ord. *Ericaceæ*. Hardy trailing flowering shrubs. Evergreen.

**CULTURE:** Soil, sandy peat. Position, moist rockery. Plant, Oct. to April. Propagate by division of plants in April, or layering in Oct.

**SPECIES CULTIVATED:** *B. Brewerj*, rosy-purple, June to Aug., 9 to 12 in., California; *empetriformis*, reddish purple, summer, 6 in., British Columbia; *erectus*, red, summer, 1 ft., a hybrid between *B. empetriformis* and *Rhodothamnus Chamaecistus*.

**Bryophyllum.**—Ord. *Crassulaceæ*. Greenhouse succulent-leaved plants. First introduced 1800.

**CULTURE:** Compost, two parts sandy loam, one part old mortar, rubble, & sand. Position, well-drained pits in sunny, fairly dry greenhouse. Pot in March. Water moderately in summer, keep rather dry at other seasons. Temp., 45° to 55° in winter; 55° to 65° afterwards. Propagate by leaves simply laid on the surface of moist sand.

**SPECIES CULTIVATED:** *B. calycinum*, green and purple, summer, 3 ft., Trop. Africa; *proliferum*, green and purple, summer, 10 ft., S. Africa.

**Buck-eye** (*Æsculus Pavia*).—See *Æsculus*.

**Buckler Fern** (*Nephrodium Filix-mas*).—See *Nephrodium*.

**Buckthorn** (*Rhamnus catharticus*).—See *Rhamnus*.

**Buckwheat.**—See *Fagopyrum*.

**Buddleia** (Orange-ball-tree).—Ord. *Loganiaceæ*. Hardy or greenhouse flowering shrubs. Evergreen. Hardy kinds only worthy of culture. First introduced 1774.

**CULTURE:** Soil, light rich. Position, border against south or south-west wall, or in sheltered shrubberies. Plant, Oct. or April. Prune away dead or straggly shoots only. Propagate by seeds sown in light soil in a temp. of 60° in March; by cuttings of firm shoots inserted in pots of sandy soil in cold frame in Sept.

**SPECIES CULTIVATED:** *B. globosa*, orange, May and June, 10 to 15 ft., Chili and Peru; *intermedia*, purple, summer, 10 ft., a hybrid; *japonica* (*Syn. B. curviflora*), purple, Aug., Japan; *variabilis*, rosy lilac, summer, 6 to 10 ft., China; *variabilis veitchiana*, a superior variety.

**Buffalo-berry** (*Shepherdia argentea*).—See *Shepherdia*.

**Buffalo Currant** (*Ribes aureum*).—See *Ribes*.

**Buff-coloured Lily** (*Lilium testaceum*).—See *Lilium*.

**Buffhorn Wood** (*Burchellia capensis*).—See *Burchellia*.

**Bugbane** (*Cimicifuga americana*).—See *Cimicifuga*.

**Bugle Flower** (*Ajuga reptans*).—See *Ajuga*.

**Bugle Lily.**—See *Watsonia*.

**Bulb-bearing Lily** (*Lilium bulbiferum*).—See *Lilium*.

**Bulbinella.**—Ord. *Liliaceæ*. Hardy herbaceous perennial. First introduced 1848.

**CULTURE:** Soil, rich, well drained, containing plenty of leaf-mould. Position, partially shaded warm border. Plant in spring. Propagate by division in spring.

**SPECIES CULTIVATED:** *B. Hookeri* (*Syn. Chrysobaetron Hookeri*), white, summer, 2 to 3 ft., New Zealand.

**Bulbocodium** (Spring Meadow Saffron).—Ord. *Liliaceæ*. Hardy bulbous plant. First introduced 1649. Flowers appear in March, before leaves.



**CULTURE:** Soil, ordinary. Position, sunny or shady beds or borders. Plant bulbs 3 in. deep & 3 in. apart in Sept. Lift & replant bulbs every second year. Propagate by offsets obtained when lifting the bulbs.

**SPECIES CULTIVATED:** *B. vernum*, purple, March, 6 in., Alps; *vernum vesicolor*, prettily tinted.

**Bullace** (*Prunus institia*).—See *Prunus*.

**Bullrush** (*Typha latifolia*).—See *Typha*.

**Bull's Head Orchid** (*Anguloa Clowesi*).—See *Anguloa*.

**Bunch Berry** (*Cornus canadensis*).—See *Cornus*.

**Bunya-Bunya Pine-tree** (*Araucaria Bidwelli*).—See *Araucaria*.

**Buphane**.—Ord. Amaryllidaceæ. Half-hardy or greenhouse bulbous-rooted plants. First introduced 1795.

**CULTURE:** Compost, equal parts peat, loam, & sand. Pot, Sept. Water only when new growth begins, then give moderate quantity; cease to give any after leaves turn yellow. Temp., Sept. to Nov. 50° to 55°; Nov. to March 55° to 65°; March to Sept. 65° to 75°. Plants must have full exposure to sun. Propagate by offsets inserted in small pots & grown similar to large bulbs.

**SPECIES CULTIVATED:** *B. ciliaris*, purple, summer, 1 ft.; *disticha*, purple, summer, 1 ft., S. Africa.

**Bupleurum** (Hare's-ear).—Ord. Umbelliferae. Hardy evergreen shrub and perennials. First introduced 1596.

**CULTURE OF SHRUBBY SPECIES:** Soil, ordinary. Position, warm border. Plant, Oct. or April. Propagate by cuttings inserted in sandy peat in cold frame in Oct. or March; also by seeds.

**CULTURE OF PERENNIAL SPECIES:** Soil, ordinary. Position, sunny borders or rockeries. Plant, Oct. or March. Propagate by seeds: sown outdoors in April; division in March.

**SHRUBBY SPECIES CULTIVATED:** *B. fruticosum*, yellow, July, 3 ft., Mediterranean Region.

**PERENNIAL SPECIES CULTIVATED:** *B. petraeum*, yellow, June, 6 in., Europe; *stellatum*, yellow, June, 9 in., S. Europe.

**Bupthalmum** (Yellow Ox-eye).—Ord. Compositæ. Hardy herbaceous perennials. First introduced, 1722.

**CULTURE:** Soil, ordinary. Position, open sunny border. Plant, Oct. or March. Propagate by division of old plants in Oct. or March; seeds sown outdoors in April.

**SPECIES CULTIVATED:** *B. salicifolium*, yellow, June, 18 in., S. Europe; *salicifolium grandiflorum*, large-flowered variety; *speciosissimum* (Syn. *Telekia speciosissima*), yellow, June, 2 ft., Europe; *speciosum* (Syn. *Telekia speciosa*), yellow, June, 5 ft., Europe.

**Burbidgea**.—Ord. Scitaminaceæ. Stove herbaceous flowering perennial. First introduced 1879.

**CULTURE:** Compost, equal parts peat, leaf-mould, and loam. Position, large pots, tubs, or beds. Plant, March. Water freely March to August, moderately other times. Propagate by division of roots in April.

**SPECIES CULTIVATED:** *B. nitida*, orange red, summer, 3 ft., Borneo.

**Burchellia** (Bufflehorn-wood).—Ord. Rubiaceæ. Stove flowering shrub. Evergreen. Nat. Cape of Good Hope.

**CULTURE:** Compost, equal parts peat, loam, leaf-mould, & sand. Pot, March. Water freely April to Sept., moderately other times. Temp., Sept. to March. 55° to 60°; March to Sept. 65° to 75°. Propagate by cuttings of young shoots inserted in sandy peat under bell-glass in temp. 75° in March, April, or May.

SPECIES CULTIVATED: *B. capensis*, scarlet, March to May, 3 ft.

**Bur Marigold**.—See *Bidens*.

**Burnet** (*Poterium Sanguisorba*).—See *Poterium*.

**Burnet Rose** (*Rosa spinosissima*).—See *Rosa*.

**Burning Bush** (*Dictamnus albus*).—See *Dictamnus*.

**Burr Oak** (*Quercus macrocarpa*).—See *Quercus*.

**Burser's Saxifrage** (*Saxifraga burseriana*).—See *Saxifraga*.

**Bush Basil** (*Ocimum minimum*).—See *Ocimum*.

**Bush Clover** (*Lespedeza capitata*).—See *Lespedeza*.

**Bush Honeysuckle** (*Diervilla rosea*).—See *Diervilla*.

**Butcher's Broom** (*Ruscus aculeatus*).—See *Ruscus*.

**Butomus** (Flowering Rush; Lily Grass).—Ord. *Alismaceæ*.

Hardy perennial. Pretty waterside plant.

CULTURE: Soil, ordinary. Position, in shallow water on margins of ponds, lakes, etc. Plant, Oct. or March. Propagate by division of roots in March or April.

SPECIES CULTIVATED: *B. umbellatus*, rose, summer, 2 to 3 ft., Europe (Britain.)

**Butter & Eggs** (*Narcissus incomparabilis plenus*).—See *Narcissus*.

**Butter Bean** (*Phaseolus vulgaris*).—See *Phaseolus*.

**Buttercup**.—See *Ranunculus*.

**Butterfly Flower**.—See *Schizanthus*.

**Butterfly Iris**.—See *Moræa*.

**Butterfly Orchid** (*Oncidium Papilio*).—See *Oncidium*.

**Butterfly Orchis** (*Habenaria chlorantha* & *H. bifolia*).—See *Habenaria*.

**Butterfly Pea**.—See *Clitoria*.

**Butterfly Plant** (*Phalænopsis amabilis*).—See *Phalænopsis*.

**Butterfly Tulip** (*Calochortus lilacinus*).—See *Calochortus*.

**Butterfly-weed** (*Asclepias tuberosa*).—See *Asclepias*.

**Butter-weed** (*Erigeron canadensis*).—See *Erigeron*.

**Butterwort** (*Pinguicula vulgaris*).—See *Pinguicula*.

**Button Bush** (*Cephalanthus occidentalis*).—See *Cephalanthus*.

**Button Snake-root** (*Liatris pycnostachya*).—See *Liatris*.

**Buxus** (Box-tree). — Ord. *Euphorbiaceæ*. Hardy evergreen, ornamental-leaved shrubs. Nat. England, S. Europe. Leaves, green, golden, or silver variegated.

CULTURE: Soil, ordinary. Position, open or shady, shrubberies or banks; choice kinds on lawns. Plant, March, April, Sept., Oct. Propagate by cuttings of young shoots 3in. long inserted in shady border in Aug. or Sept.; division of old plants in Oct. or March; layering in Sept. or Oct.

CULTURE FOR EDGINGS: Dwarf Box (*B. suffruticosa*) used for this purpose. Plant divisions with roots attached in shallow trench 6 in. deep in Oct., Nov., or March. Allow plants to nearly touch each other, & to have their tips about 2 in. above soil. Press soil firmly. Trim plants April or Aug. Nursery yard of box will make three yards of edging. Cost, sixpence per lineal yard.

BOX HEDGES: Trench soil 3 ft. deep & 3 ft. wide, add decayed manure, & plant ordinary green box 12 ins. high, 12 ins. apart in Sept. or Oct. Trim annually in April or Aug. Cost of plants, per 100, 25s.; preparing site & planting, 9d. per lineal yard.

SPECIES CULTIVATED: *B. balearica*, 8 ft., Balearic Islands; *japonica*, 8 ft., Japan; *japonica aurea* (golden leaved) *sempervirens*, 8 ft., Europe (Britain), etc.

and its numerous varieties, *argentea* (silver-leaved); *aurea* (golden-leaved); *handsworthiensis*, *myrtifolia* (myrtle-leaved), *pyramidalis* and *suffruticosa* (Dutch or edging box).

**Byzantine Crocus** (*Crocus iridiflorus*).—See *Crocus*.

**Cabbage**.—See *Brassica*.

**Cabbage Lettuce**.—See *Lactuca*.

**Cabbage Palm** (*Sabal Palmetto*).—See *Sabal*.

**Cabbage Rose** (*Rosa centifolia*).—See *Rosa*.

**Cacalia**.—See *Kleinia*.

**Cactus Dahlia** (*Dahlia Juarezii*).—See *Dahlia*.

**Cæsalpinia**.—Ord. Leguminosæ. Hardy deciduous & stove evergreen shrubs. First introduced 1739.

**CULTURE OF HARDY SPECIES:** Soil, ordinary. Position, warm, sheltered shrubberies. Plant, Oct. to Feb. Prune merely to keep in good shape. Propagate by seeds sown in sandy soil in cold frame at any time.

**CULTURE OF STOVE SPECIES:** Compost, two parts peat or loam, one part leaf-mould, half a part silver sand. Position, pots in light part of stove or outdoors during July & Aug. Pot, Feb. or March. Water freely, March to Oct., moderately afterwards. Temp., March to Oct. 70° to 80°; Oct. to March 55 to 65°. Propagate by seeds sown in light sandy soil in temp. of 75° to 85° in spring; cuttings of short young shoots inserted singly in small pots filled with pure sand under bell-glass in temp. 75° to 85° in summer.

**HARDY SPECIES:** *C. sepiaria* (Syn. *C. japonica*), yellow, spring, 6 to 8 ft., Japan; *Gilliesii* (Syn. *Poinciana Gilliesii*), yellow, summer, 10 ft., S. America.

**STOVE SPECIES:** *C. pulcherrima* (Syn. *Poinciana pulcherrima*), yellow and red, summer, 10 to 15 ft., Tropics.

**Caffe Bread**.—See *Encephalartos*.

**Caffe Butter Shrub** (*Combretum purpureum*).—See *Combretum*.

**Caffe Lily** (*Schizostylis coccinea*).—See *Schizostylis*.

**Cakile** (Sea Rocket).—Ord. Cruciferæ. Hardy annual. Nat. Europe, N. America.

**CULTURE:** Soil, sandy. Position, open borders. Propagate by seeds sown 1-16 in. deep where plants are to flower in March or April.

**SPECIES CULTIVATED:** *C. maritima*, lilac, June, 1 ft., Britain.

**Caladium**.—Ord. Aroidææ. Stove deciduous perennials. Tuberous-rooted. Orn. foliage. First introduced 1773. Leaves, green, white, crimson, red, rose.

**CULTURE:** Compost, equal parts turfy loam, peat, leaf-mould, decayed manure, & silver sand. Position, well drained pots in shade. Pot moderately firm in pots just large enough to take tubers in Feb. or March; transfer to larger pots in April or May. Water moderately Feb. to April & Sept. to Nov.; freely April to Sept.; keep quite dry Nov. to Feb. Temp., Feb. to Sept. 70° to 80°; Sept. to Nov. 65° to 75°; Nov. to Feb. 55° to 65°. *C. Humboldtii* used as an edging to subtropical beds in summer. Propagate by dividing the tubers in Feb. or March.

**SPECIES CULTIVATED:** *C. Humboldtii* (Syn. *C. argyrites*), 9 ins., Brazil; bicolor, 18 in., S. America; bicolor, *Chantini*, 18 in., bicolor *picotum*, 18 in.; *marmoratum*, 1 ft., Guayaquil; *Schomburgkii*, 18 in., Brazil; *rutescens*, Brazil; *venosum*, Brazil. A host of beautiful varieties more generally grown than the species will be found in trade lists.

**Calamintha** (Calamint; Basil Thyme).—Ord. Labiataæ. Hardy annuals & herbaceous perennials. Flowers, fragrant.

**CULTURE:** Soil, ordinary. Position, sunny rockeries & borders.

Plant, Oct. to April. Propagate by seeds sown 1-16 in. deep outdoors in April; cuttings of side shoots in cold frame in spring; division of roots in Oct. or April.

ANNUAL SPECIES: *C. Acinos* (Basil Thyme), purple, July, 6 in., England.

PERENNIAL SPECIES: *C. grandiflora*, purple, June, 1 ft., Europe.

**Calamus.**—Ord. Palmaceæ. Stove palms. Evergreen. Orn. foliage. First introduced 1819. Ht. 5 to 15 ft. Leaves, large, finely divided.

CULTURE: Compost, two parts turfy loam, one part leaf-mould & coarse sand. Position, well drained pots in shade. Pot firmly in March. Water moderately Sept. to March, freely afterwards. Temp., Sept. to Mar. 60° to 65°; March to Sept. 70° to 85°. Propagate by seeds sown 1 in. deep in light soil, in temp. 80° in March; by suckers growing from roots, inserted in small pots of light soil under bell-glass in temp 80°.

SPECIES CULTIVATED: *C. asperimus*, Java; *australis*, Australia; *caryo-  
toides*, Australia; *ciliaris*, Malaya; *erectus*, Himalayas; *flagellum*, Himalayas; *Muelleri*, Australia; *oblongus*, Java; *oxleyanus*, Malaya; *Regis*, New Guinea; *rudentum*, Cochín China; *subangulatus*, Sumatra; *tenuis*, India; *trinervis*, East Indies; *viminalis*, India.

**Calandrinia** (Rock-Purslane). — Ord. Portulacææ. Hardy annuals, biennials, & perennials. First introduced 1826.

CULTURE: Soil, light, moderately rich. Position, sunny rockery for dwarf species; borders for tall species. Plant perennials in April. Propagate annuals by seeds sown 1-16 in. deep in shallow boxes of light soil in temp. 55° to 60° in March, transplant seedlings into small pots in April, & plant out in June, or sow seeds outdoors in April, where plants are to flower; biennials by seeds sown in heat similar to annuals; perennials by seeds or division of roots in April.

ANNUAL SPECIES: *C. compressa*, rose, Aug., 6 in., Chili; *procumbens*, rose, Aug., 6 in., Peru; *nitida*, red, Aug., 6 in., Chili.

BIENNIAL SPECIES: *C. umbellata*, rose, July, 6 in., Peru.

PERENNIAL SPECIES: *C. grandiflora*, rosy-red, summer, 1 ft., Chili; *Menziesii*, crimson, summer, 1 ft., California; *discolor*, rose, summer, 18 in., Chili.

**Calanthe.**—Ord. Orchidacææ. Warm greenhouse terrestrial orchids. Deciduous & evergreen. First introduced 1819.

CULTURE: Compost, two parts loam, one part decayed manure, & leaf-mould. Position, shady or partially shady, pots with a third of drainage in each. Pot loosely in March. Cover drainage with layer of moss & allow compost to be well elevated above the rim of pot. Water deciduous kinds freely April to Sept., moderately Sept. to Jan.; keep quite dry afterwards; evergreen kinds water freely at all times. Temp., March to Sept. 65° to 85°; Sept. to Jan. 60° to 70°; Jan. to March 55° to 65°. Resting period, winter. Flowers appear in centre of new growth, or at base of pseudo-bulb, when growth is nearly completed. Propagate by division of pseudo-bulbs in March.

SPECIES CULTIVATED: *C. ourculigoides*, orange, 2 ft., Oct., Malaya; *Masuca*, violet, winter, 3 ft., India; *vestita*, white, winter, 2½ ft., India.

HYBRIDS: *Dominii*, lilac-purple, 2 ft., Feb.; *porphyrea*, crimson, spring, 2 ft.; *Veitchii* (Syn. *Limatodes rosea*), rose, winter, 3 ft., and numerous other rare or little-grown forms.

**Calathea** (Zebra Plant).—Ord. Scitamineæ. Stove plants. Orn. foliage. Leaves, green, rose, yellow, white, & olive on upper sides; rosy purple beneath.

CULTURE: Compost, equal parts coarse lumps of loam, peat, leaf-mould, & sand. Position, well drained pots in shade. Pot, March, moderately firm. Water freely April to Sept., moderately afterwards.

Temp., March to Sept. 70° to 80°; Sept. to March 65° to 70°. Propagate by division of roots in March.

**SPECIES CULTIVATED:** *C. angustifolia*, 2 to 3 ft., Trop. America; *bachemiana*, 9 in., Brazil; *cyclophora*, 2 ft., Guiana; *eximia*, 2½ ft., Trop. America; *flavescens*, 18 in., Brazil; *illustris*, 1 ft., Brazil; *lindeniana*, 1 ft., Peru; *leopardina*, 2 ft., Brazil; *ornata*, 1 ft., Brazil; *sanderiana*, 2½ ft., Brazil; *veitohiana*, 3 ft., Bolivia.

**Calathian Violet** (*Gentiana pneumonanthe*).—See *Gentiana*.

**Calceolaria** (Slipper-flower; Slipper-wort).—Ord. Scrophulariaceæ. Half-hardy or greenhouse shrubs & herbaceous perennials. First introduced 1733.

**CULTURE OF HERBACEOUS KINDS:** Sow seeds on surface of fine soil in well-drained pans or shallow boxes in July. Cover box or pan with sheet of glass, & stand them under bell-glass or in cold frame. Shade from sun, & keep moderately moist. Transplant seedlings 1 in. apart in fine soil in Aug., transfer them singly into 2 in. pots in Sept., into 5 in. in Oct., & 6 or 7 in. in March. Compost, two parts sandy loam, one part leaf-mould, decayed manure & sand. Water moderately until April, then apply freely. Apply liquid manure from April till plants are in flower. Temp., Aug. to March 45° to 50°; March to May 50° to 55°. Discard plants after flowering.

**CULTURE OF SHRUBBY KINDS:** Compost, same as for herbaceous kinds. Position, pots in windows or greenhouses, or in sunny or shady beds outdoors in summer. Pot in March; plant in May. Nip off points of shoots in March to make bushy plants. Propagate by cuttings 3 in. long inserted in sandy soil in cool shady frame in Sept. or Oct., or in pots or boxes in cool greenhouse or window in Sept. Cuttings to remain in frames, etc., till potting or planting time. Protect from frost. Water moderately in autumn & winter, freely in summer.

**HERBACEOUS SPECIES:** *C. amplexicaulis*, yellow, summer, 1 to 2 ft., Peru; *araucoides*, purple, June, 1 ft., Chili; *Burbidgei* (hybrid), yellow, Sept., 2 to 3 ft., Chili; *corymbosa*, yellow, May, 1 ft., Chili; *Fothergillii*, yellow, summer, 6 in., Falkland Isles; *Pavonii*, yellow, July, 2 ft., Peru; *purpurea*, purple, July, 1 ft., Chili.

**SHRUBBY SPECIES:** *C. alba*, white, summer, 1 ft., Chili; *fuchsiaeifolia*, yellow, spring, 1 to 2 ft., Peru; *integrifolia* (Syn. *C. rugosa*), yellow, summer, 18 in., Chili; *Kellyana* (hybrid), yellow, orange and red, summer; *violacea*, violet, summer, 2 ft., Chili. The large-flowered herbaceous kinds are hybrids classified under the name of *Calceolaria herbacea*.

**Calendula** (Pot Marigold).—Ord. Compositæ. Hardy annuals.

**CULTURE:** Soil, ordinary. Position, sunny or shady beds or borders. Propagate by seeds sown ¼ in. deep outdoors in March or April where plants are to flower. Reproduces itself freely from seed.

**SPECIES CULTIVATED:** *C. officinalis*, orange-yellow, summer, 12 in., S. Europe. Meteor and Orange King are superior varieties to the species.

**Calico Bush** (*Kalmia latifolia*).—See *Kalmia*.

**Californian Bluebell** (*Nemophila insignis*).—See *Nemophila*.

**Californian Buck-eye** (*Pavia californica*).—See *Pavia*.

**Californian Cedar** (*Thuja plicata*).—See *Thuja*.

**Californian Chain Fern** (*Woodwardia radicans*).—See *Woodwardia*.

**Californian Columbine** (*Aquilegia californica*).—See *Aquilegia*.

**Californian Cone-flower** (*Rudbeckia californica*).—See *Rudbeckia*.

**Californian Fuchsia** (*Zauschneria californica*).—See *Zauschneria*.

**Californian Hyacinth** (*Brodiaea congesta*).—See *Brodiaea*.

**Californian Lace Fern** (*Cheilanthes gracillima*). — See *Cheilanthes*.

**Californian Lilac** (*Ceanothus integerrimus*).—See *Ceanothus*.

**Californian May-bush** (*Photinia arbutifolia*).—See *Photinia*.

**Californian Mock Orange** (*Carpenteria Californica*).—See *Carpenteria*.

**Californian Nutmeg** (*Torreya Californica*).—See *Torreya*.

**Californian Orange Poppy** (*Eschscholtzia californica crocea*).—See *Eschscholtzia*.

**Californian Pink Poppy** (*Eschscholtzia californica rosea*).—See *Eschscholtzia*.

**Californian Pitcher-plant** (*Darlingtonia californica*).—See *Darlingtonia*.

**Californian Poppy** (*Platystemon californicus*).—See *Platystemon*.

**Californian Redwood** (*Sequoia sempervirens*).—See *Sequoia*.

**Californian Silver Fir** (*Abies concolor*).—See *Abies*.

**Californian Soapwort** (*Leucocrinum montanum*).—See *Leucocrinum*.

**Californian Vine** (*Vitis californica*).—See *Vitis*.

**Californian White Poppy** (*Eschscholtzia californica alba*).—See *Eschscholtzia*.

**Calla** (*Bog Arum*; *Water Dragon*; *Marsh Calla*).—Ord. *Aroideæ*. Hardy floating water perennial.

**CULTURE**: Soil, rich, boggy, or muddy. Position, moist bog or shallow pond. Plant, March or April. Propagate by inserting portions of stems in boggy or muddy soil where plants are required to grow.

**SPECIES CULTIVATED**: *C. palustris*, white, summer, 6 in., N. Hemisphere. See also *Richardia*.

**Calla Lily** (*Richardia africana*).—See *Richardia*.

**Callicarpa** (*French Mulberry*; *Purple Mulberry*).—Ord. *Verbenacæ*. Stove plant. Orn. fruit. First introduced 1822. Berries, deep violet, borne abundantly in axils of leaves; Nov. to May.

**CULTURE**: Compost, equal parts peat & loam, with little sand. Position, pots, sunny. Pot, March. Prune straggly shoots into shape before potting. Water moderately Sept. to March, freely afterwards. Temp., Sept. to March 55° to 65°; March to Sept. 70° to 80° Propagate by cuttings of young shoots inserted in 2 in. pots of sandy soil in March in temp. 80°. To ensure plenty of berries, keep the points of shoots frequently pinched off & all flowers removed until the end of July.

**SPECIES CULTIVATED**: *C. purpurea*, 6 ft., China.

**Callichroa**.—See *Layia*.

**Calliopsis**.—See *Coreopsis*.

**Calliphuria**. — Ord. *Amaryllidacæ*. Greenhouse, bulbous rooted perennial. First introduced 1876.

**CULTURE**: Compost, two parts sandy loam, one part leaf-mould, peat, & sand. Position, well-drained pots, sunny. Pot, March, placing one bulb 3 in. deep in a 5 in. pot. Water moderately March to Oct., very little afterwards. Temp., Sept. to March 50° to 55°; March to Sept. 55° to 65° Propagate by offsets placed in small pots in March.

**SPECIES CULTIVATED**: *C. hartungiana*, white, June, 1 ft., Bogota.

**Callirhoe** (Poppy-Mallow).—Ord. Malvaceæ. Hardy annuals & perennials. First introduced 1824.

**CULTURE:** Soil, ordinary. Position, open borders. Plant perennials Oct. or March. Propagate annual species by seeds sown 1-16 in. deep in pans of light soil in temp. 55° to 65° in March, transplanting seedlings outdoors in May, or where plants are to flower in April; perennials by seeds sown 1-16 in. deep outdoors in April, or cuttings of young shoots inserted in sandy soil in cold frame in spring.

**ANNUAL SPECIES:** *C. pedata*, cherry-red, summer, 2 ft., Texas; *pedata compacta*, crimson, white eye.

**PERENNIAL SPECIES:** *C. involucrata*, crimson, July, 6 in., N. America; *lineariloba*, striped, July, 6 in., N. America; *alcæoides* (Syn. *C. macrorhiza*), white and rose, 2 ft., summer.

**Callistemon** (Bottle Brush Tree).—Ord. Myrtaceæ. Greenhouse evergreen flowering shrubs. First introduced 1788.

**CULTURE:** Compost, equal parts peat, loam, & silver sand. Position, in pots, or in well-drained beds at base of wall. Pot or plant March or April. Prune shoots slightly after flowering. Water freely April to Sept., moderately afterwards. Temp. March to Sept. 55° to 65°; Sept. to March 40° to 50°. Propagate by cuttings of firm shoots, 3 in. long, inserted in sandy peat under bell-glass, in temp. 55° to 65° during summer.

**SPECIES CULTIVATED:** *C. lanceolatus*, crimson, June, 8 to 10 ft.; *salignus*, yellow, June, 6 ft.; *speciosus* (Syn. *Metrosideros speciosa*), crimson, spring, 8 to 10 ft. Natives of Australia.

**Callistephus** (China Aster).—Ord. Compositæ. Hardy annuals. First introduced 1731.

**CULTURE:** Soil, rich liberally manured. Position, open, sunny, well drained. Sow seeds  $\frac{1}{2}$  in. deep in light soil in temp. 55° to 65° in March, transplant seedlings in April 2 in. apart in shallow boxes or in bed of light soil in cold frame, plant out 6 to 12 in. apart in outdoor beds in May; or sow seeds same depth & soil in cold frame, or in pots in window in April & plant outdoors in May. Apply weak liquid manure twice a week during July & Aug. To secure exhibition blooms pinch off all flower buds, except three or four on each plant directly they form.

**POT CULTURE:** Sow seeds as advised above. Transplant three seedlings into a 3 in. pot in April, into 5 in. in May, & 6 in. in June. Compost, equal parts loam, leaf-mould, decayed manure, & sand. Water freely, & apply liquid manure once a week when flower buds are formed. Thin out latter to three on each plant. Plants may be lifted from open ground in Aug. & placed in pots to flower if desired.

**SPECIES CULTIVATED:** *C. hortensis*, various colours, summer, 6 in. to 2 ft., China. Numerous varieties.

**Calluna** (Ling; Heather).—Ord. Ericaceæ. Hardy evergreen flowering shrubs.

**CULTURE:** Soil, bog, or peat. Position, moist, open beds, borders, or shrubby margins. Plant, Sept., Oct., March, or April. Propagate by division of plant in Oct. or April.

**SPECIES CULTIVATED:** *C. vulgaris*, purple, spring, 1 ft., Europe (Britain); *vulgaris alba*, white; *vulgaris Alporti*, crimson; *vulgaris argentea*, silvery leaved; *vulgaris aurea*, golden-leaved.

**Calochortus** (Butterfly Tulip; Butterfly-weed; Star Tulip; Mariposa Lily).—Ord. Liliaceæ. Half-hardy bulbous plants. Nat. California & N.W. America. First introduced 1826.

**FRAME CULTURE:** Prepare bed 12 in. deep with compost of equal parts loam, peat, leaf-mould, & sand. Plant bulbs 3 in. deep & 4 in.

apart in Nov. Keep lights on in frosty weather; off night & day in fair weather. Water in dry weather. Lift & replant every three years.

**POT CULTURE:** Use same compost as advised for frame culture. Place a dozen bulbs 2 in. deep in a 5 in. pot in Nov. Cover pots with ashes in cold frame, & give no water. Remove pots from ashes in Jan. & place in cool greenhouse near glass. Water moderately till after flowering, then gradually withhold it. Repot annually in Nov.

**OUTDOOR CULTURE:** Plant bulbs in similar soil & manner to that advised for frames. Bed must be dry in winter, sunny, at foot of south wall. Propagate by seeds sown  $\frac{1}{4}$  in. deep in pans of sandy soil in temp. 45° to 55° in March, transplanting seedlings following year into small pots & treating similar to old bulbs; by offsets planted like bulbs in Nov.

**SPECIES CULTIVATED:** *C. albus* (Syn. *Cyclobothra alba*), white, July, 1 ft.; *Amœnus* (Syn. *Cyclobothra amœna*), pink, July, 1 ft.; *Bentharii*, yellow, July, 8 in.; *Cœruleus*, lilac-blue, July, 6 in.; *clavatus*, yellow, July, 2½ ft.; *elegans*, white, June, 9 in.; *Gunnisonii*, white, July, 2 ft.; *Howellii*, white, July, 18 in.; *Kennedyi*, orange-red, July, 2½ ft.; *lilacinus*, lilac, July, 9 in.; *lutens*, yellow, July, 1 ft.; *Nuttallii* (Syn. *O. Leitochlinii*), white, June, 6 in.; *pulchellus* (Syn. *Cyclobothra pulchella*), yellow, July, 1 ft.; *Purdyi*, white, July, 1 ft.; *splendens*, lilac, July, 1 ft.; *venustus*, white, July, 18 in. A number of varieties will be found in specialists' lists.

**Calodendron** (Cape Chestnut).—Ord. Rutaceæ. Greenhouse flowering shrub. Evergreen. First introduced 1789.

**CULTURE:** Compost, two parts loam, one part peat & sand. Position, pots or tubs, sunny. Pot & prune, March. Water moderately Sept. to March, freely afterwards. Temp., Sept. to March 50° to 55°; March to Sept. 55° to 65°. Propagate by cuttings of shoots 3 in. long inserted in sandy soil under bell-glass in temp. 60° in June or July.

**SPECIES CULTIVATED:** *C. capense*, pink, summer, 10 ft., S. Africa.

**Calophaca**.—Ord. Leguminosæ. Hardy deciduous flowering shrubs. First introduced 1786.

**CULTURE:** Soil, ordinary. Position, open shrubbery. Plant, Oct. to Feb. Propagate by seeds sown  $\frac{1}{2}$  in. deep in Nov. or March; by grafting on common laburnum in March.

**SPECIES CULTIVATED:** *C. woolgarica*, yellow, June, 3 ft., S. Russia.

**Calopogon** (Grass Pink Orchis).—Ord. Orchidaceæ. Hardy herbaceous orchid. First introduced 1791.

**CULTURE:** Soil, peaty. Position, moist, sheltered rockery. Plant, March or April. May also be grown in equal parts peat & loam in pots in cold frames or greenhouses. Propagate by offsets treated as old plants.

**SPECIES CULTIVATED:** *C. multiflorus*, purple, summer, 1 ft.; *pulchellus*, purple, July, 18 in., N. America.

**Calostemma**.—Ord. Amaryllidaceæ. Greenhouse flowering bulbous perennials. First introduced 1819.

**CULTURE:** Compost, two parts loam, one part peat & sand. Pot, Aug. Position, sunny greenhouse. Water freely March to July, moderately July to Sept., very little afterwards. Temp., Sept. to March 45° to 50°; March to Sept. 55° to 65°. Propagate by offsets at potting time.

**SPECIES CULTIVATED:** *C. album*, white, May, 1 ft., N. Australia; *luteum*, yellow, Nov., 1 ft., Australia; *purpureum*, purple, Nov., 1 ft., Australia; *purpureum carneum*, pale purple.

**Caltha** (Marsh Marigold; Goldings; Water Gowan; Double Marsh Marigold).—Ord. Ranunculaceæ. Hardy herbaceous perennials.

**CULTURE:** Soil, rich. Position, damp borders, or banks of ponds, streams or lakes. Plant, Oct. or March. Propagate by division of roots in March or July.



**SPECIES CULTIVATED:** *C. biflora*, white, May, 1 ft., N. America; *leptosepala*, yellow, May, 1 ft., N.W. America; *palustris* (Marsh Marigold), yellow, April, 1 ft., Britain; and its varieties, *alba* (white), *flore pleno* (double yellow), *monstrosa plena* (yellow, double); and *nana flore-pleno* (dwarf).

**Calvary Clover** (*Medicago echinus*).—See *Medicago*.

**Calycanthus** (*Carolina Allspice*).—Ord. *Calycanthaceæ*. Hardy deciduous flowering shrubs.

**CULTURE:** Compost, two parts peat, one part loam & leaf-mould. Position, south or west walls, or sheltered shrubbery South of England. Plant, Oct. to March. Propagate by seeds sown  $\frac{1}{4}$  in. deep in light soil in cold frame, March; by layers of shoots in July & Aug.

**SPECIES CULTIVATED:** *C. floridus*, brownish purple, fragrant, June, 6 ft., S. United States; *glaucus*, brownish purple, May, 6 ft., United States; *occidentalis* (Syn. *C. macrophyllus*), red, fragrant, Aug., 9 ft., California. *Asplenifolius*, *ovatus* and *variegata* are forms of *C. floridus*.

**Calypso** (*Calypso Orchis*).—Ord. *Orchidaceæ*. Hardy terrestrial orchid. First introduced 1820.

**CULTURE:** Compost, two parts leaf-mould, one part fibry peat & coarse sand. Position, shady margins of rockwork or bog. Plant, Oct. or March. Propagate by offsets treated as old plants at planting time.

**SPECIES CULTIVATED:** *C. borealis*, rose, brown and yellow, Jan., 1 ft., N. Temperate Zone.

**Calystegia** (*Bind-weed*).—Ord. *Convolvulaceæ*. Hardy herbaceous trailing & climbing perennials.

**CULTURE:** Soil, ordinary. Position, sunny border where the fleshy roots can be confined and prevented spreading over the garden. Plant, Oct. to March. Propagate by seeds sown  $\frac{1}{4}$  in. deep in pots of sandy soil in temp. 55° in March, or similar depth in April where plants are to flower; by division of roots in Oct. or March.

**SPECIES CULTIVATED:** *C. hederacea* (Syn. *C. pubescens* fl. pl.), Double Chinese Bindweed, rose, summer, 6 ft., China and Japan; *sepium incarnata* (*American Bindweed*), rose, July, 6 ft.; *sepium dahurica*, rosy purple, July, 6 ft., Siberia; *sylvatica*, white, July, 6 ft., Europe; *Soldanella* (Syn. *Convolvulus Soldanella*), red, June, 3 ft., Temperate Zone.

**Camassia** (*Bear Grass; Wild Hyacinth; Californian Quamash*).—Ord. *Liliaceæ*. Hardy bulbous plants. First introduced 1837.

**CULTURE:** Compost, equal parts loam, leaf-mould, & coarse sand. Position, sheltered beds or borders. Plant bulbs 4 in. deep & 4 in. apart in Oct. or Feb. Top-dress annually with decayed manure. Lift & replant every four years. Propagate by seeds sown  $\frac{1}{4}$  in. deep in sunny position outdoors in March, or  $\frac{1}{8}$  in. deep in boxes of light soil in temp. 55° in Nov.; by offsets in Oct. or Feb.

**SPECIES CULTIVATED:** *C. esculenta* (*Quamash*), blue, July, 2 ft., N.W. America; *Cusickii*, blue, July, 2½ ft., California; *Fraseri* (*Wild Hyacinth*), blue, June, 2 ft., N. America.

**Camellia** (*Japan Rose; Tea-plant*).—Ord. *Ternstroemiaceæ*. Greenhouse flowering shrubs. Evergreen. First introduced 1739.

**CULTURE:** Compost, equal parts turfy loam, peat, & sand. Position, pots or tubs in greenhouse, against south wall, or in sheltered shrubberies outdoors in S. of England. Pot, March or April. Plant outdoors Oct. or March. Water moderately Sept. to March, freely afterwards. Prune at potting time. Temp., Sept. to March 50° to 55°; March to Sept. 55° to 65°. Place plants outdoors on bed of cinder ashes July to Sept. Apply stimulants once a week Aug. to March. Suitable stimulants: Solution of sheep droppings & soot, clear soot water, guano & water, or artificial manures. Cause of buds dropping, dry atmosphere & insufficient water at roots. Propagate by seeds sown  $\frac{1}{8}$  in. deep in sandy peat in temp. 75° in March; by cuttings of

firm shoots inserted in well-drained pots of sandy peat in cool greenhouse in Aug., transferring pots in March to temp. 55° & putting cuttings in small pots following Sept.; by layers of shoots in Sept.; grafting in March.

**SPECIES CULTIVATED:** *C. japonica*, parent of the numerous cultivated varieties, red, spring, 15 to 20 ft., Japan; *japonica anemonæiflora*, red; *reticulata*, red, spring, 8 to 10 ft., China; *roseiflora*, rose, spring, 3 ft., China; *Sasanqua*, white, Feb., 6 ft., China; *theifera* (China Tea Plant), white, May, 5 to 6 ft., China; *theifera assamica* (Assam or Indian Tea plant).

**Campanula** (Bellflower; Harebell; Canterbury Bell; Garden Rampion).—Ord. Campanulacæ. Hardy annuals, biennials, & perennials.

**CULTURE OF PERENNIAL SPECIES:** Soil, ordinary rich. Position, trailing species on sunny rockeries; tall species beds & borders, sunny or shady. Plant, Oct. to April.

**POT CULTURE:** Compost, equal parts leaf-mould, loam, & sand. Trailing kinds grow in small pots in hanging baskets. Repot them in March. Water moderately in winter, freely other times. Tall kinds grow singly in 5 in. pots or three in a 7 in. pot. Sow seeds of these in cold frame in Aug.; transplant seedlings singly in 3 in. pots in Oct., into 5 in. in April, 7 in. in May. Water moderately in winter, freely in summer.

**CULTURE OF ANNUAL SPECIES:** Sow seeds in gentle heat in March, transplant seedlings into boxes, harden off in cold frame in May & plant out in sunny borders early in June.

**CULTURE OF BIENNIAL SPECIES:** Sow seeds outdoors in April, May, or June. Transplant seedlings when 1 in. high, 6 in. apart in nursery bed, & plant out in borders in Oct. to flower following year.

**CULTURE OF RAMPION:** Sow seeds in shallow drills 6 in. apart in shady border of rich soil in May. Thin seedlings to 4 in. apart. Lift & store roots in frost-proof place in Nov. Uses: Young roots & leaves for winter salads; large roots cook and eat like parsnips.

Propagate perennials by seeds sown 1-16 in. deep in sandy soil in temp. 55° in March or Aug.; by cuttings of young shoots in light soil in cold frame in Aug. or March; division of roots in Oct. or April.

**ANNUAL SPECIES:** *C. dichotoma*, blue, July, 1 ft., Sicily; *drabæfolia*, blue, July, 3 in., and *drabæfolia alba*, white, Greece; *erinoidea*, blue, July, 1 ft., S. Africa; *Erinus*, blue, July, 1 ft., S. Europe; *Lœflingii*, blue, July, 1 ft., Portugal; *Loreyi*, purple, June, 18 in., Italy; *macrostyla*, blue, July, 18 in., Asia Minor.

**BIENNIAL SPECIES:** *C. Medium* (Canterbury Bell), blue, July, 3 ft., S. Europe; and several white, rose, and purple single and double varieties.

**PERENNIAL SPECIES:** *C. abietiana*, blue, July, 1 ft., Europe; *alliarifolia*, yellow, June, 18 in., Caucasus; *Allioni*, blue, July, 3 in., France; *alpina*, blue, July, 6 in., Europe; *balchiniana*, blue, July, 6 in., hybrid; *barbata*, blue, June, 1 ft., Europe; *betoniceæfolia*, blue, May, 18 in., Mt. Olympus; *bononiensis*, blue, July, 2½ ft., Europe; *cæspitosa*, blue, summer, 6 in., Europe; *cæspitosa alba*, white; *carpatica*, blue, summer, 12 in., E. Europe; *carpatica alba*, white; *carpatica turbinata*, blue, 6 in.; *collina*, blue, July, 1 ft., Caucasus; *Elatines*, purple, summer, 3 in., Piedmont; *elatinoidea*, purple, summer, 3 in., Piedmont; *fragalis* (Syn. *C. Barrelieri*), lilac and purple, Aug., 6 in., Italy; *ganganica*, blue, June, 6 in., Italy; *glomerata*, blue, summer, 18 in., Europe (Britain), and its varieties *dahurica* (deep blue) and *flore-pleno* (double, blue); *grandis*, violet blue, June, 2 ft., Siberia, and its variety *alba* (white); *Hondersonii*, mauve, July to Sept., 1 ft., hybrid; *isophylla*, lilac blue, July, 3 to 6 in., Italy, and its varieties *alba* (white) and *Mayi* (mauve); *lactiflora*, white and blue, July, 3 ft., Caucasus; *latifolia*, blue, July, 4 to 6 ft., Britain, and its varieties *alba* (white), *Burghalti* (lilac), and *Van Houttei* (violet-blue); *nobilis*, reddish violet, or creamy, July, 2 ft., China; *persicifolia*, blue, June, 2 to 3 ft., Europe, and its varieties *alba* (white), *albo coronata* (white, semi-double), *alba flore-pleno* (double white), etc.; *portenschlagiana*, blue, June, 6 in., S. Europe; *pulla*, violet blue, June, 6 in., Austria; *pusilla*, dark blue, July 4 in., Alps; and its varieties *alba* (white) and *pallida* (pale blue);

pyramidalis (Chimney Bellflower), blue, July, 4 to 6 ft., Dalmatia and its variety alba (white); Rainierii, blue, June, 3 in., Alps; rapunculoides, bluish violet, June, 3 ft., Alps; Rapuncululus (Rampion), purple, blue or white, June, 3 ft., Europe (Britain); rotundifolia (Harebell), blue, summer, 8 to 12 in., Britain, and its varieties alba (white) and Hostii (blue); Trachelium, blue, July, 3 ft., Europe, and its varieties alba (white), alba plena (double white) and flore pleno (double blue); Warleyi, purple, July, 6 in., a hybrid.

**Camperdown Weeping Elm** (*Ulmus montana* var. *pendula*).—See *Ulmus*.

**Campernelle** (*Narcissus odoratus*).—See *Narcissus*.

**Campion**.—See *Lychnis*.

**Canada Tea** (*Gaultheria procumbens*).—See *Gaultheria*.

**Canadian Columbine** (*Aquilegia canadensis*).—See *Aquilegia*.

**Canadian Flea-bane** (*Erigeron canadensis*).—See *Erigeron*.

**Canadian Golden Rod** (*Solidago canadensis*).—See *Solidago*.

**Canadian Lily** (*Lilium canadensis*).—See *Lilium*.

**Canadian Yew-tree** (*Taxus canadensis*).—See *Taxus*.

**Canarina** (Canary Island Bellflower).—Ord. Campanulaceæ. Greenhouse herbaceous perennial. First introduced 1696.

**CULTURE**: Compost, equal parts loam, leaf-mould, decayed manure & silver sand. Position, pots. Pot, Feb.; good drainage very essential. Water liberally March to Aug., moderately Aug. to Nov., very little afterwards. Temp., Sept. to Feb. 45° to 55°; March to Sept. 55° to 65°. Propagate by cuttings of young shoots inserted in sandy soil in temp. 65° in March or April; division of roots in Feb.

**SPECIES CULTIVATED**: *C. campanulata*, orange, Jan., 4 ft., Canary Islands.

**Canary Creeper** (*Tropæolum aduncum*).—See *Tropæolum*.

**Canary Grass** (*Phalaris canariensis*).—See *Phalaris*.

**Canary Island Bell-flower** (*Canarina campanulata*).—See *Canarina*.

**Candelabra-flower** (*Brunsvigia Josephinæ*).—See *Brunsvigia*.

**Candle-berry Myrtle** (*Myrica Gale*).—See *Myrica*.

**Candlemas Bells** (*Galanthus nivalis*).—See *Galanthus*.

**Candle Plant** (*Kleinia articulata*).—See *Kleinia*.

**Candy Mustard** (*Æthionema saxatile*).—See *Æthionema*.

**Candytuft**.—See *Iberis*.

**Canna** (Indian Shot-plant).—Ord. Scitamineæ. Stove herbaceous plants. First introduced, 1570.

**INDOOR CULTURE**: Compost, equal parts loam, decayed manure, leaf-mould, & sand. Position, pots in sunny greenhouse. Pot, March. Water freely March to Oct., very little afterwards. Temp., Sept. to March 40° to 50°; March to Sept. 65° to 85°. Apply weak liquid manure once or twice a week to plants in healthy growth.

**OUTDOOR CULTURE**: Place roots in pots in March in temp. 55° to 60°. Remove pots into temp. 55° end of April & plant outdoors early in June. Lift roots in Sept., place them in boxes filled with ordinary soil, keep latter nearly dry, & store in frost-proof position till potting time. Propagate by seeds steeped for 24 hours in tepid water, then sown  $\frac{1}{2}$  in. deep in light soil in temp. 85° in Feb.; division of roots at potting time. It will facilitate germination if a slight notch be filed in the seed before sowing.

**SPECIES CULTIVATED**: *C. indica*, yellow and red, summer, 6 ft., W. Indies. This species is the parent of the numerous beautiful varieties grown in gardens. See trade lists for names.

**Cannabis** (Indian or Giant Hemp).—Ord. Urticaceæ. Hardy annuals. Orn. foliage.

**CULTURE:** Soil, ordinary. Position, sunny borders. Propagate by seeds sown  $\frac{1}{2}$  in. deep outdoors, where plants are to grow, in April, or in temp.  $55^{\circ}$  in March, transplanting seedlings in June.

**SPECIES CULTIVATED:** *C. sativa*, green, June, 4 to 10 ft., India.

**Canterbury Bells** (*Campanula medium*).—See *Campanula*.

**Cantua** (Peruvian Magic-tree).—Ord. Polemoniaceæ. Greenhouse evergreen flowering shrubs. First introduced 1846.

**CULTURE:** Compost, two parts turfy loam, one part leaf-mould & sand. Position, pots, sunny greenhouse. Pot, March. Water moderately Sept. to March, freely March to Sept. Temp., Sept. to March  $40^{\circ}$  to  $50^{\circ}$ ; March to Sept.  $50^{\circ}$  to  $60^{\circ}$ . Propagate by cuttings of shoots inserted in pure silver sand under bell-glasses in temp.  $50^{\circ}$  to  $55^{\circ}$ , May to Aug.

**SPECIES CULTIVATED:** *C. bicolor*, yellow and red, May, 4 ft., Bolivia; *buxifolia*, rose, May, 5 ft., Peru.

**Cape Aloe** (*Aloe ferox*).—See *Aloe*.

**Cape Aster** (*Agathæa cœlestis*).—See *Agathæa*.

**Cape Bladder Senna** (*Sutherlandia frutescens*).—See *Sutherlandia*.

**Cape Chestnut** (*Calodendron capensis*).—See *Calodendron*.

**Cape Cowslip** (*Lachenalia tricolor*).—See *Lachenalia*.

**Cape Crocus** (*Gethyllis spiralis*).—See *Gethyllis*.

**Cape Fig-wort** (*Phygelius capensis*).—See *Phygelius*.

**Cape Forget-me-not** (*Anchusa capensis*).—See *Anchusa*.

**Cape Gooseberry** (*Physalis peruviana*).—See *Physalis*.

**Cape Honey-flower** (*Melianthus major*).—See *Melianthus*.

**Cape Honeysuckle** (*Tecoma capensis*).—See *Tecoma*.

**Cape Ivy** (*Senecio macroglossus*).—See *Senecio*.

**Cape Jasmine** (*Gardenia florida*).—See *Gardenia*.

**Cape Lead-wort** (*Plumbago capensis*).—See *Plumbago*.

**Cape Lily** (*Crinum longifolium*).—See *Crinum*.

**Cape Pond-weed** (*Aponogeton distachyon*).—See *Aponogeton*.

**Cape Primrose**.—See *Streptocarpus*.

**Cape Silver-tree** (*Leucadendron argenteum*).—See *Leucadendron*.

**Cape Stock**.—See *Heliophila*.

**Cape Treasure-flower** (*Gazania pavonia*).—See *Gazania*.

**Caper Bush** (*Capparis spinosa*).—See *Capparis*.

**Caper Spurge** (*Euphorbia lathyris*).—See *Euphorbia*.

**Capparis** (Caper-tree).—Ord. Capparidaceæ. Half-hardy evergreen shrubs. First introduced 1596.

**CULTURE:** Compost, two parts turfy loam, one part leaf-mould & sand. Position, pots in sunny greenhouse. Pot, March; good drainage essential. Plant outdoors Sept. to Nov. Water moderately in pots Sept. to March, freely afterwards. Temp., Sept. to March  $45^{\circ}$  to  $55^{\circ}$ ; March to Sept.  $55^{\circ}$  to  $65^{\circ}$ . May be grown outdoors in sheltered position in S. of England. Propagate by cuttings of firm shoots in sand under bell-glasses in temp.  $65^{\circ}$  to  $75^{\circ}$ , July or Aug.

**SPECIES CULTIVATED:** *C. spinosa*, white, June, 3 ft., S. Europe. This species yields the capers of commerce.

**Capsicum** (Cayenne Pepper; Chilli; Red Pepper).—Ord. Solanaceæ. Hothouse annual or shrubby plants. First introduced, 1548. Fruit, round, long, red & yellow.

**CULTURE:** Soil, light, rich. Position, pots in sunny greenhouse, against south wall outdoors in summer.

**POT CULTURE:** Sow seeds  $\frac{1}{2}$  in. deep in temp. 80° in Feb. Place seedlings singly in 3 in. pots in March & in 6 in. pots in May. Water freely & grow throughout in temp. 75° to 85°. Gather fruit when full red or yellow colour is attained.

**OUTDOOR CULTURE:** Sow seeds & grow seedlings in pots as advised in previous case. Plant out in June. Train shoots thinly to wall as they grow. Yields the chilli of commerce.

**SPECIES CULTIVATED:** *C. annuum* (Red Pepper, Chillies and Capsicum), white, June, 1 ft., India; *minimum* (Cayenne Pepper, Guinea Pepper and Bird Pepper), white, May, 1 ft., E. Indies. The first species is an annual and the second one an evergreen shrub.

**Caragana** (Siberian Pea-tree; Chinese Pea-tree).—Ord. Leguminosæ. Hardy flowering trees & shrubs. Deciduous. First introduced 1751.

**CULTURE:** Soil, ordinary. Position, open shrubbery. Plant, Oct. to March. Propagate by seeds sown 2 in. deep in ordinary soil outdoors in Nov. or March; cuttings of roots inserted 3 in. deep outdoors in Oct.; layers of strong shoots in Sept.; grafting choice species on *C. arborescens* in March.

**SPECIES CULTIVATED:** *C. arborescens*, yellow, May, 15 ft., Siberia; *arborescens Redowskii*, a superior form; *frutescens*, yellow, April, 3 ft., Russia and Japan.

**Caraway** (*Carum Carvi*).—See Carum.

**Carbenia** (Blessed Thistle).—Ord. Compositæ. Hardy biennial. Ornamental foliage.

**CULTURE:** Soil, ordinary. Position, sunny border. Sow seeds thinly in March, where plants are to grow, and afterwards thin out to a foot or so apart.

**SPECIES CULTIVATED:** *C. benedicta*, leaves green and blotched with white, 3 to 4 ft., Mediterranean Region.

**Cardamine** (Cuckoo-flower; Tooth Flower; Lady's Smock; Coral Root). Ord. Cruciferæ. Hardy perennial herbs.

**CULTURE:** Soil, ordinary. Position, moist, shady border. Plant, Oct., Nov., March, or April. Propagate by seeds sown  $\frac{1}{2}$  in. deep outdoors in April; division of roots in Oct.

**SPECIES CULTIVATED:** *C. asarifolia*, white, May, 1 ft., Italy; *pratensis* (Cuckoo Flower or Lady's Smock), pale purple, May, 18 in., Britain; *pratensis flore pleno*, double; *diphylla* (Syn. *Dentaria bulbifera*), the Coral Root, purple, April, 18 in., Britain.

**Cardinal Flower** (*Lobelia cardinalis*).—See Lobelia.

**Cardinal Monkey-flower** (*Mimulus cardinalis*).—See Mimulus.

**Cardoon**.—See Cynara.

**Carex** (Blue-grass; Sedge).—Ord. Cyperaceæ. Hardy herbaceous perennial grasses. Orn. foliage.

**CULTURE:** Soil, ordinary. Position, margins of ponds. Plant March. The variegated kinds may be grown in pots in ordinary good soil in cool greenhouses or in rooms. Propagate by seeds sown where plants are to grow in March; division of roots in March.

**SPECIES CULTIVATED:** *C. baccans*, purple berried, 4 ft., Trop. Asia; *brunnea variegata*, leaves striped with white, 2 ft., India; *Pseudo-cyperus* (Bastard Cyperus), 3 ft., Temperate Zone; *paniculata* (Sedge), pale brown inflorescence, summer, 3 to 4 ft., Britain; *pendula*, brown inflorescence, summer, 5 to 6 ft., Britain; *tristachya* (*Japonica* of gardens), leaves striped with white, 1 ft., Japan.

**Carlina** (*Carlina Thistle*).—Ord. Compositæ. Hardy perennials. First introduced 1640.

**CULTURE:** Soil, ordinary. Position, open dryish border. Plant, March or April. Propagate by seeds sown  $\frac{1}{2}$  in. deep in April where plants are required to grow.

**SPECIES CULTIVATED:** *C. acaulis*, white, June, 9 in., Europe; *acanthifolia*, white, June, 18 in., S. Europe.

**Carludovica.**—Ord. Cycolanthaceæ. Stove ornamental-leaved perennials. First introduced 1818. Leaves, green, divided, palm-like.

**CULTURE:** Compost two parts peat, one part sandy loam. Position, moist, shady. Pot, March. Water moderately Nov. to March, freely afterwards. Temp., Sept. to March 55° to 65°; March to Sept. 65° to 75°. Propagate by division of plant at potting time.

**SPECIES CULTIVATED:** *C. Drudei*, 4 ft., Colombia; *angustifolia* (Syn. *C. Plumeri*), 2 ft., Peru.

**Carnation** (*Dianthus caryophyllus*).—See *Dianthus*.

**Carnation Poppy** (*Papaver somniferum*).—See *Papaver*.

**Carniola Lily** (*Lilium carniolicum*).—See *Lilium*.

**Carob Tree** (*Ceratonia siliqua*).—See *Ceratonia*.

**Carolina Allspice**.—See *Calycanthus*.

**Carolina Pink** (*Spigelia marilandica*).—See *Spigelia*.

**Carolina Poplar** (*Populus monilifera*).—See *Populus*.

**Carpathian Bell-flower** (*Campanula carpatica*).—See *Campanula*.

**Carpathian Snowflake** (*Leucojum carpaticum*).—See *Leucojum*.

**Carpenteria** (Californian Mock Orange).—Ord. Saxifragaceæ. Hardy deciduous flowering shrub. First introduced 1880.

**CULTURE:** Soil, light loamy. Position, sheltered position in shrubbery or against south wall. Plant, Oct. or Nov. Prune away shoots that have flowered directly blossoms fade. Propagate by cuttings of young shoots inserted in cold frame in April; suckers removed from roots in autumn; layering shoots in Sept.

**SPECIES CULTIVATED:** *C. californica*, white, fragrant, June, 4 ft., California.

**Carpenter's-Leaf** (*Galax aphylla*).—See *Galax*.

**Carpet Plant** (*Ionopsidium acaule*).—See *Ionopsidium*.

**Carpinus** (Hornbeam).—Ord. Cupuliferæ. Hardy deciduous trees. Orn. foliage.

**CULTURE:** Soil, ordinary; not adapted for chalky soils. Position, open, exposed. Plant, Oct. to March. Native species (*C. Betulus*) makes good hedge. Plant three-year old seedlings 3 ft. apart for this purpose, & prune shoots in closely every autumn. Cost of plants, 5s. per 100; preparing site and planting per lineal yard, 9d.; trimming, 4d. per chain. Propagate by seeds sown 1 in. deep in autumn in ordinary soil outdoors. Transplant seedlings when a year old 2 ft. apart each way. Number of seeds in a pound, 14,000. Weights of a bushel of seeds, 40 lb. Quantity of seeds to sow an acre, 35 lb. Timber reaches maturity at 40 years. Average price per cubic foot, 2s. Uses: Sawmill rollers and skittle pins.

**SPECIES CULTIVATED:** *C. Betulus* (Hornbeam), 30 ft., Europe (Britain), and its varieties *asplenifolia*, *incisa* (cut-leaved), *pendula* (weeping), *aureo-variegata* (golden-leaved) and *variegata* (variegated); *caroliniana* (Syn. *C. americana*), American Hornbeam, 20 ft., N. America; *japonica* (Japanese Hornbeam), 15 ft., Japan; *orientalis*, 10 ft., S. Europe.

**Carrot Flower**.—See *Stapelia*.

**Carrot**.—See *Daucus*.

**Carthamus** (Distaff Thistle; Safflower).—Ord. Compositæ. Hardy annuals. First introduced 1551.

**CULTURE:** Soil, ordinary. Position, sunny border. Propagate by seeds sown  $\frac{1}{2}$  in. deep in light soil in temp.  $65^{\circ}$  in March, transplanting seedlings where they are to flower in May.

**SPECIES CULTIVATED:** *O. lanatus*, yellow, July, 2 ft.; *Oxyacantha*, yellow, July, 2 ft.; *tinctorius*, orange, June, 3 ft. All natives of Europe.

**Cartwheel Flower** (*Heracleum villosum*).—See *Heracleum*.

**Carum** (Parsley; Caraway).—Ord. Umbelliferae. Hardy biennial culinary herbs & aromatic seed-bearing plants. Caraway seeds used for confectionary purposes; Parsley for garnishing, etc. First introduced 1548.

**CULTURE OF PARSLEY:** Soil, ordinary, deep, rich, moist. Position, partially shady; as edgings to borders, or in rows. Sow in Feb., May, and July in drills  $\frac{1}{2}$  in. deep & 12 in. apart. Thin seedlings when 1 in. high to 3 in. apart, & later on to 8 in. apart. Thinnings may be replanted to form a fresh bed if desired. When leaves become coarse cut them all off to induce fresh growth. Renew beds every second year. Suitable artificial manures,  $2\frac{1}{2}$  oz. superphosphate per square yard before sowing;  $2\frac{1}{2}$  oz. nitrate of soda forked in when the plants are thinned; 1 oz. superphosphate,  $\frac{1}{2}$  oz. nitrate of soda,  $\frac{1}{4}$  oz. iron sulphate, to a gallon of water, applied in summer. Seed retains its vegetative power 3 years. Quantity required for a row 50 ft. long, 1 oz.

**MARKET CULTURE:** Soil, sandy loam. Sow in April for a summer crop, & in July for winter and spring. Drill in 1 in. deep; rows 15 in. as under. Seeds to sow an acre, 12 lb. Keep well hoed, & thin to 6 in. apart. Cut over winter crop in Sept. to check flowering, & induce new leaves to form. Market by the dozen bunches, each bunch being a good handful. Average price per doz. bunches, 2s. to 3s.

**CULTURE OF CARAWAY:** Soil, deep loam, well manured the previous winter. Sow seeds 1 in. deep in drills 18 in. apart in April. Well roll land after sowing. Keep well hoed. Have the growth eaten down close by sheep in autumn. Harvest crop in July, & thresh out seeds at once. Market in sacks of three bushels. Average yield per acre, 15 to 20 cwt.

**SPECIES CULTIVATED:** *C. Petroselinum* (Parsley), yellow, summer, 1 to 2 ft., Sardinia; *Carvi* (Caraway), pinkish white, July, 30 in., Europe.

**Carya** (Hickory).—Ord. Juglandaceae. Hardy deciduous trees. First introduced 1629. Full grown trees bear edible nuts similar to walnuts.

**CULTURE:** Soil, ordinary. Position, shrubberies, woods, or as single specimens on lawns & in parks. Plant, Oct. to March. Prune, Nov., thinning out unsightly branches only. Propagate by nuts sown 2 in. deep where trees are required to grow, in Nov.

**SPECIES CULTIVATED:** *C. alba* (Shell-bark Hickory), 30 ft., N. America; *amara* (Bitter Nut), 30 to 40 ft., N. America.

**Caryopteris** (Moustache plant).—Ord. Verbenaceae. Half-hardy shrubby perennial. First introduced 1814.

**CULTURE:** Compost, two parts loam, one part leaf-mould & a little sand. Position, pots in cool greenhouse, or in border at foot of a warm, sheltered wall outdoors. Pot or plant April. Water freely in spring & summer, moderately in winter. Propagate by seeds sown in light soil in temp.  $55^{\circ}$  in spring; cuttings of the young shoots or division of roots in March or April.

**SPECIES CULTIVATED:** *C. Mastacanthus*, blue, autumn, 3 to 4 ft., China and Japan.

**Caryota** (East Indian Wine Palm; Toddy Palm).—Ord. Palmaceæ. Stove palms. Orn. foliage. First introduced 1788.

**CULTURE:** Compost, equal parts loam, leaf-mould, & coarse sand. Position, pots, moist, shady. Pot, March. Water freely March to Nov., moderately afterwards. Temp., Sept. to March 55° to 65°; March to Sept. 65° to 85°. Propagate by seeds sown 1 in. deep in light soil in temp. 85° in March; suckers removed from roots, inserted in small pots, any time.

**SPECIES CULTIVATED:** *C. elegans*, 8 to 10 ft., Tropics; *mitis*, 20 to 25 ft., Malaya; *urens*, 30 to 40 ft., Trop. Asia.

**Cashmere Larkspur** (*Delphinium cashmerianum*).—See *Delphinium*.

**Cashmere Primrose** (*Primula denticulata*).—See *Primula*.

**Cashmere Sage** (*Salvia hians*).—See *Salvia*.

**Cassandra**.—Ord. Ericaceæ. Hardy evergreen flowering shrubs. First introduced 1748.

**OUTDOOR CULTURE:** Soil, equal parts peat, leaf-mould, or silver sand. Position, open sheltered borders, rockeries, or bogs. Plant, Sept. to Nov., or March. Prune straggling shoots only moderately after flowering. Water freely in dry positions during summer.

**POT CULTURE:** Soil, equal parts peat, leaf-mould, & fine silver sand. Position, well-drained pots in cold greenhouse, Nov. to June; in shady position outdoors, June to Nov. Pot, Oct. to Nov. Water moderately, Nov. to March, freely afterwards. Propagate by seeds sown 1-16 in. deep in sandy peat in cold frame, Nov. or March; layering shoots in Sept.; division of plants, Oct. or Nov.

**SPECIES CULTIVATED:** *C. calyculata* (Syn. *Andromeda calyculata*), white, spring, 3 ft., N. America.

**Cassia** (*Senna* plant).—Ord. Leguminosæ. Greenhouse evergreen shrubs and hardy perennials. First introduced 1723.

**CULTURE OF GREENHOUSE SPECIES:** Compost, two parts loam, one part peat & sand. Position, pots in greenhouse, or well-drained border against south wall. Pot, March. Plant outdoors April. Water moderately Nov. to Feb., freely afterwards. Prune straggling shoots to within 2 in. of base in Dec. or Jan. Temp., Sept. to March 50° to 55°; March to Sept. 55° to 65°.

**CULTURE OF HARDY SPECIES:** Soil, ordinary well drained. Position, sunny borders. Plant, March or April. Protect in winter with covering of leaves or ashes. Propagate by seeds sown  $\frac{1}{2}$  in. deep in light soil in temp. 75° in March; cuttings of previous year's shoots inserted in sandy soil under bell-glass in temp. 80° in March; herbaceous species by division in March.

**GREENHOUSE SPECIES:** *C. corymbosa*, yellow, summer, 6 to 10 ft., Buenos Ayres.

**HARDY SPECIES:** *C. marylandica*, yellow, Sept., 3 ft., N. America. There are other species, but above are the only ones worth growing.

**Cassinia** (Golden Bush).—Ord. Compositæ. Hardy evergreen flowering and ornamental-leaved shrub.

**CULTURE:** Soil, ordinary. Position, sunny, dryish borders. Plant in autumn. Propagate by cuttings of young shoots inserted in sandy soil in cold frame in summer.

**SPECIES CULTIVATED:** *C. fulvida*, white, summer, 3 to 4 ft., leaves golden tinted, N. America.

**Cassiope**.—Ord. Ericaceæ. Hardy evergreen flowering shrubs. First introduced 1798.

**CULTURE:** Soil, sandy peat. Position, moist, shady beds or



borders. Plant, Sept. to April. Propagate by layering shoots in autumn.

**SPECIES CULTIVATED:** *C. fastigiata*, white, May, 9 in., Himalayas; *C. hypnoides*, white and red, June, 9 in., Arctic Regions; *tetragona*, white, March, 9 to 12 in., Arctic Regions. Formerly known under generic name of *Andromeda*.

**Castanea** (Sweet or Spanish Chestnut).—Ord. *Corylaceæ*. Hardy deciduous trees. Bears edible nuts, which should be separated from the husks when latter fall in autumn, then be thoroughly dried in the sun or warm oven, and stored in air-tight jars or boxes in a cool, dry place. Young trees much grown as coppice wood for game shelter. Probably introduced to Britain by Romans.

**CULTURE:** Soil, deep, rich, dry, & sandy. Position, open, sunny. Plant, Oct. to Feb. Propagate by sowing nuts 3 in. deep & 6 in. apart in open garden in Nov. or Feb. Transplant seedlings when a year old. Distance apart to plant, 25 ft. for avenues & 5 ft. apart for underwood. Timber most valuable in a young state; brittle when old. One bushel of seed will yield 3,000 plants. Number of seeds in a pound, 115. Weight of bushel of seed, 58 lb. Quantity of seeds to sow an acre, 600 lb. Average price of timber per cubic foot, 1s. 3d. Timber reaches maturity at 50 years. Average life, 500 years. Uses: Rafters in churches, cabinet work, post and rail fencing, rustic work.

**SPECIES CULTIVATED:** *C. sativa*, 50 to 60 ft., S. Europe, N. Africa, etc.; and its varieties, *aureo-marginatus* (golden-edged), and *heterophylla dissecta* (cut-leaved).

**Castanopsis** (Golden-leaved Chestnut).—Ord. *Cupuliferæ*. Hardy deciduous ornamental-leaved tree.

**CULTURE:** Soil, sandy or well-drained loam. Position, lawns or mixed shrubberies. Plant, Oct. to March. Propagate as advised for Sweet Chestnut.

**SPECIES CULTIVATED:** *C. chrysophylla* (Syn. *Castanea chrysophylla*), N. America.

**Castilleja** (Painted Cup).—Ord. *Scrophularinæ*. Half-hardy perennials. Plants with showy bracts.

**CULTURE:** Compost, two parts peat, one part of equal proportions of loam, leaf-mould, & sand. Position, sunny sheltered borders. Plant in April. Protect in winter. Propagate by seeds sown in temp. 55° to 65° in March, hardening off seedlings in cold frame.

**SPECIES CULTIVATED:** *C. coccinea*, yellow and scarlet, July, 1 ft.; *animata*, yellow, summer, 2 ft.; *pallida*, white, 1 ft., N. America.

**Castor Oil Plant** (*Ricinus communis*).—See *Ricinus*.

**Catalpa** (Indian Bean).—Ord. *Bignoniaceæ*. Hardy deciduous flowering and ornamental-leaved trees. First introduced 1726.

**CULTURE:** Soil, ordinary, good. Position, sunny, sheltered lawns. Plant, Oct. to April. Propagate by cuttings of firm shoots inserted in sandy soil under bell-glass in temp. 55° to 65° in summer.

**SPECIES CULTIVATED:** *C. bignonioides* (Indian Bean), white, spotted purple and yellow, July, 20 to 30 ft., United States, and its variety *aurea* (golden-leaved); *cordifolia*, white, June, 20 to 30 ft., United States; *Kempferi*, yellow, spotted red, July, 20 ft., Japan.

**Catananche** (Blue Cupidone; Blue Succory).—Ord. *Compositæ*. Hardy perennials and annuals. First introduced 1596. Flowers may be cut and dried for winter decoration. Gather when fully developed.

**CULTURE:** Soil, ordinary. Position, warm borders. Plant, April. Propagate by seeds sown  $\frac{1}{2}$  in. deep in light soil in temp. 55° in March, transplanting seedlings outdoors in June.

**SPECIES CULTIVATED:** *C. cœrulea*, blue, 2½ ft., July and Aug., S. Europe; *cœrulea bicolor*, white and blue; *lutea*, yellow, June, 1 ft., S. Europe. Last named is an annual.

**Catasetum.**—Ord. Orchidacæ. Stove deciduous orchids. First introduced 1822.

**CULTURE:** Compost, good fibry peat. Position, pots or hanging baskets, well drained. Water freely from time new growth begins until leaves fall off, very little other times. Temp., March to Sept. 65° to 85°; Sept. to March 60° to 70°. Resting period, winter. Flowers appear at base of new pseudo-bulb when growth is finishing. Propagate by division of plant at potting time.

**SPECIES CULTIVATED:** *C. atratum*, yellow, white and purple, July, Brazil; *Bungerthii*, white, spring, Venezuela; *callosum*, brown and yellow, June, Venezuela; *christyanum*, red, brown, and green, spring, Trop. America; *macrocarpum*, brown and purple, spring, Trop. America; *maculatum*, green and purple, Sept., Guatemala; *sacostum*, purple and yellow, March, Colombia; *splendens*, white and yellow, spring, Venezuela. There are others, but above are the best.

**Catch-fly** (*Silene pendula*).—See *Silene*.

**Cat Chop** (*Mesembryanthemum felinum*).—See *Mesembryanthemum*.

**Catesbæa** (Lily Thorn). — Ord. Rubiaceæ. Stove evergreen flowering shrubs.

**CULTURE:** Compost, equal parts loam & peat, & a little sand. Position, well-drained pots & plenty of light. Pot in March. Water freely March to Sept., moderately afterwards. Temp., 55° to 65° Oct. to March, 75° to 85° afterwards. Propagate by cuttings inserted in sand under bell-glass in a temp. of 75° in spring.

**SPECIES CULTIVATED.**—*S. spinosa*, yellow, May, 10 ft., W. Indies.

**Cathcartia** (Cathcart's Poppy).—Ord. Papaveracæ. Hardy herbaceous perennial. First introduced 1850.

**CULTURE:** Soil, ordinary, dryish. Position, sunny, well-drained rockery. Propagate by seeds sown  $\frac{1}{2}$  in. deep in sandy soil in cold frame in July, transplanting seedlings into small pots in Aug., keeping them in cold frame till planting time.

**SPECIES CULTIVATED:** *C. villosa*, yellow, June, 1 ft., Himalayas.

**Cat-Mint** (*Nepeta Glechoma*).—See *Nepeta*.

**Cat-Thyme** (*Teucrium marum*).—See *Teucrium*.

**Cat's Ear** (*Antennaria tomentosa*).—See *Antennaria*.

**Cat's Valerian** (*Valeriana officinalis*).—See *Valeriana*.

**Cattleya.**—Ord. Orchidacæ. Stove orchids. Evergreen. First introduced 1815.

**CULTURE:** Compost, two parts coarse fibry peat, one part chopped living sphagnum moss, charcoal, & sand. Position, well-drained pots, hanging baskets, blocks. Pot, Feb. or March. Keep plants well above rim of pot. Water three times weekly March to Aug.; once weekly Aug. to Nov. & Feb. to March; once a month other times. Syringe freely in summer. Temp., March to Sept. 65° to 85°; Sept. to March 60° to 70°. Resting period, winter. Flowers appear at top of new growth directly growth is completed. Propagate by division of pseudo-bulbs at potting time.

**SPECIES CULTIVATED:** *C. Aclandiae*, yellow, green and purple, May, 6 in., Brazil; *bicolor*, crimson and purple, summer, 2 ft., Brazil; *bowringiana*, rosy-purple, Oct., 12 in., British Honduras; *citrina*, yellow, April, 4 in., Mexico; *guttata*, yellow and purple, Nov., 2 ft., Brazil; *intermedia*, purple and white, spring, 1 ft., Brazil; *labiata*, mauve, purple and yellow, autumn, 1 ft., Brazil; *labiata aurea*, yellow, crimson and gold, Oct., 1 ft., Colombia; *labiata dowiana*, yellow, crimson and gold, Oct., 1 ft., Costa Rica; *labiata Eldorado*, lilac, white and yellow, summer, 1 ft., Brazil; *labiata gaskelliana*, purple and orange yellow, summer, 12 in., Venezuela; *labiata luddemanniana*, purple, rose, and yellow, summer, 1 ft., Venezuela; *labiata Mendellii*, white, rose and yellow, May, 12 in., Colombia; *labiata Mossiæ*, white, rose, purple and yellow, May, 1 ft., Venezuela;

labiata perovaliana, lilac, rose, purple and yellow, Jan., 1 ft., Venezuela; labiata Schroderæ, lilac and orange, March, 1 ft., Colombia; labiata Trianæ, white, rose, purple, and yellow, Feb., 1 ft., Colombia; labiata Warneri, rose, purple and yellow, June, 1 ft., Bahia; labiata Warscewiczii, crimson, purple and yellow, July, 1 ft., Colombia; lawrenciana, rosy purple, March, 10 in., British Guiana; Loddigesii, rosy lilac and purple, Aug., 18 in., Brazil; maxima, rose and purple, Nov., 1 ft., Peru; Rex, white, purple and gold, Aug., 1 ft.; schilleriana, yellow, rose and purple, May, 6 in., Bahia; Skinneri, rose, purple, and white, May 10 in., Mexico; superba, rose, purple, crimson, and yellow, July, 10 in., Brazil; walberiana, lilac, purple and white, Dec., Brazil. Also a number of Hybrids.

**Caucasian Comfrey** (*Symphytum caucasicum*).—See *Symphytum*.

**Caucasian Lily** (*Lilium monadelphum*).—See *Lilium*.

**Caucasian Primrose** (*Primula amœna*).—See *Primula*.

**Caucasian Scarlet Poppy** (*Papaver umbrosum*).—See *Papaver*.

**Cauliflower**.—See *Brassica*.

**Caulophyllum** (Pappoose-root; Squaw-root; Blue Cobosh).—Ord. Berberidacæ. Hardy tuberous-rooted perennial. First introduced 1755.

**CULTURE**: Soil, ordinary. Position, shady. Plant, Nov. Propagate by division of roots March to Nov.

**SPECIES CULTIVATED**: *C. thalioides*, yellow, April, succeeded by blue berries in autumn, N. America.

**Cayenne Pepper** (*Capsicum annum*).—See *Capsicum*.

**Cayenne Pepper Plant** (*Capsicum minimum*).—See *Capsicum*.

**Ceanothus** (Mountain Sweet; Californian Lilac; New Jersey Tea-plant).—Ord. Rhamnacæ. Hardy & half-hardy flowering shrubs. First introduced 1713.

**CULTURE**: Soil, light, ordinary. Position, against south or west walls or fences outdoors; in pots in cool greenhouse. Plant, Oct. to March. Pot, Oct. Prune weak shoots away entirely in March. Water moderately in pots in winter, freely in summer. Propagate by cuttings 3 in. long inserted in pots of sandy soil in cold frame, cool greenhouse in Oct.; layering strong shoots in Sept., Oct., & Nov.; seeds sown in heat in spring.

**SPECIES CULTIVATED**: *C. americanus* (New Jersey Tea), white, July, 5 ft., E. America; *americanus variegatus*, leaves edged yellow; *azureus*, blue, July, 8 to 10 ft., Mexico; *dentatus*, blue, May, 10 ft., California; *divaricatus*, blue, July, 4 ft., California; *papillosus*, blue, June, 3 ft., California; *rigidus*, blue, July, 4 ft., California; *veitchianus*, blue, June, 10 ft., California; *thyrsiflora* (California Lilac), blue, July, 9 ft., California.

**Cedar**.—See *Cedrus*.

**Cedar of Lebanon** (*Cedrus Libani*).—See *Cedrus*.

**Cedrela** (Bastard Cedar).—Ord. Meliacæ.—Hardy deciduous ornamental-leaved tree. Handsome habit.

**CULTURE**: Soil, good ordinary, well drained. Position, sheltered on lawns or in shrubberies. Plant in autumn. Propagate by root cuttings.

**SPECIES CULTIVATED**: *C. sinensis* (Syn. *Ailanthus flavescens*), white and pink, June, 30 to 50 ft., China.

**Cedronella** (Balm of Gilead).—Ord. Labiatæ. Half-hardy herbaceous perennials & shrubs. First introduced 1697. Leaves fragrant.

**CULTURE**: Compost, two parts sandy loam, one part leaf-mould & sand. Pot, March. Position, pots in sunny greenhouse. Temp., Sept. to March 50° to 55°; March to Sept. 55° to 65°. Water moderately in autumn & winter, freely other times. *C. triphylla* may be grown at base of south wall in dryish soil in S. of England. Propagate peren-

nial species by division of roots in March; shrubby species by cuttings of young shoots inserted in pots of sandy soil in temp. 75° in March, April, or May.

**PERENNIAL SPECIES:** *C. cana*, crimson and blue, July, 3 ft., Mexico; *cordata*, lilac, July, 1 ft., N. America; *mexicana*, purple, July, 2½ ft., Mexico; *pallida*, rose, Sept., 18 in., Mexico.

**SHRUBBY SPECIES:** *C. triphylla* or *canariensis* (Balm of Gilead), purple, July, 3 ft., Canaries.

**Cedrus** (Mount Atlas & Silver Cedar; Cedar of Lebanon; Deodar; East Indian Cedar; Fountain-tree).—Ord. Coniferæ. Hardy evergreen trees. Orn. foliage. First introduced 1676. Wood of Cedar of Lebanon used in ancient times as incense. Oldest cedar in England at Brethry Park, Derbyshire; planted in 1676. Cones not produced by *Cedrus Libani* until tree is 40 to 100 years old.

**CULTURE:** Soil, rich, deep, sandy. Position, well drained, elevated. *C. atlantica* does well in seaside gardens; & all are suitable for chalky soils. Plant, Sept. to Nov., or March to May. Propagate by seeds sown ¼ in. deep in well-drained pans of light soil in cold frame in April, transplanting seedlings outdoors following spring.

**SPECIES CULTIVATED:** *C. atlantica* (Mount Atlas Cedar), 80 to 100 ft., N. Africa; *atlantica aurea*, foliage golden; *atlantica argentea*, foliage silvery; *deodara* (Deodar Cedar), 200 to 250 ft., Himalayas; *deodara argentea*, silvery-leaved; *deodara aurea*, golden-leaved; *deodara orassifolia*, thick leaved; *deodara viridis*, green-leaved; *Libani* (Cedar of Lebanon), 80 ft., Syria; *Libani glauca*, glaucous leaved.

**Celandine** (*Chelidonium majus*).—See *Chelidonium*.

**Celandine Poppy** (*Stylophorum diphyllum*).—See *Stylophorum*.

**Celastrus** (Staff-tree; Climbing Bitter-sweet; Staff-vine).—Ord. Celastraceæ. Greenhouse evergreen & hardy deciduous climbing shrubs. First introduced 1722. Ht. 1 to 10 ft.

**CULTURE OF GREENHOUSE SPECIES:** Compost, equal parts peat, loam, & sand. Pot, March. Position, sunny greenhouse. Water moderately Sept. to March, freely afterwards. Temp., March to Sept. 55° to 65°; Sept. to March 50° to 55°. Increased by layers.

**CULTURE OF HARDY SPECIES:** Soil, ordinary. Position, walls, fences, & arbours. Plant, Oct. to March. Prune away weak shoots & tips of main shoots in Feb. Propagate by layers of young shoots in Sept., Oct., & Nov.

**GREENHOUSE SPECIES:** *C. articulatus*, green, June, 15 ft., China and Japan.

**HARDY SPECIES:** *C. Oriza*, green, summer, 6 ft., Japan; *scandens*, yellow, summer, succeeded by orange berries, climbing, N. America.

**Celeriac** (*Apium graveolens rapaceum*).—See *Apium*.

**Celery**.—See *Apium*.

**Celosia** (Cockscomb).—Ord. Amarantaceæ. Greenhouse annuals. First introduced 1570.

**CULTURE OF CELOSIAS:** Compost, two parts fibry loam, one part leaf-mould & well-decayed cow manure & sand. Position, warm greenhouse, exposed to light. Sow seeds 1-16 in. deep in well-drained pans of light soil in temp. 75° in March. Transplant seedlings 1 in. apart when 1 in. high in light soil in well-drained pots & keep in temp. 60° to 75°. When seedlings have formed four leaves place them singly in 3-in. pots, transferring them in June to 5 in. pots. Keep plants near the glass. Water roots moderately. Syringe foliage twice daily. Liquid manure, apply when flowers appear. Summer temp., 55° to 65°. May be used for summer bedding between May and Sept.

**CULTURE OF COCKSCOMBS:** Sow seeds as advised for

**Celosias.** When seedlings appear place them close to glass & keep moderately moist. Transplant, when seedlings have formed three leaves, into 2 in. pots in above compost. Place pots on shelf near glass until "combs" show themselves. Select plants with finest "combs" & place them in 4 in. pots; plunge these to rim on gentle hotbed (temp. 65° to 75°) & keep moderately moist at root. Syringe freely. Transfer plants when pots are full of roots into 5 in. pots & treat as before. Give liquid manure when "combs" are well advanced. Good specimen of "comb" should measure 9 to 12 in. long, 3 to 6 in. wide, & plant 6 to 9 in. high.

**SPECIES CULTIVATED:** *C. argentea*, white, summer, 2 ft., China; *cristata* (Cockscomb), red or crimson, summer, 2 ft., Tropics; *cristata pyramidalis*, red, yellow, etc., summer, 2 to 3 ft., and its varieties *plumosa*, etc.; *Huttoni*, red, summer, leaves crimson, 1 to 2 ft., Java.

**Celsia** (Cretan Mullein).—Ord. Scrophulariaceæ. Half-hardy shrubs & biennials. First introduced 1752.

**CULTURE:** Compost, equal parts loam, leaf-mould, & sand. Position, pots in unheated greenhouse or in flower beds outdoors in summer. Pot or plant March; water moderately in winter, freely at other times. Propagate shrubby species by cuttings, 3 in. long, of young shoots, inserted in well-drained pots of sandy soil in cold frame or greenhouse in April, May, or June, or by seeds sown 1-10 in. deep in light sandy soil in similar position; biennial species by seed sown 1-16 in. deep in sunny place outdoors in April or Aug.

**SPECIES CULTIVATED:** *C. Arcturus*, yellow, July, 3 to 4 ft., Crete, shrubby; *cretica*, yellow, July, 4 ft., S. Europe, biennial.

**Celtis** (Nettle Tree; Hackberry).—Ord. Urticaceæ. Hardy deciduous ornamental-leaved trees. First introduced 1656.

**CULTURE:** Soil, ordinary. Position, sunny shrubberies. Plant, Oct. to Feb. Prune, Nov. to Feb. Propagate by seeds sown outdoors in outer layering shoots in Oct.; cuttings of firm shoots in Nov.

**SPECIES CULTIVATED:** *C. australis*, green, May, 30 ft., S. Europe; *occidentalis* (Hackberry), green, spring, 20 ft., N. America.

**Centaurea** (Cornflower; Sweet Sultan; Centaury).—Ord. Compositæ. Hardy and tender perennials & annuals.

**CULTURE OF ANNUAL SPECIES:** Sow seeds outdoors in April where plants are required to flower. Thin seedlings when an inch or so high to 4 or 6 in. apart. Ordinary rich soil & a sunny position.

**CULTURE OF PERENNIAL SPECIES:** Soil, ordinary good. Position, sunny borders. Plant autumn or spring. Lift, divide, & replant every third or fourth year. Propagate by seeds sown outdoors in April, or in heat in spring, also by division of roots in autumn or spring.

**CULTURE OF TENDER SPECIES:** Rear plants from seeds sown in heat in spring or summer, & grow on in pots in greenhouse; or from cuttings inserted in cold frame in July or August, lifting them when rooted & placing in pots in greenhouse. Plant out in beds end of May. Silvery foliage of these very striking for bedding out.

**ANNUAL SPECIES:** *C. cyanus* (cornflower), blue, rose, white, etc., summer, 3 ft., Britain; *moschata* (Purple Sweet Sultan), purple, summer, 2 ft., Orient; *moschata alba* (White Sweet Sultan), white; *suavolens* (Yellow Sweet Sultan), yellow, fragrant, July, 18 in., Levant; *suavolens margarita*, white, fragrant.

**PERENNIAL SPECIES:** *C. aurea*, golden yellow, July to Sept., 2 ft., S. Europe; *babylonica*, yellow, July, 6 to 10 ft., Levant; *dealbata*, rose, summer, 18 in., Caucasus; *glassifolia*, yellow, summer, 4 to 6 ft., Caucasus; *macrocephala*, yellow, July, 3 to 5 ft., Caucasus; *montana*, blue, July, 2 to 3 ft., Caucasus, Pyrenees; *montana alba*, white; *montana rosea*, rose.

**TENDER SPECIES:** *C. cineraria*, 12 to 18 in., Italy; *Olementei*, 9 to 12 in., Spain; *gymnocarpa*, 2 ft., S. Europe; *ragusina*, 2 ft., S. Europe, all with elegant silvery foliage.

**Centaurium** (*Erythræa centaurium*).—See *Erythræa*.

**Centaurium, Yellow** (*Chlora perfoliata*).—See *Chlora*.

**Centradenia**.—Ord. Melastomaceæ. Stove flowering shrubs. Evergreen. First introduced 1840.

**CULTURE**: Compost, two parts peat, one part loam & sand. Position, sunny. Pot, Feb. Temp., Sept. to March 55° to 65°; March to Sept. 65° to 75°. Water moderately Sept. to March, freely afterwards. Propagate by cuttings of side shoots 2 or 3 in. long inserted in pots of sandy peat under bell-glass in temp. 85° in Feb. & March.

**SPECIES CULTIVATED**: *C. floribunda*, red, July, 18 in., Mexico; *grandiflora*, pink, Sept., 18 in., Mexico; *inequalateralis* (Syn. *C. rosea*), rose, April, 1 ft., Mexico.

**Centranthus** (Red Valerian; Spur Valerian; German Lilac).—Ord. Valerianaceæ. Hardy herbaceous perennials & annuals.

**CULTURE**: Soil, ordinary. Position, old walls, sunny rockeries, borders. Plant, March or April. Propagate by seeds sown  $\frac{1}{2}$  in. deep in light soil in temp. 55° in March, transplanting seedlings outdoors in May; or in sunny positions outdoors in April or June, transplanting seedlings in May or Aug.; perennials also by division in autumn or spring.

**ANNUAL SPECIES**: *C. macrosiphon*, red, July, 2 ft., Spain; *macrosiphon albus*, white.

**PERENNIAL SPECIES**: *C. ruber* (Red Valerian), red, July, 18 in., Europe (Britain); *ruber albus*, white.

**Centropogon**.—Ord. Campanulaceæ. Stove herbaceous perennial.

**CULTURE**: Compost, equal parts loam, peat, leaf-mould, & a little sand. Pot, March. Position, stove Sept. to June; June to Sept. sunny frame outdoors. Temp., Oct. to Feb. 50° to 55°; Feb. to June 60° to 75°. Water moderately Sept. to Feb., freely afterwards. Prune shoots close to soil in Feb. when repotting. Propagate by cuttings of young shoots 3 in. long, removed with a portion of stem attached, & inserted in light sandy soil in well-drained pots under bell-glass in temp. 60° to 70°.

**SPECIES CULTIVATED**: *C. lucyanus*, rose, autumn, 2 ft., a hybrid. Habitat of the genus: Trop. America.

**Centrosema**.—Ord. Leguminosæ. Stove evergreen climbers.

**CULTURE**: Compost, equal parts peat, loam, leaf-mould, & silver sand. Position, pots on staging, shoots trained up rafters or round a trellis or sticks. Pot in March. Water freely in spring & summer; moderately in winter. Temp., March to Sept. 75° to 85°; Sept. to March 55° to 65°. Propagate by seeds in a temp. of 75° in March; also by cuttings in sand in a temp. of 85° in summer.

**SPECIES CULTIVATED**: *C. Plumieri* (Syn. *Clitoria Plumieri*), red and white, autumn, 6 ft., S. America.

**Century Plant** (*Agave americana*).—See *Agave*.

**Cephalanthera** (White Helleborine).—Ord. Orchidaceæ. Hardy terrestrial orchids.

**CULTURE**: Soil, chalky loam. Position, open & well-drained border. Plant, Sept. & Oct. Propagate by division of roots in Sept.

**SPECIES CULTIVATED**: *C. ensifolia*, white, June, 2 ft.; *pallens* (Syn. *C. grandiflora*), white and yellow, June, 18 in.; *rubra*, purple and white, May, 18 in. Natives of Britain.

**Cephalanthus** (Button bush).—Ord. Rubiaceæ. Hardy deciduous shrub. Orn. foliage. First introduced 1735.

**CULTURE**: Soil, sandy peat. Position, open shrubberies. Plant, Oct. or Nov. Propagate by layers of shoots in Sept. or Oct.

**SPECIES CULTIVATED**: *C. occidentalis*, white, July, 7 ft., N. America.

**Cephalaria.**—Ord. Dipsacæ. Hardy herbaceous perennials. First introduced 1759.

**CULTURE:** Soil, ordinary. Position, shrubby borders or woods. Plant, March or April. Propagate by seeds sown  $\frac{1}{2}$  in. deep in sunny position outdoors in April, transplanting seedlings in May.

**SPECIES CULTIVATED:** *C. alpina* (Syn. *Scabiosa alpina*), yellow, July, 5 ft., Europe; *tartarica*, yellow, July, 5 ft., Siberia.

**Cephalotaxus** (Cluster-flowered Yew).—Ord. Coniferæ. Hardy conifers. Orn. foliage. Evergreen. First introduced 1837. Leaves similar to those of Yew.

**CULTURE:** Soil, ordinary. Position, sheltered shrubberies or lawns. Plant, Sept. to Nov. or March to May. Propagate by seeds sown  $\frac{1}{2}$  in. deep in light soil in cold frame in Sept. or March, transplanting seedlings outdoors a year after; cuttings of shoots 3 in. long inserted in sandy soil in shady cold frame, or under bell-glass or hand-light outdoors.

**SPECIES CULTIVATED:** *C. drupacea*, 5 to 6 ft., Japan; *Fortuni*, 8 ft., N. China; *pedunculata*, 8 ft., Japan.

**Cephalotus** (Australian Pitcher-plant).—Ord. Saxifragacæ. Greenhouse herbaceous perennial. First introduced 1822. Flowers, white. Pitchers, 1 to 3 in. long, dark green, purple, & pink.

**CULTURE:** Compost, equal parts sphagnum moss, fibry peat, & silver sand. Position, pots or pans, well drained & covered with bell-glass; shady cool greenhouse or window. Temp., Oct. to March 45° to 55°; March to Oct. 50° to 55°. Water moderately Sept. to April, freely afterwards. Propagate by division of roots in March.

**SPECIES CULTIVATED:** *C. follicularis*, Australia; 2 to 4 in.

**Cerastium** (Snow in Summer; Snow-plant).—Ord. Caryophyllacæ. Hardy perennials. Evergreen & deciduous.

**CULTURE:** Soil, ordinary. Position, dryish borders, rockeries & edgings to flower beds. Plant, March or April. Propagate by division of plants in March or April; cuttings of shoots 3 in. long inserted in ordinary soil in shady position outdoors in June or July; seeds sown 1-10 in. deep in shady position outdoors in April, transplanting seedlings in June or July.

**SPECIES CULTIVATED:** *C. alpinum*, white, June, 3 to 4 in., Britain; *Biebersteinii*, white, June, 6 in., leaves silvery, Asia Minor; *Boiserii*, white, June, 8 to 9 in., leaves silvery; *grandiflorum*, white, July, 6 in.; *tomentosum* (Snow in Summer), white, May, 6 in., leaves silvery, Europe.

**Ceratiola** (Sandhill Rosemary).—Ord. Empetracæ. Half-hardy evergreen shrub. First introduced 1826.

**CULTURE:** Soil, two parts sandy peat & loam. Position, moist, shady, sheltered. Plant, April. Propagate by cuttings of shoots 3 in. long inserted in well drained pots of sandy peat, under bell-glass, in cold frame in June, July, or Aug. Protection required in severe weather.

**SPECIES CULTIVATED:** *C. ericoides*, brown, June, 2 ft., Carolina.

**Ceratonia** (Carob-bean).—Ord. Leguminosæ. Hardy evergreen tree. First introduced 1570.

**CULTURE:** Position, against south walls; suitable for S. & W. of England only. Plant, Sept. to Nov. or March to May. Propagate by seeds sown 1 in. deep in pots of sandy soil in temp. 85° in March, transplanting seedlings outdoors in June; cuttings of firm shoots 4 in. long inserted in sandy soil under bell-glass in cold frame or greenhouse in Aug. or Sept.

**SPECIES CULTIVATED:** *C. Siliqua*, yellow and red, Sept., 15 ft., S. Europe.

**Ceratopteris** (Pod Fern).—Ord. Filices. Stove water floating fern. Annual.

**CULTURE:** Compost, equal parts loam & leaf-mould. Position, in pots or pans submerged to rim in tank of water. Temp., Sept. to March 55° to 60°; March to Sept. 65° to 75°. Propagate by spores sown in Feb. on surface of compost in pan in water as above; pegging old fronds to surface of soil from which young plants will grow.

**SPECIES CULTIVATED:** *C. thalictroides*, Trop. America.

**Ceratostigma** (Lead-wort).—Ord. Plumbaginææ. Hardy perennial of dwarf, shrubby habit, and with creeping roots.

**CULTURE:** Soil, sandy loam. Position, sunny rockery. Plant in autumn or spring. Propagate by division in spring.

**SPECIES CULTIVATED:** *C. plumbaginoides* (Syn. *Plumbago Larpentæ*), blue, autumn, 1 ft., China.

**Cercis** (Judas-tree; Red-bud).—Ord. Leguminosæ. Hardy. deciduous flowering trees. First introduced 1596.

**CULTURE:** Soil, rich, deep, sandy. Position, warm sheltered shrubberies, or on lawns. N. of England against south wall. Plant, Oct. to March. Prune away old branches in Feb. Propagate by seeds sown  $\frac{1}{2}$  in. deep in light sandy soil in temp. 55° to 65° in March, transplanting seedlings outdoors in June, or by layers of strong shoots in Sept. or Oct.

**SPECIES CULTIVATED:** *C. canadensis* (Red bud), red, May, 15 ft., N. America; *chinensis*, pink, May, 10 ft., China and Japan; *Siliquastrum* (Judas Tree), purple or rose, May, 20 to 25 ft., S. Europe.

**Cereus** (Torch Thistle; Night-flowering Cereus).—Ord. Cactaceæ. Greenhouse plants with fleshy, spiny stems, no leaves. First introduced 1690.

**CULTURE:** Compost, two parts fibry loam, one part coarse sand & pounded brick rubbish. Position, well-drained pots in sunny greenhouses or windows. Pot every three or four years, in March. Water once a month Sept. to April, once a week afterwards. Temp., Sept. to March 50° to 55°; March to Sept., 55° to 65°. Propagate by seeds sown  $\frac{1}{8}$  in. deep in well-drained pans of sandy soil in temp. 75° in March, keeping soil moderately moist; cuttings of stems inserted in small pots of sandy soil kept barely moist in summer; grafting on common kind in April.

**SPECIES CULTIVATED:** *C. aggregatus*, scarlet, Sept., U. States; *Berlandieri*, purple, Texas; *Blanckii*, rose, summer, Mexico; *cærulescens*, white, July, Mexico; *flagelliformis*, pink, spring, S. America; *\*fulgidus*, orange-scarlet, July; *\*grandiflorus*, white, July, W. Indies; *cæspitosus*, rose, summer, U. States; *enneacanthus*, purple, July, Texas; *Fendleri*, purple, June, Mexico; *giganteus*, colour not known, California; *leeanus*, red, Mexico; *\*Lemairii*, yellow and white, June, *\*Macdonaldie*, white and red, July, Honduras; *leptacanthus*, purple lilac and white, May; *Mallisonii*, red, summer, hybrid; *multiplex*, scarlet, summer, Brazil; *paucispinus*, red and orange, summer, New Mexico; *\*Napoleonis*, yellow and white, autumn, Mexico; *\*nyctacalis*, white, autumn, Mexico; *pentalophus*, rose, Mexico; *peruvianus*, red, August, Peru; *pleiogonus*, purple-red; *polycanthus*, blood-red, spring, Mexico; *procumbens*, rosy purple, May, Mexico; *reductus*, white and rose, summer, Mexico; *repandus*, white, summer, W. Indies; *Royenii*, rose, spring, New Grenada; *serpentinus*, purple and white, Peru; *\*speciosissimus*, crimson, July, S. America; *\*triangularis*, white, Aug., W. Indies; *variabilis*, green and red, July, S. America. Those indicated by an asterisk are night blooming.

**Cerinthæ** (Honeywort; Wax-plant).—Ord. Boraginææ. Hardy annuals and perennials. First introduced 1570.

**CULTURE:** Soil, ordinary. Position, sunny well-drained beds or borders. Plant perennial species Oct. or April. Propagate annuals by seeds sown 1-16 in. deep in April where plants are to flower, or in boxes of light sandy soil in temp. 55° to 65° in March, transplanting



seedlings outdoors in May; thin outdoor-sown seedlings to 2 in. apart; perennials by seeds similar to annuals & by division of roots in April.

**ANNUAL SPECIES:** *C. aspera*, yellow, July, 1 to 2 ft., S. Europe; *glabra*, yellow and violet, June, 1 ft., Alps; major, yellow and purple, July, 1 ft., Alps; minor, yellow, June, 12 to 18 in., S. Europe; *retorta*, yellow and violet, July, 18 in., Greece.

**PERENNIAL SPECIES:** *C. maculata*, yellow, June, 18 in., S. Europe.

**Ceropegia.**—Ord. Asclepiadææ. Greenhouse trailing plants. Ornamental-leaved.

**CULTURE:** Compost, equal parts peat, loam, leaf-mould, & silver sand. Position, baskets or pots suspended from roof of greenhouse, or in rockeries; sunny. Pot, March. Water moderately between March & Sept., occasionally afterwards. Temp., March to Sept. 55° to 65°, afterwards 45° to 50°. Propagate by cuttings of slender shoots inserted in silver sand, in well-drained pots, in a temp. of 65° in spring.

**SPECIES CULTIVATED:** *C. elegans*, white, brown, and purple, summer, 3 to 4 ft., India; *Sandersonii*, green, autumn, 3 ft., Natal; *Woodii*, white and purple, summer, 2 to 3 ft., S. Africa.

**Cestrum** (Bastard Jasmine; Night-blooming Jasmine).—Ord. Solanaceæ. Greenhouse flowering shrubs. Evergreen. First introduced 1787.

**CULTURE:** Compost, two parts loam, one part leaf-mould & sand. Position, pots or beds with shoots trained on wall, pillars, or roof of greenhouse. Pot, March. Prune into shape, Feb. Temp., Sept. to March 40° to 50°; March to Sept. 55° to 60°. Water moderately in winter, freely other times. Propagate by cuttings of side shoots 3 or 4 in. long, removed with portion of old stem attached, inserted in well-drained pots of sandy soil in temp. 65° to 75° in July, Aug., or Sept.

**SPECIES CULTIVATED:** *C. aurantiacum*, orange-yellow, June, 5 ft., Guatemala; *elegans*, carmine, spring, 10 ft., Mexico; *Newellii*, crimson, June, 10 ft. Formerly known under the generic name of *Habrothamnus*.

**Ceterach.**—See *Asplenium*.

**Chænostoma.**—Ord. Scrophulariaceæ. Half-hardy herbs & shrubs. First introduced 1816. Ht. 4 in. to 2 ft.

**CULTURE:** Soil, ordinary. Position, sunny beds or borders outdoors May to Oct., greenhouse or frame in winter. Plant outdoors in May. Propagate by seeds sown 1-10 in. deep in light soil in temp. 65° to 70° in March; cuttings inserted in well-drained pots of sandy soil in greenhouse or cold frame in Sept.

**SPECIES CULTIVATED:** *C. cordata*, white, June, 18 in.; *fastigiata*, rose, summer, 6 in.; *fastigiata alba*, white; *hispida*, lilac, July, 6 in.; *linifolia*, yellow, Sept., 1 ft.; *polyantha*, lilac and yellow, summer, 4 in. Natives S. Africa.

**Chærophyllum** (Bulbous-rooted Chervil).—Ord. Umbelliferæ. Hardy esculent vegetable. First introduced 1726. Roots carrot-like, yellowish white, sweet; cooked & served as carrots.

**CULTURE:** Soil, ordinary. Position, sunny beds outdoors. Propagate by seeds sown 1 in. deep in drills 1 ft. apart in Aug., Sept., & Oct. Thin out seedlings to 8 in. apart in May. Lift roots in Aug., & store them in dry, dark places until required for use.

**SPECIES CULTIVATED:** *C. bulbosum*, white, June, 1 ft., S. Europe. See also the genus *Anthriscus*.

**Chain Fern** (*Woodwardia radicans*).—See *Woodwardia*.

**Chalice Flower** (*Narcissus pseudo-narcissus*).—See *Narcissus*.

**Chalk Plant** (*Gypsophila paniculata*).—See *Gypsophila*.

**Chamæbatia.**—Ord. Rosaceæ. Half-hardy evergreen flowering shrub. First introduced 1859.

**CULTURE:** Compost, two parts loam, one part peat & sand. Posi-

tion, pots in cool greenhouse, or sunny rockeries outdoors S. of England. Pot, March. Plant, April. Water moderately in winter, freely in summer in pots. Propagate by cuttings inserted in sandy soil in cold frame in July or Aug.

SPECIES CULTIVATED: *C. foliolosa* (Syn. *Spiræa Millefolium*), white, summer, 3 ft., California.

**Chamæcyparis.**—See *Cupressus*.

**Chamædorea.**—Ord. Palmaceæ. Stove palms. Ornamental foliage. First introduced 1846.

CULTURE: Compost, two parts peat, one part loam & sand. Position, shady part of stove in pots or tubs. Pot, March. Water moderately Sept. to March, abundantly afterwards. Temp., Sept. to March 55° to 65°; March to Sept. 65° to 75°. Propagate by seeds sown 1 in. deep in above compost in pots, in temp. 85° in March.

SPECIES CULTIVATED: *C. elatior*, 9 in., Mexico; *elegans*, 8 to 10 ft., Mexico; *gracilis*, 10 ft., Mexico.

**Chamæpeuce.**—See *Cnicus*.

**Chamærops** (Fan Palm; African Hair Palm; European Palm).

—Ord. Palmaceæ. Greenhouse & half-hardy palms. Orn. foliage. First introduced 1731. Leaves, fan-shaped, green.

CULTURE: Compost, two parts rich loam, one part decayed leaf-mould & sand. Position, well-drained pots in greenhouse or sheltered well-drained beds outdoors in S. of England. Pot, March. Plant, April. Temp., Sept. to March 40° to 50°; March to Sept. 50° to 60°. Water moderately in winter, freely in summer. Propagate by seeds sown 1 in. deep in light soil in temp. of 80° in Feb. or March; suckers removed from parent plant in April or Aug.

SPECIES CULTIVATED: *C. humilis*, 10 ft., S. Europe, N. Africa. See also the genus *Trachycarpus*.

**Chamomile** (*Anthemis nobilis*).—See *Anthemis*.

**Chandelier Flower** (*Brunsvigia Josephinæ*).—See *Brunsvigia*.

**Chaplet Flower** (*Stephanotis floribunda*).—See *Stephanotis*.

**Chaste Tree** (*Vitex Agnus-castus*).—See *Vitex*.

**Chatham Island Forget-me-not** (*Myosotidium nobile*).—See *Myosotidium*.

**Cheddar Pink** (*Dianthus cæsius*).—See *Dianthus*.

**Cheilanthes** (Californian Lace Fern; Lip Fern).—Ord. Filices. Stove & greenhouse ferns. First introduced 1775.

CULTURE: Compost, two parts peat, one part loam & silver sand. Position, pots in shade. Pot, Feb. or March. Water moderately Oct. to Feb., freely afterwards. Temp., stove species, Sept. to March 55° to 65°, March to Sept. 65° to 75°; greenhouse, Sept. to March 45° to 50°, March to Sept. 55° to 65°. Propagate by spores similar to *Adiantum*.

GREENHOUSE SPECIES: *C. argentea*, 6 to 8 in., N. Asia, etc.; *californica* (Californian Lip Fern), 6 in., California (also known as *Hypolepis californica*); *Cleavelandii* (Cleveland's Lip Fern), 12 in., N. America; *Eatonii*, 6 in., N. America; *fragrans*, 2 to 4 ins., S. Europe; *hirta*, 4 to 8 in., Cape, Mexico, etc.; *Lindhemerii*, 3 to 6 in., Texas; *microphylla* (Plumier's Lip Fern), 6 to 8 in., N. America; *pulchella*, 9 in., Madeira; *viscida* (Sticky Lip Fern), 6 in., N. America.

STOVE SPECIES: *C. chlorophylla*, 12 in., S. America; *farinosa*, 6 to 8 in., Abyssinia, Java, etc.; *myriophylla* (Lace Fern), Syn. *C. elegans*, 4 to 8 in., Trop. America; *radiata*, 9 to 12 in., Trop. America; *tenuis*, 1 ft., Mexico.

**Cheiranthus** (Gilliflower; Wallflower).—Ord. Cruciferae. Hardy perennials. Of biennial duration only on heavy soils. Flowers, single & double, fragrant.

**CULTURE OF WALLFLOWERS:** Soil, ordinary well-drained, not too heavy; add lime or old mortar. Position, sunny borders, beds or old walls. Sow either broadcast or in drills 6 in. apart &  $\frac{1}{2}$  in. deep in April. Transplant seedlings when third leaf has formed, 6 in. apart each way, in a bed of firm soil limed as before, & plant out finally a foot or so apart in Sept. or Oct. Make soil firm around plants to ensure sturdy firm growth. Double-flowered varieties may be increased by cuttings or slips of side-shoots removed with a slight heel attached, & inserted in cold frame or shady border in Aug. Plant out in March. To grow on old walls, sow a pinch of seed in crevices, adding a little soil & cow manure to supply food to young plants; or plant young seedlings in similar compost in spring. On heavy soils wallflowers are best grown as biennials.

**CULTURE OF DWARF SPECIES:** *C. alpinus*, *Marshallii*, *kewensis*, & *mutabilis*, should be grown on sunny rockeries in good loamy soil & old mortar. Plant in spring. Top-dress annually in March with well-rotted cow manure. Propagate as advised for Double Wallflowers.

**POT CULTURE:** Plant seedlings in good ordinary mould in six-inch pots in Sept.; keep in sunny cold frame till flower buds form, then transfer to greenhouse. Water moderately. Feed with liquid manure when in flower. Throw away after blooming.

**SPECIES CULTIVATED:** *C. alpinus*, yellow, May, 6 in., Scandinavia, best grown on a rockery; *Cheiri* (Wallflower), various colours, spring, 1 to 2 ft., Europe; *Marshallii*, orange, 1 ft., hybrid; *kewensis*, sulphur, orange, purple, Nov. to May, 1 ft., hybrid; *mutabilis*, or *Allionii*, purple, spring, 1 ft.

**Chelidonium** (Celandine; Swallow-wort).—Ord. Papaveraceæ. *Chenopodiaceæ*. Hardy perennials & annuals. *C. Bonus-Henricus* & *C. Quinoa*, grown sometimes as a substitute for spinach.

**CULTURE:** Soil, ordinary. Position, damp shady borders. Plant, March or April. Propagate by seeds sown  $\frac{1}{2}$  in. deep in shade outdoors in April; division of roots in April.

**SPECIES CULTIVATED:** *C. majus*, yellow, May, 2 ft., Britain; *majus flore pleno*, autumn.

**Chelone** (Turtle Head; Shell-flower). — Ord. Scrophulariaceæ. Hardy herbaceous perennials. First introduced 1752.

**CULTURE:** Soil, rich, deep. Position, open borders. Plant, Oct., Nov., March, or April. Propagate by seeds sown 1-16 in. deep in light soil in temp. 55° to 65° in March, or similar depth in soil in cold frame in April, transplanting seedlings outdoors in May & June; cuttings inserted in sandy soil in cold frame in June & July; division of plants in Aug. & Sept.

**SPECIES CULTIVATED:** *C. glabra*, white, Aug., 4 ft., N. America; *Lyoni*, purple, Aug., 4 ft., N. America; *obliqua*, purple, Aug., 4 ft., N. America.

**Chenopodium** (Good King Henry; Wild Spinach). — Ord. *Chenopodiaceæ*. Hardy perennials & annuals. *C. Bonus-Henricus* & *C. Quinoa* grown sometimes as a substitute for Spinach.

**CULTURE OF GOOD KING HENRY:** Soil, good, well trenched, & liberally manured. Position, dryish, sunny. Sow seeds 1 in. deep in drills 12 in. apart in April. Thin seedlings out to 9 in. apart in May. Cover bed in October with thin layer of manure. Gather young shoots in April as substitute for asparagus; leaves in May & June in lieu of spinach. Renew beds every 3 or 4 years.

**CULTURE OF ANNUAL SPECIES:** Soil, ordinary. Position, sunny beds or borders. Sow seeds outdoors in April. Thin seedlings to 18 in. apart. Pinch out points of shoots to make bushy plants.

**CULTURE OF C. QUINOA:** Soil, ordinary. Position, open garden.

Sow seeds in drills 1 in. deep & 2 ft. apart from March onwards at intervals of a few weeks. Gather leaves, cook, & eat like spinach.

PERENNIAL SPECIES: *C. Bonus-Henricus* (Good King Henry), 3 ft., Britain.

ANNUAL SPECIES: *C. purpurascens* (Syn. *C. Atriplicis*), reddish purple, Aug., 3 ft., leaves and shoots rosy violet, China; *C. Quinoa*, 4 to 6 ft., Peru.

**Chequered Daffodil** (*Fritillaria meleagris*).—See *Fritillaria*.

**Cherimoyer** (*Anona Cherimolia*).—See *Anona*.

**Cherokee Rose** (*Rosa lævigata*).—See *Rosa*.

**Cherry**.—See *Prunus*.

**Cherry Laurel** (*Prunus Laurocerasus*).—See *Prunus*.

**Cherry Pie-flower** (*Heliotropium peruvianum*).—See *Heliotropium*.

**Cherry Plum-tree** (*Prunus cerasifera*).—See *Prunus*.

**Chervil**.—See *Anthriscus*.

**Chervil, Bulbous-rooted**.—See *Chærophyllum*.

**Chestnut**.—See *Castanea* & *Æsculus*.

**Chicory**.—See *Cichorium*.

**Chignon Fern** (*Dicksonia regalis*).—See *Dicksonia*.

**Chilian Arbor-vitæ** (*Libocedrus chiliensis*).—See *Libocedrus*.

**Chilian Bell-flower**.—See *Nolana*.

**Chilian Crocus** (*Tecophilæa Cyanocrocus*).—See *Tecophilæa*.

**Chilian Glory Flower** (*Eccremocarpus scaber*).—See *Eccremocarpus*.

**Chilian Gum Box** (*Escallonia rubra*).—See *Escallonia*.

**Chilian Pine-tree** (*Araucaria imbricata*).—See *Araucaria*.

**Chilian Pitcher-flower** (*Sarmienta repens*).—See *Sarmienta*.

**Chili Jasmine** (*Mandevilla suaveolens*).—See *Mandevilla*.

**Chili Nettle** (*Loasa laterita*).—See *Loasa*.

**Chili Pepper** (*Capsicum annum*).—See *Capsicum*.

**Chili Strawberry** (*Fragaria chiloensis*).—See *Fragaria*.

**Chillies** (*Capsicum annum*).—See *Capsicum*.

**Chimaphila** (Spotted Winter Green; Ground Holly).—Ord. Ericaceæ. Hardy dwarf herbaceous perennials. First introduced 1752.

CULTURE: Compost, two parts leaf-mould, one part sand. Position, shady rockery outdoors. Plant, April. Propagate by division of plants in April.

SPECIES CULTIVATED: *C. maculata*, pink and white, June, 6 in., N. America; *umbellata*, white and pink, June, 6 in., N. America.

**Chimney Plant** (*Campanula pyramidalis*).—See *Campanula*.

**Chimonanthus** (*Japan Allspice*).—Ord. Calycanthaceæ. Hardy deciduous flowering shrub. First introduced 1766.

CULTURE: Soil, deep, rich, sandy. Position, against south or west walls. Plant, Feb. Prune in Feb., cutting away all shoots that have flowered to within 1 in. of base, except those required to furnish plants with branches. Propagate by layering shoots in Sept. or Oct.

SPECIES CULTIVATED: *C. fragans*, yellow and red, fragrant, Dec., 6 to 9 ft., China and Japan.

**China Aster** (*Callistephus hortense*).—See *Callistephus*.

**China Creeper** (*Ipomæa Quamoclit vulgaris*).—See *Ipomæa*.

**China Creeper** (*Quamoclit vulgaris*).—See *Quamoclit*.

**Chinaman's Breeches** (*Dicentra spectabilis*).—See *Dicentra*.

**China Rose** (*Rosa indica*).—See *Rosa*.

- Chinese Apple** (*Pyrus spectabilis*).—See *Pyrus*.
- Chinese Arbor-vitæ** (*Thuja orientalis*).—See *Thuja*.
- Chinese Artichoke** (*Stachys Sieboldii*).—See *Stachys*.
- Chinese Bell-flower** (*Platycodon grandiflorum*).—See *Platycodon*.
- Chinese Crab** (*Pyrus spectabilis*).—See *Pyrus*.
- Chinese Hawthorn** (*Photinia serrulata*).—See *Photinia*.
- Chinese Honey-Locust-tree** (*Gleditschia sinensis*).—See *Gleditschia*.
- Chinese Ivy** (*Trachelosperum jasminoides*). — See *Trachelosperum*.
- Chinese Jasmine** (*Trachelosperum jasminoides*). — See *Trachelosperum*.
- Chinese Juniper** (*Juniperus chinensis*).—See *Juniperus*.
- Chinese Lantern** (*Physalis Alkekengi*).—See *Physalis*.
- Chinese Lilac** (*Syringa chinensis*).—See *Syringa*.
- Chinese Medlar** (*Eriobotrya japonica*).—See *Eriobotrya*.
- Chinese Monk's-hood** (*Aconitum chinensis*).—See *Aconitum*.
- Chinese Pagoda-tree** (*Sophora japonica*).—See *Sophora*.
- Chinese Pea-tree** (*Caragana frutescens*).—See *Caragana*.
- Chinese Pink** (*Dianthus chinensis*).—See *Dianthus*.
- Chinese Primrose** (*Primula sinensis*).—See *Primula*.
- Chinese Privet** (*Ligustrum sinensis*).—See *Ligustrum*.
- Chinese Rose Mallow** (*Hibiscus rosa-sinensis*).—See *Hibiscus*.
- Chinese Sacred Lily** (*Narcissus tazetta*).—See *Narcissus*.
- Chinese Tree Pæony** (*Pæonia moutan*).—See *Pæonia*.
- Chinese Tulip-tree** (*Magnolia fuscata*).—See *Magnolia*.
- Chinese Water Lily** (*Nelumbium speciosum*).—See *Nelumbium*.
- Chinese Wax Privet** (*Ligustrum lucidum*).—See *Ligustrum*.
- Chinese Yam** (*Dioscorea batata*).—See *Dioscorea*.
- Chionanthus** (*Fringe Tree*; *Virginian Snow-flower*).—Ord. Oleaceæ. Hardy flowering trees & shrubs. Deciduous. First introduced 1796.
- CULTURE**: Soil, sandy loam. Position, moist sheltered shrubbery. Plant, Oct. to Feb. *C. virginica* suitable for pot culture for spring flowering in heated or cold greenhouses. Pot, Nov. Water moderately Nov. to April, freely afterwards. Plunge pot to rim outdoors from June to Feb. Propagate by seeds sown in sandy soil in cold frame in April; grafting on Ash in March; budding on Ash in July.
- SPECIES CULTIVATED**: *C. retusus*, white, May, 6 ft., China and Japan; *virginica*, white, May, 10 to 20 ft., Florida.
- Chionodoxa** (*Glory of the Snow*).—Ord. Liliaceæ. Hardy deciduous bulbous plants. First introduced 1877.
- OUTDOOR CULTURE**: Soil, sandy loam. Position, sunny rockeries, well drained. Plant bulbs 1 in. apart & 3 in. deep in Sept. Lift and replant every three years.
- POT CULTURE**: Compost, equal parts peat, loam, leaf-mould, & sand. Pot, Sept., planting 12 bulbs 1 in. deep in a 3 in. pot, well drained. Cover pot with ashes outdoors or in frame until Jan., then remove to window or greenhouse. Water moderately Jan. to April, freely April to June, none afterwards. Propagate by seeds sown  $\frac{1}{2}$  in. deep in boxes of light soil in cold frame in Aug.; offsets as mature bulbs.
- SPECIES CULTIVATED**: *C. cretica*, blue and white, March, 6 in., Crete;

Lucilæ, blue and white, March, 6 in., Asia Minor, and its varieties gigantea (Syn. Allenii) and grandiflora, violet, March, 6 in., sardensis, blue, March, 6 in., and Tmoli, blue and white, April, 6 in.; nana, white and lilac, April, Crete.

**Chionographis.**—Ord. Liliaceæ. Half-hardy herbaceous perennial. First introduced 1880.

**CULTURE:** Compost, equal parts loam, leaf-mould, peat, & sand. Position, warm, well-drained south border outdoors, or pot in cold frame. Plant, Oct. or Feb. Pot, Feb. Propagate by seeds sown  $\frac{1}{2}$  in. deep in above compost in a pot, pan, or box in March, in cold frame; division of roots in Sept.

**SPECIES CULTIVATED:** *C. japonica*, white, May, 1 ft., Japan.

**Chirita.**—Ord. Gesneriaceæ. Stove herbaceous perennial & ever-green plants. First introduced 1840.

**CULTURE:** Compost, equal parts peat & leaf-mould, half a part fibry loam, & half a part of silver sand & charcoal. Pot, Feb. Shake away old soil from roots & put in small pots first, shifting into larger size when plants begin to grow. Water moderately at first, increasing supply when plants grow freely; keep nearly dry Oct. to Feb. Position, on shelf near glass. Liquid or artificial manure may be applied when flower buds appear. Temp., Nov. to Feb. 55° to 65°; Feb. to Nov. 70° to 85°. Propagate by seeds sown in well-drained pots of above compost in March. Cover seeds with sprinkle of sand, place a square of glass over each pot & put latter in temp. 75° to 85°. Keep soil moderately moist. Transplant seedlings when three leaves are formed into small pots & treat as advised for old plants. Can be propagated also by large leaves, cutting their main ribs through & laying undersides on pans of sandy soil in temp. 65° to 75° in summer.

**SPECIES CULTIVATED:** *C. depressa*, violet, July, 6 to 8 in., China; *Horsefieldii*, white and purple, Sept., 18 in., Java; *lilacina*, white, blue, and yellow, summer, 18 in., Chiriqui; *Moonii*, blue and purple, June, 2 ft., Ceylon; *sinensis*, lilac, July, 6 in., China; *Walkerii*, yellow, June, 18 in., Ceylon; *zeylanica*, purple, June, 18 in., Ceylon.

**Chives.**—See Allium.

**Chlidanthus.**—Ord. Amaryllidaceæ. Half-hardy herbaceous plant. First introduced 1820.

**OUTDOOR CULTURE:** Compost, equal parts peat, leaf-mould, loam, & silver sand. Position, warm, well-drained bed or border outdoors. Plant bulbs 3 in. deep in April. Lift bulbs in Oct. & store them in sand in frost-proof place during winter.

**POT CULTURE:** Plant bulbs 1 in. apart & 2 in. deep in above compost in 5 in. pots in April. Water moderately first, freely when in active growth. Grow in cold frame or cool greenhouse. Withhold water from roots after Sept. until repotting time. Propagate by offsets in April.

**SPECIES CULTIVATED:** *C. fragrans*, yellow, fragrant, June, 10 in., Peru.

**Chlora** (Yellow Centaury; Yellow-wort).—Ord. Gentianaceæ. Hardy biennials. Suitable for large gardens only.

**CULTURE:** Soil, heavy loam. Position, moist borders. Propagate by seeds sown  $\frac{1}{2}$  in. deep in shady beds outdoors in July, transplanting seedlings into flowering positions in Oct.

**SPECIES CULTIVATED:** *C. imperfoliata*, yellow, June, 1 ft.; *perfoliata*, yellow, June, 1 ft., Britain.

**Chloris.**—Ord. Gramineæ. Hardy annual flowering grasses. Inflorescence suitable for winter decorations. Cut and dry when fully developed.

**CULTURE:** Soil, ordinary. Position, sunny borders. Sow seeds outdoors in April.

**SPECIES CULTIVATED:** *C. barbata*, 1 ft., E. Indies; *elegans*, 1 ft., S. America.  
**Chlorogalum** (Soap Plant).—Ord. Liliaceæ. Hardy bulbous plant. First introduced 1819.

**CULTURE:** Soil, light. Position, south border, well drained. Plant bulbs 4 in. deep and 3 in. apart in Oct. or March. Replant every three years. Propagate by offsets planted similarly to old bulbs; by seeds sown  $\frac{1}{2}$  in. deep in well-drained pots of sandy soil in March.

**SPECIES CULTIVATED:** *C. pomeridianum*, white and purple, June, 2 ft., California.

**Chlorophytum.**—Ord. Liliaceæ. Greenhouse plants. Orn. foliage. First introduced 1751.

**CULTURE:** Compost, equal parts loam, leaf-mould, peat, & sand. Position, variegated & tall kinds in pots; drooping stemmed species in pots or baskets suspended in window or greenhouse. Pot, March. Temp., Oct. to March 45° to 50°; March to Oct. 55° to 65°. Water moderately in winter, freely other times. Propagate by seeds sown  $\frac{1}{2}$  in. deep in well-drained pots of light soil in temp. 65° in March.; by offshoots inserted singly in small pots under bell-glass in window or greenhouse in April; by division of roots when repotting.

**SPECIES CULTIVATED:** *C. elatum* (Syn. *Anthericum* and *Phalangium elatum*), white, summer, 12 to 18 in., S. Africa; *elatum variegatum* (Syn. *Anthericum variegatum*), leaves variegated with creamy white; *orchidastrum*, white, July, 18 in., Trop. Africa.

**Chocolate-tree** (*Theobroma cacao*).—See *Theobroma*.

**Choisya** (Mexican Orange-flower).—Ord. Rutaceæ. Hardy evergreen flowering shrub. First introduced 1825.

**OUTDOOR CULTURE:** Compost, equal parts peat, loam, leaf-mould, & sand. Position, sheltered shrubberies S & W. of England & Ireland, against south walls N. of England. Plant, Oct. or March. Prune after flowering, shortening straggling shoots only.

**POT CULTURE:** Compost as above. Pot, Sept. or Oct. Water moderately Sept. to March, freely afterwards. Keep plants in cool greenhouse Nov. to May, remainder of time outdoors. Propagate by cuttings of shoots 3 in. long inserted in well-drained pots of sandy soil under bell-glass in temp. 55° to 65°, March to June.

**SPECIES CULTIVATED:** *C. ternata*, white, summer, 6 ft., Mexico.

**Chokeberry** (*Pyrus arbutifolia*).—See *Pyrus*.

**Choke Cherry** (*Prunus virginiana*).—See *Prunus*.

**Chorizema.**—Ord. Leguminosæ. Greenhouse flowering shrubs. Evergreen. First introduced 1803.

**CULTURE:** Compost, equal parts fibry peat & loam, one-fourth sand. Position, pots, or in well-drained beds in greenhouses. Pot, March or June; firm potting essential. Prune straggling shoots slightly after flowering. Water freely March to Sept., moderately afterwards. Temp., March to Sept. 55° to 65°; Sept. to March 45° to 50°. Stand plants outdoors from July to Sept. to mature flowering shoots for following year. Propagate by seeds sown 1-16 in. deep in light sandy compost in temp. 65° to 70° in March; by cuttings inserted in pots of sandy peat under bell-glass in temp. 65° in summer.

**SPECIES CULTIVATED:** *C. cordatum*, red and yellow, April, 1 ft., Australia; *diversifolium*, orange-red, May, 2 ft.; Australia; *Henchmanni*, scarlet, May, 2 ft., Australia; *illicifolium*, yellow, May, 3 ft., Australia; *varium* (Syn. *C. Chandlerii*), yellow and red, May, 4 ft., Australia.

**Christmas Pride** (*Ruellia macrantha*).—See *Ruellia*.

**Christmas Rose** (*Helleborus niger*).—See *Helleborus*.

**Christ's-Eye** (*Inula Oculus-Christi*).—See *Inula*.

**Chrysanthemum** (Ox-eye Daisy; Marguerite; Pyrethrum;

Corn Marigold; Shasta Daisy).—Ord. Compositæ. Greenhouse, hardy annual, herbaceous perennial & shrubby plants. First introduced 1764.

**CULTURE OF ANNUAL SPECIES:** Soil, ordinary, rich. Position, open, sunny. Plant seedlings out in May. Sow seeds  $\frac{1}{2}$  in. deep in boxes of light soil in temp.  $65^{\circ}$  to  $70^{\circ}$  in March, afterwards planting seedlings out; or similar depth where plants are to flower. Thin seedlings to 3 in. apart in June. Gather seed in Aug.

**POT CULTURE OF ANNUAL SPECIES:** Sow seed as above. Transplant seedlings when 2 in. high at rate of four in a 5 in. pot, or seven in a 6 in. pot. Compost, two parts good soil, one part leaf-mould or decayed manure & sand. Grow plants in cold frame or greenhouse. Water moderately. Thin flower buds if fine blooms are wanted. Give weak liquid manure when flower buds appear.

**CULTURE OF MARGUERITES:** Compost, equal parts loamy soil and leaf-mould, fourth part silver sand. Propagate by cuttings inserted singly, or three in a 4-in. pot, in April. Cover pot with bell-glass or place in propagator. Pot cuttings when rooted in 3 in. pots, shifting them into 5 in. in August. Stand plants in full sun from July to Sept., place in cold frame from then to Nov., thence into greenhouse heated to temp.  $50^{\circ}$  to  $55^{\circ}$ . Water moderately. Give liquid manure when pot is full of roots. Throw plants away when a year old, & raise fresh stock from cuttings.

**CULTURE OF INDOOR CHRYSANTHEMUMS:** Classes: Incurved, petals curving inwards; reflexed, petals curving backwards; Anemone-flowered, flowers with dense centres & petals fringing their base; pompones, flowers small, petals reflexed, fringed or toothed; Japanese, flowers large, petals loosely arranged, variously shaped. Compost, three-parts fibry loam, one horse manure, one decayed tree leaves, one coarse silver sand, quarter part finely ground bones, same of dissolved bones, one part charcoal & wood ashes & little soot. Pot first time in 3 in. pots, March; second, in 5 or 6 in., middle of April; third, in 8 or 10 in., middle of June. Stop main stems 4 in. from base in March for ensuring bushy plants; those to produce blooms for exhibition leave untouched. Cut down plants intended for dwarfs to within 6 in. of pot in May. Thin flower buds to one on each shoot when they are size of radish seed. Stand plants in full sun May to Sept., then remove to greenhouse. Water freely while outdoors, moderately in greenhouse. Apply liquid manure when flower buds form & continue till flowers open. Propagate by cuttings issuing from roots, inserting these singly in 2 in. pots in temp.  $55^{\circ}$  to  $65^{\circ}$  in Jan., Feb., or March, or in cold frames in Dec.; by seeds sown  $\frac{1}{2}$  in. deep in light soil in temp.  $65^{\circ}$  in March. After flowering cut stems down & place plants in cold frame to produce cuttings, after which plant out in garden or discard. Temp. for plants whilst in flower,  $45^{\circ}$  to  $50^{\circ}$ . Suitable liquid manures: Nitrate of soda,  $\frac{1}{4}$  oz. to gall. of water; sulphate of ammonia,  $\frac{1}{2}$  teaspoonful to gall.; guano,  $\frac{1}{2}$  oz. to gall.—all three once a week; sheep & cow dung, peck of each &  $\frac{1}{2}$  peck of soot to 36 galls. of water, to be applied half diluted once weekly.

**CULTURE OF OUTDOOR CHRYSANTHEMUMS:** Soil, good ordinary. Position, sunny beds or borders. Plant out 3 ft. apart in May. Stop shoots when 6 in. high, then allow plants to grow naturally. Do not disbud. Water freely in summer. Give liquid manure July to Sept.

**CULTURE OF HARDY PERENNIAL SPECIES:** Soil, ordinary rich. Position, sunny borders. Plant, autumn or spring. Lift, divide, and



replant every third year. Increased by division in autumn or spring; cuttings in cold frame in summer; seeds in heat in spring.

**ANNUAL SPECIES:** *C. carinatum*, white and purple, summer, 2 ft., N. Africa; *coronarum*, white, summer, 3 ft., S. Europe; *segetum* (Corn Marigold), yellow, summer, 18 in., Europe (Britain); *segetum grandiflorum*, yellow.

**HARDY PERENNIAL SPECIES:** *C. coccineum* (Syn. *Pyrethrum roseum*), scarlet, summer, 2 to 3 ft., Caucasus, parent of the single and double race of *pyrethrum* (Coloured Marguerites); *lacustre* (Marsh Ox-eye), white, summer, 2 ft., S.W. Europe; *leucanthemum* (Ox-eye Daisy), white, summer, 3 ft., Europe; *maximum* (large Ox-eye or Shasta Daisy), white, summer, 3 ft.; *nipponicum*, white, 2 ft., summer, Japan; *uliginosum* (Grand Ox-eye), Syn. *Pyrethrum uliginosum*, white, autumn, 5 ft., Eastern Europe; *Parthenicum* (Feverfew), white, summer, 2 ft., Europe.

**TENDER SPECIES:** *C. indicum* (Japanese Chrysanthemum), parent of ordinary chrysanthemums, China and Japan; *frutescens* (Marguerite or Paris Daisy), white or yellow, 3 ft., summer, Canary Islands; *peaitum* (Syn. *C. Pyrethrum partheniifolium aureum*), Golden Feather, white, summer, leaves yellow, Caucasus.

**Chrysobactron.**—See *Bulbinella*.

**Chrysocoma.**—Ord. *Compositæ*. Greenhouse evergreen flowering shrub. First introduced 1731.

**CULTURE:** Compost, equal parts peat, loam & silver sand. Position, well-drained pots in sunny part of greenhouse. Pot, March. Water freely in spring & summer, moderately other seasons. Temp., March to Oct. 55° to 65°; Oct. to March 45° to 50°. Propagate by cuttings of firm shoots in silver sand under bell-glass in spring.

**SPECIES CULTIVATED:** *C. Coma-aurea*, yellow, July, 2 ft., S. Africa. See also the genus *Aster*.

**Chrysogonum** (Golden Knee).—Ord. *Compositæ*. Hardy herbaceous perennial.

**CULTURE:** Compost, equal parts loam, peat, & leaf-mould. Position, shady moist borders. Plant, Oct. or March. Propagate by division of roots in March.

**SPECIES CULTIVATED:** *C. virginianum*, yellow, May, 9 in., N. America.

**Chrysoplenium** (Golden Saxifrage).—Ord. *Saxifragaceæ*. Hardy perennial herbs. Soil, boggy peat. Position, damp & shady water-courses or ditches. Plant, Oct. or March. Propagate by division of plants in March.

**SPECIES CULTIVATED:** *C. alternifolium*, yellow, summer, 3 in., N. Hemisphere (Britain); *oppositifolium*, yellow, 3 in., Europe (Britain).

**Chusan Daisy** (*Chrysanthemum sinense*).—See *Chrysanthemum*.

**Chusan Palm** (*Chamærops Fortunei*).—See *Chamærops*.

**Chysis.**—Ord. *Orchidaceæ*. Stove deciduous epiphytal orchids. First introduced 1834.

**CULTURE:** Compost, equal parts fibry peat, moss, & potsherds. Position, well-drained pots or blocks of wood in partial shade. Pot, after flowering. Water freely March to Sept., moderately afterwards. Temp., Sept. to March 55° to 60°; March to Sept. 65° to 75°. Resting period, winter. Flowers appear on new growths directly after resting. Propagate by division of pseudo-bulbs in Feb. or March.

**SPECIES CULTIVATED:** *C. aurea*, yellow, spring and summer, 1 ft., Colombia; *bractescens*, white and yellow, spring, 1 ft., Mexico; *Chelsoni*, yellow and purple, spring, 1 ft., hybrid; *langleyensis*, white and rose, May, hybrid; *Limmingheii*, yellow and purple, spring, 1 ft. Mexico.

**Cibotium.**—See *Dicksonia*.

**Ciboul Onion** (*Allium fistulosum*).—See *Allium*.

**Cichorium** (Chicory; Witloof; Endive).—Ord. *Compositæ*. Hardy esculent rooted and salad vegetables.

**CULTURE OF CHICORY.**—Roots used when dry for mixing with coffee; leaves, when forced, for salad. Soil, rich light. Position, open,

away from trees. Sow seeds  $\frac{1}{2}$  in. deep in drills 15 in. asunder first week in May. Thin seedlings when an inch high to 8 in. apart in row. No liquid or artificial manures required. Lift roots in Nov. & store them in dry soil or sand in outhouse. Force leaves for salad by placing roots close together in large pots or deep box, using ordinary soil. Put pots or boxes in temp.  $55^{\circ}$  to  $65^{\circ}$ , & keep quite dark. Gather blanched leaves when three to six inches long.

**FIELD CULTURE OF CHICORY:** Soil, deep sandy loam, following potatoes or wheat. Plough in 12 tons of manure per acre in autumn, & 5 cwt. of guano in spring before sowing. Sow in May in drills 18 in. apart, afterwards thinning seedlings to 8 in. apart. Quantity of seed to sow an acre, 3 lb. Harvest crop in Oct. Average yield per acre, 8 to 10 tons. Cost of cultivation: Seed, 2s. 6d. per lb.; ploughing and harrowing, 20s. to 30s. per acre; manures, £4 to £5 per acre; hoeing, £2 10s. per acre; seed & sowing per acre, 10s.; digging & washing roots, £2 10s.; carting roots to factory, £1 10s. Average cost per acre after wheat, £15; after potatoes, £11. Average value per ton, 34s. Average returns per acre, £17.

**CULTURE OF ENDIVE:** Leaves when blanched used for salads. Soil, light rich. Position, open garden or on south or west borders. Sow seeds  $\frac{1}{2}$  in. deep in drills 4 in. apart in June for early crop, July for maincrop, Aug. for late crop. Transplant seedlings when they have formed four leaves 12 in. apart each way. Water freely in dry weather. Blanch early crop in Aug., main crop in Sept., late crop in Oct. by covering each plant by slate, tile, board, or inverted pot with drainage hole plugged. Lift remaining plants in Nov. & store close together in cold frame, covering them with dry leaves to ensure blanching. Seed two or three years old yield the dwarfest plants.

**SPECIES CULTIVATED:** *C. intybus* (Chicory), blue, July, 2 ft., Britain; *endivia* (endive), blue, July, 2 ft., Orient. Introduced 1548.

**Cimicifuga** (Snake-root; Bug-bane; Bugwort).—Ord. Ranunculacæ. Hardy herbaceous perennials. Introduced 1737.

**CULTURE:** Soil, ordinary. Position, moist shady borders. Plant, Oct., Nov., or March. Propagate by seeds sown 1-16 in. deep in light soil in cold frame in Sept.; division of roots in March.

**SPECIES CULTIVATED:** *C. americana*, white, Aug., 3 ft., N. America; *cordifolia*, white, July, 3 ft., N. America; *davurica*, white, July, 4 ft., China; *elata*, white, July, 3 ft., N. America; *foetida*, white, July, 2 ft., Europe; *racemosa*, white, Aug., 3 ft., N. America.

**Cincinalis.**—See *Nothochlæna*.

**Cineraria.**—See *Senecio*.

**Cinnamon Fern** (*Osmunda cinnamomea*).—See *Osmunda*.

**Cinnamon Root** (*Inula Conyza*).—See *Inula*.

**Cinnamon Rose** (*Rosa cinnamomea*).—See *Rosa*.

**Cinque-foil.**—See *Potentilla*.

**Cirrhopetalum** (Medusa's Head Orchid).—Ord. Orchidacæ. Stone epiphytal evergreen orchids. First introduced 1839.

**CULTURE:** Compost, equal parts fibrous peat & sphagnum. Position, well-drained pots, baskets, or blocks of wood, in partial shade. Pot, March. Water freely when plants are growing, moderately other times. Temp., Oct. to March  $55^{\circ}$  to  $65^{\circ}$ ; March to Oct.  $65^{\circ}$  to  $75^{\circ}$ . Propagate by division of pseudo-bulbs in March. Resting period, winter. Flowers appear at base of pseudo-bulb of previous year's growth after resting period.

**SPECIES CULTIVATED:** *C. Collettii*, purple, yellow, April, 8 in., Burma; *amesianum*, yellow and purple, June, 6 in., Trop. Asia; *Oummingii*, red and purple,

autumn, 6 in., Philippines; elegantulum, maroon, May, 6 in., Madras; grandiflorum, yellow and crimson, May, 8 in., Ceylon; ornatissimum, yellow and purple, Oct., 8 in., Himalayas; picturatum, green and red, 8 in., Malaya; robustum, red, yellow, and purple, June, 1 ft., New Guinea; Thouarsii, yellow, July, 1 ft., Mascare Islands.

**Cissus**.—See *Vitis*.

**Cistus** (Rock Rose; Gum Cistus).—Ord. Cistaceæ. Hardy & half-hardy evergreen shrubs. First introduced 1548.

**CULTURE**: Soil, good ordinary. Position, pots in frame or cold greenhouse, sunny rockeries or against south walls. Plant, March. Protect in severe weather. Propagate by seeds sown 1-16 in. deep in boxes of sandy soil in cold frame or unheated greenhouse in March, transplanting seedlings into small pots & planting outdoors in June; by cuttings 4 in. long in pots of sandy soil in Sept. in cold frame or greenhouse.

**SPECIES CULTIVATED**: *C. albidus*, white, 2 ft., S.W. Europe; *crispus*, purple, 2 ft., S. Europe; *cyprius*, white, 4 ft., Cyprus; *florentinus*, white, 4 ft., S. Europe; *ladaniferus*, white, 4 ft., S.W. Europe; *ladaniferus albiflorus*, white; *ladaniferus maculatus*, white and purple; *laurifolius*, white, 4 ft., S.W. Europe; *longifolius* white, 8 ft., S.W. Europe; *purpureus*, purple, 2 ft., Levant; *monspeliensis*, white, 2 ft., S. Europe.

**Citron** (*Citrus medica* var. *cedra*).—See *Citrus*.

**Citron-scented Gardenia** (*Miriostigma axillaris*).—See *Miriostigma*.

**Citron-scented Geranium** (*Pelargonium citriodorum*).—See *Pelargonium*.

**Citron-scented Orchid** (*Odontoglossum citrosimum*).—See *Odontoglossum*.

**Citrus** (Orange; Lemon; Shaddock; Adam's Apple; Lime; Citron; Forbidden Fruit).—Ord. Rutaceæ. Greenhouse evergreen shrubs. First introduced 1595. Flowers, white, fragrant; May to July. Fruit: Sweet Orange, golden rind, globular; Lemon, pale yellow, rind thin, oblong; Citron, yellow, thick rind, long, egg-shaped, lump at tip; Shaddock, greenish yellow, bitter rind, large, round; Lime, greenish yellow, smooth rind, globular, with nipple at top; Mandarin, reddish rind, dark red pulp, large; Tangerine, syn. with Mandarin; St. Michael's, red rind, globular, large.

**CULTURE**: Compost, two parts good turfy loam, one part dry cow dung, charcoal, crushed bones, & ballast. Pot, Feb., March, or April. Position, pots, tubs, or beds, all to be well drained, in cool or slightly heated greenhouses. Water freely March to Oct., moderately afterwards. Apply liquid manure once a week to healthy plants from May to Oct. Syringe trees daily during summer. Stand trees in pots or tubs in sheltered position outdoors June to Sept. Repotting should not be done oftener than is actually necessary. Prune straggling shoots into shape in March. Temp., Sept. to Feb. 45° to 50°; Feb. to Sept. 55° to 65°. Fruit formed one year will not ripen till next. Propagate by seeds sown ½ in. deep in light soil in temp. 55° in March for producing stocks for grafting choice kinds on; by cuttings inserted in small pots of sandy soil in July; layering in Oct.; by budding in Aug.; by grafting in March.

**SPECIES CULTIVATED**: *C. aurantium* (Sweet Orange), 12 to 15 ft., Trop. America; *aurantium bergamia* (Bergamot Orange); *aurantium bigaradia* (Seville Orange); *aurantium japonica* (Kumquat); *aurantium lusitanica* (Portuguese Orange); *aurantium melitensis* (Blood Orange); *aurantium myrtefolia* (Myrtle-leaved Orange); *aurantium variegata* (Variegated Orange); *decumana* (Shaddock), 15 ft., Tropics; *media* (Citron), 10 ft., Trop. Asia; *medica limetto* (Sweet Lime), 10 ft.; *medica limonum* (Lemon); *nobilis*

major (Mandarin Orange); nobilis tangerana (Tangerine Orange). *C. trifoliata* is a hardy evergreen shrub which may be grown outdoors.

**Cladrastis** (Yellow-wood Tree).—Ord. Leguminosæ. Hardy deciduous flowering shrubs. First introduced 1812.

**CULTURE:** Soil, ordinary. Position, open shrubberies, or singly on lawns. Plant, Oct. to Feb. Propagate by seeds sown 1 in. deep in ordinary soil outdoors in March; cuttings of root inserted outdoors in spring.

**SPECIES CULTIVATED:** *C. amarensis*, white, July, 6 ft., Amurland; tinctoria, white, July, 15 ft., United States.

**Clarkia**.—Ord. Onagrariales. Hardy annuals. First introduced 1826.

**CULTURE:** Soil, light, rich. Position, sunny borders or beds. Sow seeds  $\frac{1}{2}$  in. deep in April, May, or June in rows or masses where plants are required to flower. Thin seedlings to 8 in. apart when 3 in. high.

**SPECIES CULTIVATED:** *C. elegans*, rosy purple, July, 2 ft.; pulchella, various colours, single and double, 2 ft.; rhombodea, purple, June, 2 ft., all natives of N.W. America. Numerous superior varieties described in trade lists.

**Clary** (*Salvia sclarea*).—See *Salvia*.

**Claytonia**.—Ord. Portulacacæ. Hardy annuals & perennials. First introduced 1768.

**CULTURE:** Soil, for annual species, ordinary; for perennials, damp peat or bog. Position, rockery for annual species; moist & shady border for perennials. Plant perennials in Oct. or March. Propagate annual species by seeds sown outdoors in April; perennials by seeds similarly, or by offsets in Oct. or March.

**ANNUAL SPECIES:** *C. perfoliata*, white, June, 6 in., N. America; sibirica, pink, March, 6 in., N. America.

**PERENNIAL SPECIES:** *C. caroliniana*, pink, May, 6 in., N. America; virginica, white, April, 6 in., N. America.

**Clematis** (Virgin's Bower).—Ord. Ranunculacæ. Greenhouse and hardy climbers and herbaceous perennials. All very showy plants.

**CULTURE OF HARDY CLIMBING SPECIES:** Soil, rich, deep, well-drained loam containing plenty of old mortar and decayed manure. Position, sunny trellises, arches, old tree stumps, arbours, etc.; also in beds with shoots trained over surface. Plant in autumn or spring. Prune in Feb. Pruning: Montana, Florida, Patens, and Lanuginosa kinds only need to have weak shoots removed as they flower on the old wood. Coccinea kinds require weak growths and tips of strong ones removed. Viticella and Jackmanni groups require previous year's shoots to be cut back to six inches from their base. Feed healthy plants occasionally in summer with weak liquid manure. Top-dress those grown in beds with decayed manure in autumn.

**CULTURE IN POTS:** Compost, two parts loam, one part of equal proportions of leaf-mould, decayed manure, & sand. Plant in pots or tubs in June. Train shoots up roof of cold or cool greenhouse, or around wire trellis fixed in pots. Water freely March to Sept. Apply weak liquid manure occasionally in summer. Keep soil nearly dry in winter. Prune shoots to 3 or 4 in. from base early in the year.

**CULTURE OF GREENHOUSE SPECIES:** Compost as for above. Grow in pots or in well-drained bed, planting in spring. Water freely during the summer, moderately in winter. Prune away weak growths and shorten rampant ones a little in Feb. Train shoots near the roof. Temp., Sept. to March 45° to 55°; March to Sept. 55° to 65°. Syringe freely daily in summer.

**CULTURE OF HERBACEOUS SPECIES:** Soil, ordinary rich. Position, sunny borders. Plant in autumn or spring. Top-dress an-

nually with decayed manure in autumn. Prune shoots close to soil in autumn. Dwarf species best grown on sunny rockeries. Propagate by seeds sown in sandy soil in cold frame in spring in case of hardy kinds, or in heat in spring in case of greenhouse species. Greenhouse species also by cuttings inserted in sandy soil in temp. of 75° in spring; hardy climbers by grafting on roots of *C. viticella* or *vitalba* in heat in spring, also by layering shoots in summer; herbaceous kinds by division in autumn or cuttings of young shoots in frame in summer.

**GREENHOUSE SPECIES:** *C. indivisa lobata*, white, April, 15 to 20 ft., New Zealand.

**HARDY CLIMBERS:** *C. coccinea*, scarlet, July, Texas; *flammula*, white, July France; *florida*, white, summer, Japan; *Jackmanii*, purple, summer, hybrid; *patens*, white, summer, Japan; *lanuginosa*, blue, June, China; *montana grandiflora*, white, May, Nepal; *vitalba*, white, July, Britain; *viticella*, blue, July, Spain. Lady Londésborough (mauve) and Miss Bateman (white) are examples of the *patens* group, and flower in May and June. Duchess of Edinburgh (white) and John Gould Veitch (lavender-blue) are typical forms of the Florida group flowering in summer; Henryi (cream) and Lady Nevill (lavender) of the *lanuginosa* section; Lady Bovil (blue) and Hendersoni (purple) of the *viticella* group; and *Jackmanii* (purple) of the *Jackmanii* section.

**HERBACEOUS SPECIES:** *C. Fremonti*, purple, summer, 1 ft., N. America; *fusca*, reddish, summer, 6 to 8 ft., shoots woody, N. Asia; *heraclesefolia*, purple, summer, 2 ft., China; *heraclesefolia davidiana*, lavender-blue, fragrant, Aug.; *integriolia*, blue, Aug., 2 ft., S. Europe; *ochroleuca*, yellow and white, summer, 2 ft., N. America; *recta*, white, fragrant, Aug., 2 ft., S. Europe.

**Cleome** (Spider-flower).—Ord. Capparidaceæ. Stove & hardy annuals & perennials. First introduced 1817.

**CULTURE OF STOVE SPECIES:** Compost, equal parts loam, leaf-mould, & sand. Position, pots in sunny stove. Water moderately at all times. Temp., 65° to 75°. Propagate by seeds sown 1-16 in. deep in light soil in temp. 70° in March, transplanting seedlings into pots when 1 in. high.

**CULTURE OF HARDY SPECIES:** Soil, ordinary. Position, sunny beds or borders. Plant perennial species in autumn or spring. Sow seeds of annual species outdoors in April. Increase perennial species by seeds sown in cold frame in spring; division in March.

**STOVE SPECIES:** *C. heptaphylla*, white, July, 18 in., Trop. America, annual.

**HARDY SPECIES:** *C. arabica*, yellow, June, 2 ft., Arabia, annual; *pubescens*, white, July, 2 ft., annual; *lutea*, yellow, July, 1 ft., N. America, perennial.

**Clerodendron** (Glory-tree).—Ord. Verbenaceæ. Stove, climbing & hardy flowering shrubs. First introduced 1790.

**CULTURE:** Compost, equal parts loam, peat, leaf-mould, decayed manure, & silver sand. Pot, Feb. Prune shoots after flowering to within 2 or 3 in. of their base. Water freely March to Sept., moderately Sept. to Nov., after which keep dry. Temp., Oct. to Feb. 55° to 60°; Feb. to Oct. 65° to 85°. Plant hardy species in ordinary soil in sheltered, warm corners outdoors in Oct. or Nov. Propagate by seeds sown ½ in. deep in sandy soil in temp. 75° in March; cuttings of stems or shoots 3 in. long, inserted in sandy compost in temp. 70° to 75° in Jan., Feb., or March.

**STOVE SPECIES:** *C. fallax*, scarlet, Aug., 2 ft., Java; *fragrans*, white and red, autumn, 6 ft., China; *speciosum*, scarlet, summer, 10 ft., hybrid; *splendens*, scarlet, summer, 10 ft., Trop. Africa; *splendens speciosissimum*, scarlet, summer, 10 ft.; *Thomsonæ* (Syn. *C. Balfourii*), scarlet, summer, 6 ft., Trop. Africa.

**HARDY SPECIES:** *C. trichotomum*, white and red, summer, 8 ft., Japan; *foetidum* (*C. Bungei*), rose, Aug., 5 ft., China.

**Clethra** (White Alder-bush; Pepper Bush). — Ord. Ericaceæ. Hardy evergreen and deciduous flowering shrubs. First introduced 1731.

**CULTURE:** Compost, two parts loam, one part peat & sand. Posi-

tion, front of shrubberies. Plant, Nov. to Feb. Propagate by seeds sown  $\frac{1}{4}$  in. deep outdoors in March, or in boxes of light soil in temp. 55° in Feb.; cuttings inserted in sandy soil under bell-glass in Oct.; layering in Oct. *C. alnifolia* suitable for forcing to flower in winter.

SPECIES CULTIVATED: *C. alnifolia* (Sweet Pepper Bush), white, Sept., 4 ft., Florida; *alnifolia Michauxii*, 4 ft.; *alnifolia paniculata*, 4 ft.; *acuminata* (White Alder), white, Sept., 10 ft.; *arborea*, white, Sept., 8 ft., Madeira; *canescens*, white, Aug., 8 ft., China.

**Clianthus** (Glory Pea; Parrot's-bill; Sturt's Desert Pea).—Ord. Leguminosæ. Greenhouse climbing shrubs & herbaceous perennials. First introduced 1832.

CULTURE: Compost, two parts loam, one part leaf-mould & silver sand. Position, pots or beds in greenhouse. Pot or plant, March. Prune in April, shortening young shoots to within 2 in. of their base. Water freely March to Sept., moderately afterwards. Syringe foliage daily April to Aug. Temp., Oct. to March 45° to 50°; March to Oct. 55° to 65°. *C. puniceus* succeeds outdoors against warm walls in Devonshire. Propagate by seeds sown  $\frac{1}{4}$  in. deep in well-drained pot of light soil in temp. 75° in March; cuttings of shoots inserted in sandy soil in temp. 75° to 85° in March or April.

SPECIES CULTIVATED: *C. Dampieri*, scarlet, April, 3 ft., Australia; *puniceus magnificus*, crimson, May, 6 ft., New Zealand.

**Cliff Brake Fern**.—See *Pellæa*.

**Climbing Dahlia** (*Hidalgoa Wercklei*).—See *Hidalgoa*.

**Climbing Fern** (*Lygodium scandens*).—See *Lygodium*.

**Climbing Fumitory** (*Adlumia cirrhosa*).—See *Adlumia*.

**Climbing Groundsel** (*Senecio mikanoides*).—See *Senecio*.

**Climbing Hydrangea** (*Schizophragma hydrangeoides*).—See *Schizophragma*.

**Climbing Snake's-tongue Fern** (*Lygodium scandens*).—See *Lygodium*.

**Clintonia**.—Ord. Liliacæ. Hardy herbaceous perennials. First introduced 1788.

CULTURE: Soil, sandy peat. Position, moist shady border. Plant, Oct. or March. Propagate by division of roots in March or April.

SPECIES CULTIVATED: *C. andrewsiana*, rose, April, 2 ft., California; *borealis*, yellow, May, 1 ft., N. America; *umbellata* (Syn. *Smilacina umbellata*), white, May, 9 in., N. America; *uniflora* (Syn. *Smilacina uniflora*), white, July, 6 in., California.

**Clitoria** (Butterfly Pea).—Ord. Leguminosæ. Stove evergreen flowering climbers. First introduced 1739.

CULTURE: Compost, equal parts peat, leaf-mould, loam, & silver sand. Position, pots, tubs, or beds in light plant stove. Pot or plant, March. Water freely April to Sept., moderately afterwards. Temp., Oct. to March 55° to 65°; March to Oct. 70° to 80°. Propagate by seeds sown  $\frac{1}{4}$  in. deep in light soil in temp. 75° in March; cuttings of side shoots inserted in sandy peat in temp. 80° at any time.

SPECIES CULTIVATED: *C. ternatea*, blue, July, 4 ft., E. Indies; *ternatea alba*, white, May; *ternatea cærulea*, blue, May; *ternatea major*, brown, Aug.

**Clivia** (Caffre Lily).—Ord. Amaryllidacæ. Greenhouse evergreen flowering plants. Fleshy-rooted. Formerly known by the generic name of *Imantophyllum*. First introduced 1823.

CULTURE: Compost, two-thirds good loam, one-third decayed manure & sand. Position, sunny, close to glass in greenhouse. Pot, Feb. Water freely March to Sept. 65° to 75°. Propagate by seeds sown in light soil in temp. 75° in March; division of roots at potting time.

**SPECIES CULTIVATED:** *C. cyrthaniflora*, orange, spring, hybrid; *Gardeni*, orange-yellow, May, 18 in., S. Africa; *miniata*, scarlet and yellow, spring, Natal; *nobilis*, red and yellow, July, S. Africa. There are numerous varieties of *C. miniata* which are superior to the parent species.

**Clack Fern** (*Nothoclæna distans*).—See *Nothoclæna*.

**Cloud Grass** (*Agrostis nebulosa*).—See *Agrostis*.

**Clove Gillflower** (*Dianthus caryophyllus*).—See *Dianthus*.

**Clove-Pink** (*Dianthus caryophyllus*).—See *Dianthus*.

**Club Lily**.—See *Kniphofia*.

**Club Moss** (*Lycopodium clavatum*).—See *Lycopodium*.

**Club Rush** (*Scirpus nodosus*).—See *Scirpus*.

**Clustered Bell-flower** (*Campanula glomerata*).—See *Campanula*.

**Clustered Wax-flower** (*Stephanotis floribunda*).—See *Stephanotis*.

**Cluster Pine-tree** (*Pinus pinaster*).—See *Pinus*.

**Cnicus** (*Fishbone Thistle*).—Ord. *Compositæ*. Hardy & half-hardy perennials. Orn. foliage.

**CULTURE OF HARDY SPECIES:** Soil, ordinary. Position, sunny borders. Plant, autumn or spring. Increased by seeds sown outdoors in April.

**CULTURE OF HALF-HARDY SPECIES:** Soil, ordinary. Position, pots in cool greenhouse, or ornamental beds outdoors in summer. Plant, May or June. Cut off flower heads directly they appear if handsome foliage be desired. Propagate by seeds sown  $\frac{1}{2}$  in. deep in light soil in temp. of 60° to 70° in Feb., or in Sept. in similar temp., keeping seedlings in greenhouse during winter. All best grown as biennials.

**HALF-HARDY SPECIES:** *C. Casabonæ* (Syn. *Chamæpuce Casabonæ*), purple, summer, leaves spiny, veined with white, 2 to 3 ft., S. Europe; *C. Diacantha* (Syn. *Chamæpuce Diacantha*), purple, summer, leaves green, veined white, ivory spines, 2 to 3 ft., Syria.

**HARDY SPECIES:** *C. spinosissima*, yellow, summer, 3 ft., Europe.

**Cobæa** (*Cup and Saucer-plant*; *Mexican Ivy*).—Ord. *Polemoniaceæ*. Greenhouse & half-hardy climbing perennial. First introduced 1792.

**CULTURE:** Compost, equal parts loam, leaf-mould, & silver sand. Position, pots or beds in greenhouse, or against south or south-west walls, arches, or trellises outdoors in summer. Pot, March. Plant outdoors in June. Temp., Sept. to March 50° to 55°; March to Sept. 60° to 70°. Water freely in summer, moderately other times. Propagate ordinary species by seeds sown  $\frac{1}{2}$  in. deep in light soil in temp. 75° in March; variegated species by cuttings of young side shoots inserted in sandy peat in temp. 75° in March or April.

**SPECIES CULTIVATED:** *C. scandens*, purple, summer, 10 to 30 ft., Mexico; *scandens aurea marginata*, leaves variegated with yellow.

**Cob-nut** (*Corylus Avellana* var. *grandis*).—See *Corylus*.

**Cobweb House Leek** (*Sempervivum arachnoideum*).—See *Sempervivum*.

**Cochineal Cactus**.—See *Opuntia*.

**Cochlearia** (*Horse-radish*).—Ord. *Cruciferæ*. Hardy esculent-rooted perennial.

**CULTURE:** Soil, ordinary, deep, rich. Position, open or shade. Plant, Jan. or Feb., 8 in. deep in rows 2 ft. apart. Sets (roots) to be 3 in. long, with  $\frac{1}{4}$  in. of crown pared off. Re-plant every third year. Lift for use as wanted. Propagate by seeds sown outdoors in July; cuttings of roots at planting time.

**SPECIES CULTIVATED:** *C. armoracia*, white, May, 3 ft., England.

**Cock's-Comb** (*Celosia cristata*).—See *Celosia*.

**Cock's-foot Grass** (*Dactylis glomerata*).—See *Dactylis*.

**Cocoanut Palm** (*Cocos nucifera*).—See *Cocos*.

**Cocoa Tree** (*Theobroma cacao*).—See *Theobroma*.

**Cocos** (*Cocoanut Palm*).—Ord. Palmaceæ. Stove palms. Orn. foliage. First introduced 1690. Leaves, feather-shape (pinnate).

**CULTURE**: Compost, two parts loam, equal parts peat & sand. Position, pots in shady stove. Pot, March. Water freely March to Oct. 70° to 85°. Propagate by seeds sown 1 in. deep in light soil in temp. 85° at any time.

**SPECIES CULTIVATED**: *C. nucifera* (*Cocoa-nut Palm*), 40 to 50 ft., Tropics; *plumosa*, 40 to 50 ft., Brazil; *romanzoffiana*, 30 to 40 ft., Brazil; *weddelliana*, 2 to 4 ft., Brazil.

**Codiaeum** (*Croton* or *South Sea Laurel*).—Ord. Euphorbiaceæ. Stove evergreen shrubs. Orn. foliage. First introduced 1804. Leaves beautifully variegated with various colours.

**CULTURE**: Compost, two parts rich loam, one part peat & sand. Position, pots in stove close to the glass. Pot, March. Water freely March to Sept., moderately afterwards. Temp., Oct. to March 55° to 65°; March to Oct. 70° to 85°. Propagate by cuttings of the ends of shoots inserted singly in 2 in. pots filled with sandy soil in temp. 75° at any time, or in bottles of water in similar temp.; stem-rooting in March or April.

**SPECIES CULTIVATED**: *C. variegatum*, leaves yellow and green, 3 to 10 ft., Malaya.

**PRINCIPAL HYBRIDS OR VARIETIES**: *C. aigburthiensis*, leaves red and green; *angustifolium*, yellow and green; *Chelsoni*, orange, red and crimson; *evansianum*, green, yellow, crimson, and scarlet; *Hawkeri*, creamy white and green; *illustris*, green and yellow; *interruptum aureus*, purple, green, and yellow; *Johannis*, green and yellow; *Laingii*, green, red, and salmon; *picturatum*, green, yellow and red; *variegatum tricolor*, green, golden yellow and cream; *Warrenii*, green and orange carmine; *Williamsii*, green, crimson and magenta; *Weismannii*, green, crimson, and magenta.

**Codlins and Cream** (*Narcissus incomparabilis* fl. pl.).—See *Narcissus*.

**Codonopsis** (*Bellwort*).—Ord. Campanulaceæ. Hardy perennial herbs.

**CULTURE**: Soil, ordinary good. Position, sunny borders. Plant, autumn or spring. Propagate by seeds sown in cold frame in spring, planting out seedlings in June; also by cuttings in autumn.

**SPECIES CULTIVATED**: *C. clematidea* (*Syn. Glosocomia clematidea*), white and blue, summer, 3 ft.; *ovata*, blue, summer, 1 ft., Himalayas.

**Cœlogyne**.—Ord. Orchidaceæ. Stove epiphytal orchids. First introduced 1822.

**CULTURE**: Compost, equal parts fresh sphagnum moss & fibry peat. Position, pots or pans half filled with potsherds, & placed close to glass. Pot, Feb. or March; have base of plant well above rim of pot or pan. Temp., March to Sept. 70° to 85°; Sept. to Nov. 65° to 75°; Nov. to March 60° to 70°. Water freely March to Aug., moderately Aug. to Nov., very little Nov. to March. Growing season, March to Aug. Resting period, Sept to Feb. Flowers appear from centre of new growth after resting. Propagate by division of pseudo-bulbs at potting time.

**SPECIES CULTIVATED**: *C. cristata*, white and yellow, Feb. to April, 6 to 10 in., Himalayas; *cristata alba*, white; *cristata lemoniana*, yellow, white and lemon; *dayana*, yellow, June, 6 in.; *Borneo*; *fuscescens*, red, brown, and green, Sept., 9 in., Himalayas; *massangeana*, yellow and red, June, 1 ft., Assam; *sanderiana*, white and yellow, July, 1 ft., Sunda Islands; *speciosa*, yellow and brown, autumn, 9 in., Malaya.



**Coffea** (Coffee-tree).—Ord. Rubiaceæ. Stove evergreen shrubs. First introduced, 1696. Fruit, a small reddish, fleshy berry, containing two seeds enclosed in parchment-like shell. Bears the coffee berries of commerce.

**CULTURE:** Compost, two parts turfy loam, one part leaf-mould & sand. Position, pots in moist plant stove. Pot, March. Temp., March to Sept. 75° to 85°; Sept. to March 60° to 70°. Water freely in summer, moderately other times. Propagate by seeds sown  $\frac{1}{2}$  in. deep in light soil in temp. 85° in March; cuttings of firm shoots inserted in sandy soil under bell-glass in temp. 85° in summer.

**SPECIES CULTIVATED:** *C. arabica* (Arabian Coffee), white, fragrant, Sept., 10 to 15 ft., Arabia.

**Coffee Tree** (*Coffea arabica*).—See *Coffea*.

**Coix** (Job's Tears). — Ord. Gramineæ. Half-hardy ornamental flowering annual grass. First introduced 1596.

**CULTURE:** Soil, light, rich. Position, sunny border outdoors. Propagate by seeds sown  $\frac{1}{2}$  in. deep in light soil in temp. 65° to 75° in March, transplanting seedlings outdoors in May; or similar depth outdoors in April where plants are to flower.

**SPECIES CULTIVATED:** *C. Lachryma-Jobi*, 2 to 3 ft., Trop. Asia. Grey pearly seeds chief attraction.

**Colchican Laurel** (*Prunus Laurocerasus colchica*). — See *Prunus*.

**Colchicum** (Autumn Crocus; Meadow Saffron).—Ord. Liliaceæ. Hardy bulbous flowering plants.

**CULTURE:** Soil, light sandy loam, enriched with decayed manure or leaf-mould. Position, moist beds or rockeries, shrubbery borders, or lawns near shade of trees. Plant bulbs 3 in. deep & 3 in. apart in July or Aug. Foliage dies down in June & July, & does not reappear until after plant has flowered. Propagate by seeds sown  $\frac{1}{2}$  in. deep in bed of fine soil outdoors in Aug. or Sept., or in pans or boxes of similar soil in cold frame at same time, transplanting seedlings 3 in. apart when two years old; division of bulbs in Aug. Seedling bulbs do not flower until four or five years old.

**SPECIES CULTIVATED:** *Autumnale*, purple, Sept., 8 in., Europe (Britain); *byzantinum*, rose and purple, Sept., 6 in., Greece; *speciosum*, lilac-purple, Sept., *Caucæus*; *variegatum*, white and purple, Sept., 6 in., S. Europe. Also numerous varieties of *C. autumnale*.

**Coleus** (Flame Nettle; Nettle Geranium).—Ord. Labiataæ. Stove perennials. Orn. foliage & flowering. First introduced 1764.

**CULTURE:** Compost, two parts turfy loam, one part well-decayed manure, leaf-mould, & little sand. Position, pots in stove in winter, greenhouse in summer. Pot, Feb. or March, pressing soil firmly in pots. Temp., Sept. to March 60° to 70°; March to June 75° to 85°; June to Sept. 65° to 75. Water very moderately Sept. to March, freely afterwards. Ornamental-leaved kinds require to have points of their shoots pinched off in early stage of their growth to ensure dwarf or good shaped plants. Propagate by seeds sown 1-16 in. deep in light soil in temp. 75° in Feb., March or April; cuttings of young shoots inserted in light soil of cocoanut-fibre refuse at any time; grafting in spring.

**SPECIES CULTIVATED:** *C. Blumei* (Syn. *C. Verschaffeltii*), white and purple, leaves bronze-red, Java, parent of the ornamental-leaved kinds; *thrysoides* (Winter-flowering *Coleus*), blue, Jan. to April, 3 ft., Trop. Africa.

**Cole-wort.**—See *Brassica*.

**Colletia** (Anchor-plant).—Ord. Rhamnaceæ. Half-hardy evergreen shrubs. First introduced 1823. Branches armed with formidable spines.

**CULTURE:** Soil, loamy. Position, sheltered, well-drained borders in S. of England. Plant in Oct. Propagate by cuttings of firm shoots 6 in. long, inserted in well-drained pots of sandy soil in cold frame in Aug. or Sept.

**SPECIES CULTIVATED:** *C. cruciata*, white, autumn, 4 to 10 ft., Uruguay.

**Collinsia** (Collins's-flower).—Ord. Scrophulariaceæ. Hardy annuals. First introduced, 1826.

**CULTURE:** Soil, ordinary. Position, open beds or borders. Propagate by seeds sown  $\frac{1}{2}$  in. deep outdoors in Sept., March, or April where plants are required to flower. Thin seedlings to 6 in. apart when 2 in. high.

**SPECIES CULTIVATED:** *C. bartsiaefolia*, purple, June, 1 ft., California; bicolor, purple and white, summer, 1 ft., California; bicolor alba, white; grandiflora, lilac, June, 18 in., N.W. America; verna, white and blue, May, 1 ft., N. America.

**Collomia**.—Ord. Polemoniaceæ. Hardy annuals. First introduced 1826.

**CULTURE:** Soil, ordinary. Position, open beds or borders. Propagate by seeds sown  $\frac{1}{2}$  in. deep outdoors in Sept., March or April where plants are required to flower. Thin seedlings to 3 in. apart when 2 in. high.

**SPECIES CULTIVATED:** *C. coccinea*, red, June, 18 in., Chili; grandiflora, red and yellow, summer, 18 in., California.

**Colocasia** (West Indian Kale; Taro Root).—Ord. Aroideæ. Stove herbaceous plants with perennial tuberous roots. Orn. foliage. First introduced 1551. Leaves, shield-like, heart or egg-shaped, deep green.

**CULTURE:** Compost, equal parts turfy loam, peat, leaf-mould, & silver sand. Position, well-drained pots in shady plant stove. Pot moderately firm in pots just large enough to take tubers in Feb. or March; transfer to larger pots in April or May. Water moderately Feb. to April & Sept. to Nov., freely April to Sept.; keep quite dry Nov. to Feb. Temp., Feb. to Sept. 70 to 80°; Sept. to Nov. 65° to 75°; Nov. to Feb. 55° to 65°. Propagate by dividing the tubers in Feb. or March.

**SPECIES CULTIVATED:** *C. Antiquorum* esculentum, 2 to 4 ft., Tropics.

**Colt's-foot**.—See Tussilago.

**Columbine** (*Aquilegia vulgaris*).—See Aquilegia.

**Columnea**.—Ord. Gesneriaceæ. Stove evergreen trailing shrubs. First introduced 1759.

**CULTURE:** Compost, equal parts fibrous peat, sphagnum moss & charcoal. Position, hanging baskets. Plant, March. Water freely in summer, moderately in winter. Temp., Sept. to March 60° to 70°; March to Sept. 70° to 80°. Propagate by cuttings of firm shoots 3 in. long, inserted in pots of above compost mixed with sand, in temp. 85°, Feb.

**SPECIES CULTIVATED:** *C. aurantiaca*, orange, June, New Grenada.

**Colutea** (Bladder Senna).—Ord. Leguminosæ. Hardy deciduous flowering shrubs. First introduced 1568.

**CULTURE:** Soil, ordinary. Position, open or shady shrubberies, banks, etc. Plant, Oct. to Feb. Prune, Nov., simply cutting away weak shoots & shortening straggling ones. Propagate by seeds sown 1 in. deep outdoors in Oct. or March; cuttings of firm shoots inserted in sandy soil outdoors in Oct.

**SPECIES CULTIVATED:** *C. arborescens*, yellow, Aug., 10 ft., S. Europe; cruenta, red and yellow, July, 6 ft., Orient.

**Combretum** (Caffre Butter-shrub).—Ord. Combretaceæ. Stove evergreen climbers. First introduced 1820.

**CULTURE:** Compost, two parts loam, one part peat & sand. Position, pots, tubs, or borders in plant stove, shoots trained to pillars or roof. Pot, March. Prune side shoots to within 2 in. of base after flowering & cut away all weak ones. Water freely March to Sept., moderately afterwards. Syringe daily March to Aug. Temp., March to Sept. 70° to 85°; Sept. to March 55° to 65°. Propagate by cuttings of side shoots 3 in. long, removed with slight portion of stem attached, & inserted in well-drained pot of sandy soil in temp. 85° in summer.

**SPECIES CULTIVATED:** *C. coccineum*, scarlet, autumn, 20 ft., Madagascar; *grandiflorum*, scarlet, May, 5 ft., Trop. Africa; *purpureum*, scarlet, Sept., 20 ft., Madagascar.

**Comfrey.**—See *Symphytum*.

**Commelina** (Blue Spider-wort; Day-flower).—Ord. Commelinaceæ. Greenhouse & hardy herbaceous perennials. First introduced 1759.

**CULTURE OF GREENHOUSE SPECIES:** Compost, equal parts peat, loam, leaf-mould, & sand. Position, pots in sunny greenhouse. Pot, March. Water freely March to Sept., very little afterwards. Temp., March to Sept. 55° to 65°; Sept. to March 45° to 50°.

**CULTURE OF HARDY SPECIES:** Soil, light, rich. Position, warm, sheltered, well-drained bed or border. Plant fleshy roots in April. Protect roots during winter on light soils with thick layer of ashes or manure. Lift roots in cold districts in Sept. & store away similarly to dahlias in frost-proof place, replanting in April. Propagate by seeds sown 1-6 in. deep in light soil in temp. 75° in March, transplanting seedlings outdoors in May to flower in Aug.; division of fleshy roots in April.

**GREENHOUSE SPECIES:** *C. africana*, yellow, May, trailing, S. Africa; *elliptica*, white, July, 2 ft., Mexico.

**HARDY SPECIES:** *C. celestis*, blue, July, 18 in., Mexico; *celestis alba*, white; *virginica*, blue, July, 1 ft., Virginia.

**Compartmentia.**—Ord. Orchidaceæ. Stove epiphytal orchids. First introduced 1836.

**CULTURE:** Compost, sphagnum moss, fibry peat. Position, on blocks of wood suspended from roof in plant stove. Re-block, March or April. Water freely at all times. Temp., March to Sept. 65° to 85°; Sept. to March 60° to 70°. Resting period, none. Flowers appear in centre of new growth after resting. Propagate by division of plant in March.

**SPECIES CULTIVATED:** *C. coccinea*, scarlet, Aug., 1 ft., Brazil; *cryptocera*, pink, 1 ft.; *falcata*, rose, May, 6 in., Mexico.

**Compass Plant** (*Silphium laciniatum*).—See *Silphium*.

**Comptonia.**—See *Myrica*.

**Conandron.**—Ord. Gesneriaceæ. Hardy herbaceous perennial. First introduced 1879.

**CULTURE:** Soil, peat & loam. Position, fissures of moist, sheltered rockery. Plant, March or April. Protect in severe winters with covering of dry litter. Propagate by seeds sown in well-drained pots of sandy peat & just covered with fine mould, in cold frame or greenhouse March or April; division of plant in March.

**SPECIES CULTIVATED:** *C. ramondioides*, pink, summer, 1 ft., Japan.

**Cone-flower.**—See *Rudbeckia*.

**Cone-head.**—See *Strobilanthes*.

**Constantinople Nut** (*Corylus colurna*).—See *Corylus*.

**Convallaria** (Lily of the Valley; May Lily).—Ord. Liliaceæ. Hardy herbaceous perennial.

**OUTDOOR CULTURE:** Compost, equal parts loam, leaf-mould, decayed manure, & sharp sand. Position, beds or borders under shade of trees, high walls, or fences for general culture; south border for early flowering. Plant single crowns 2 or 3 in. apart, with points just below surface, in Sept. & Oct. Lift and replant every four years, always planting largest crowns by themselves, next size alone, & smallest similarly. Mulch bed annually in Feb. with decayed manure. Apply liquid manure once a week, May to Sept., to beds more than a year old.

**POT CULTURE:** Compost, equal parts good soil & leaf-mould. Plant one clump or a dozen single crowns in a 6 in. pot, well drained in Oct. or Nov. Place inverted pot over crowns & stand pots in cold frame or under greenhouse stage until Jan., then remove into heat, or allow to bloom naturally in greenhouse or window. Water only when soil needs moisture in winter, freely when growth begins.

**FORCING:** Place single crowns close together in shallow boxes, with cocoanut-fibre refuse between roots, & put boxes in temp. 80° to 85°. Cover points of crowns with inverted box or thick layer of moss until flowers appear, then remove it. After forcing, crowns of no value for flowering again, therefore discard them. Retarded roots flower quickly without much forcing. Propagate by seeds sown  $\frac{1}{2}$  in. deep in light soil outdoors in March; division of crowns Sept. or Oct.

**SPECIES CULTIVATED:** *C. majalis*, white, spring, 6 in., Europe (Britain), etc.; *majalis flore-pleno*, double; *majalis prolificans*, tall variety; *majalis rosea*, rose tinted; *majalis variegata*, leaves variegated.

**Convolvulus.**—Ord. Convolvulacæ. Hardy annual & perennial climbing or trailing plants.

**CULTURE:** Soil, ordinary rich. Position, dwarf kinds in open beds & borders; tall kinds at base of arbours, trellises, walls, or trunks of trees. Plant perennials in March. Sow annual species in April where required to grow, and thin seedlings to 8 in. apart when 2 in. high. Propagate by seeds sown  $\frac{1}{2}$  in. deep outdoors in March. where plants are to flower, or in nursery bed, afterwards transplanting seedlings to permanent position; division of fleshy roots in March or April.

**ANNUAL SPECIES:** *C. tricolor*, various colours, summer, 1 ft., S. Europe.

**PERENNIAL SPECIES:** *C. mauritanicus*, blue, July, trailing, S. Europe; *chinensis*, purple and crimson, July, 6 ft. See also *Calystegia* and *Ipomœa*.

**Cooperia** (Evening Star).—Ord. Amaryllidacæ. Half-hardy bulbous plants.

**CULTURE:** Compost, equal parts peat, loam, & leaf-mould. Position, pots in cool greenhouse or cold frame. Pot, Jan. or Feb. Water moderately until growth begins, then give freely; discontinue watering after Sept. & keep soil dry during winter. Temp., Sept. to Feb. 40° to 45°; Feb. to May, 50° to 55°; May to Sept. 55° to 65°. Propagate by offsets in Feb.

**SPECIES CULTIVATED:** *C. Drummondii*, white, Aug., 9 in., Texas; *pedunculata*, white, Aug., 8 in., Texas.

**Copalm Balsam-tree** (*Liquidambar styraciflua*).—See *Liquidambar*.

**Copper-coloured Beech** (*Fagus sylvatica* var. *cuprea*).—See *Fagus*.

**Copper-leaf** (*Acalypha musaica*).—See *Acalypha*.

**Coprosma** (Tasmanian Currant).—Ord. Rubiacæ. Half-hardy evergreen shrub. Orn. foliage. Leaves, egg-shaped, green, blotched or variegated with creamy yellow. Fruit, coral red.

**CULTURE:** Compost, two parts sandy loam, one part leaf-mould & sand. Position, pots in cool greenhouse. Repot, March. Prune

straggling shoots into shape in March. Water moderately in winter, freely in summer. Temp., Sept. to March 40° to 45°; March to Sept. 55° to 65°. Propagate by cuttings removed in March, with small portion of old wood attached, & inserted in well-drained pots of sandy soil in temp. 85° under bell-glass. Hardy in sheltered positions outdoors S. of England.

**SPECIES CULTIVATED:** *C. Baueri*, leaves green, 3 to 10 ft., Norfolk Islands; *Baueri variegata*, leaves edged with yellow, 3 ft.

**Coptis** (Gold Thread; Mouth Root).—Ord. Ranunculaceæ. Hardy evergreen bog plants. First introduced 1782.

**CULTURE:** Soil, boggy peat. Position, moist, shady. Plant, Oct. or March. Propagate by seeds sown 1-16 in. deep in pans of fine sandy peat in shady cold frame in March; division of roots in Oct. or March.

**SPECIES CULTIVATED:** *C. occidentalis*, white, May, 1 ft., N.W. America; *trifolia*, white, April, 1 ft., N. Hemisphere.

**Coral Barberrry** (*Berberidopsis corallina*).—See *Berberidopsis*.

**Coral Creeper** (*Kennedyia prostrata*).—See *Kennedyia*.

**Coral Drops** (*Bessera elegans*).—See *Bessera*.

**Coral-head-plant** (*Abrus precatorius*).—See *Abrus*.

**Coral Root**.—See *Dentaria* & *Cardamine*.

**Coral Tree** (*Erythrina Crista-galli*).—See *Erythrina*.

**Cordyline**.—Ord. Liliaceæ. Greenhouse plants. Orn. foliage. Allied to & often called *Dracanas*. First introduced 1820.

**CULTURE:** Compost, two parts peat, one part loam & sand. Position, pots in greenhouse. Repot, March. Water moderately Oct. to March, freely afterwards. Temp., March to Sept. 55° to 65°; Sept. to March 45° to 50°. Propagate by seeds sown 1 in. deep in pots of light soil in temp. 85° in March; cuttings of main stems cut into lengths of 1 in. and partially inserted horizontally in pots of sandy soil in March; cuttings of fleshy roots inserted 1 in. deep in pots of sandy soil, in March or April in temp. 75° to 80°; stem rooting in March or April; offsets inserted in 2 in. pots of sandy soil at any time.

**SPECIES CULTIVATED:** *C. australis* (Syn. *C. Veitchii*), leaves broad and green, 10 ft., New Zealand; *australis argentea striata*, leaves variegated; *australis variegata*, leaves green and white; *stricta congesta* (Syn. *Congesta*), leaves green and narrow, 6 to 10 ft., Australia; *indivisa*, green, narrow, New Zealand; *indivisa atropurpurea*, leaves dark; *indivisa lineata*, leaves narrow.

**Coreopsis** (Tickseed).—Ord. Compositæ. Hardy annual & perennial herbaceous plants. First introduced 1699.

**CULTURE:** Soil, ordinary. Position, sunny, well-drained beds or borders. Plant perennials in Oct. or March, annuals in May or June. Propagate annuals by seed sown  $\frac{3}{4}$  in. deep in boxes of light soil in temp. 65° to 70° in March, or outdoors in April where plants are to flower; perennials by seed sown outdoors in April, transplanting seedlings when large enough to handle to permanent position; division of roots in Oct. or March.

**ANNUAL SPECIES:** *C. atkinsoniana*, yellow and purple, summer, 2 to 4 ft., N.W. America; *Drummondii*, yellow and crimson, summer, 2 ft., Texas; *coronata*, orange and purple, summer, 2 ft., Texas; *tinctoria* (Syn. *bicolor*), yellow and purple, summer, 2 ft., N. America; *tinctoria atrosanguinea*, purplish.

**PERENNIAL SPECIES:** *C. auriculata*, yellow and purple, summer, 2 ft., U. States; *grandiflora*, yellow, Aug., 3 ft., U. States; *lanceolata*, yellow, Aug. 3 ft., N. America; *verticillata*, yellow, Aug., 2 ft.

**Corfu Lily** (*Funkia subcordata*).—See *Funkia*.

**Coriander** (*Coriandrum sativum*).—See *Coriandrum*.

**Coriandrum** (*Coriander*).—Ord. Umbelliferæ. Hardy annual. Leaves used for flavouring soups & salads. Seed ripens in Aug., & is largely employed in confectionery.

**CULTURE IN GARDENS:** Soil, ordinary. Position, south border. Propagate by seeds sown  $\frac{1}{2}$  in. deep in drills 12 in. apart, March or Sept.

**FIELD CULTURE:** Soil, deep, well-drained loam. Rotation, follow wheat. Sow in Oct. in drills 18 in. apart. Keep well hoed. Quantity of seed required per acre, 10 lb. Harvest in Aug. Yield per acre, 10 to 20 cwt. Average price per cwt., 15s. to 18s.

**SPECIES CULTIVATED:** *C. sativum*, white, June, 18 in., S. Europe.

**Coris** (Montpelier Coris).—Ord. Primulacæ. Hardy biennial. First introduced 1640.

**CULTURE:** Soil, sandy peat. Position, well-drained beds on sunny rockery. Plant, March or April. Propagate by seeds sown 1-16 in. deep in Aug. or April where plants are to grow.

**SPECIES CULTIVATED:** *C. monspeliensis*, lilac, May, 1 ft., S. Europe.

**Cork-barked Elm** (*Ulmus suberosa*).—See *Ulmus*.

**Cork Oak** (*Quercus suber*).—See *Quercus*.

**Cornel** (*Cornus sanguinea*).—See *Cornus*.

**Cornelian Cherry** (*Cornus mascula*).—See *Cornus*.

**Corn Flag** (*Gladiolus communis*).—See *Gladiolus*.

**Corn-flower** (*Centaurea cyanus*).—See *Centaurea*.

**Cornish Elm** (*Ulmus campestris* var. *cornubiensis*).—See *Ulmus*.

**Cornish Money-wort** (*Sibthorpia europæa*).—See *Sibthorpia*.

**Corn Marigold** (*Chrysanthemum segetum*).—See *Chrysanthemum*.

**Corn Salad** (*Valerianella olitaria*).—See *Valerianella*.

**Cornus** (Bunch Berry; Dwarf Cornel; Cornelian Cherry; Corneltree; Dogwood; Dogberry; Skewerwood).—Ord. Cornacæ. Hardy deciduous trees & shrubs & herbaceous perennials. Flowering & orn. foliage. Leaves, green, or variegated with white & crimson.

**CULTURE OF SHRUBBY SPECIES:** Soil, sandy peat for dwarf species, ordinary for others. Position, rocky for dwarf kinds; open or shady shrubberies for tall species. Plant, Oct. to Feb. Prune, Nov. or Dec., simply cutting branches into shape.

**HERBACEOUS SPECIES:** Soil, bog or peat. Position, moist bed or rockery. Plant, March. Propagate shrubby kinds by cuttings of firm shoots inserted in sandy soil outdoors in Nov.; layering shoots in Oct.; suckers, removed from plant in Nov. & replant at once; grafting variegated kinds in March; seeds sown outdoors in March; herbaceous species by division in March.

**SHRUBBY SPECIES:** *C. alba*, white, July, 8 to 10 ft., N. Asia; *alba sibirica variegata*, variegated; *alba Spaethii*, leaves bronze and gold; *capitata* (Syn. *Benthamia fragifera*), white, Aug., 10 ft., N. India, hardy S. of England only; *florida* (Flowering Dogwood), white, April, 10 to 15 ft., N. America; *mas* (Cornelian Cherry), yellow, Feb., 15 ft., Europe; *mas aurea elegantissima*, leaves creamy white and red; *mas variegata*, leaves edged creamy white; *sanguinea* (Dogwood), green, June, 8 ft., branches red.

**HERBACEOUS SPECIES:** *C. canadensis* (Dwarf Cornel), purplish white, May, 6 in., N. America.

**Corokia**.—Ord. Cornacæ. Half-hardy evergreen trailing shrub. First introduced 1835.

**CULTURE:** Soil, ordinary. Position, sheltered, south or west wall. Plant, Oct. to April. Propagate by cuttings inserted in sand in well-drained pan under bell-glass; layering shoots in Oct.

**SPECIES CULTIVATED:** *C. buddleiodes*, yellow, summer, 10 ft., New Zealand; *Otoneaster*, yellow, 10 ft., New Zealand.

**Coronilla** (Crown Vetch; Scorpion Senna).—Ord. Leguminosæ. Greenhouse and hardy shrubs & hardy perennials. First introduced 1596.

**CULTURE OF GREENHOUSE SPECIES:** Compost, two parts loam, one part peat & sand. Position, pots in light greenhouse. Repot, March. Prune off points of shoots in spring to induce bushy growth. Water moderately Oct. to March, freely afterwards. Temp., Sept. to March 40° to 45°; March to Sept. 55° to 65°. Place plants outdoors in sunny position June to Sept. Propagate by seeds sown  $\frac{1}{2}$  in. deep in light soil in temp. 75° in March, or by cuttings inserted in well-drained pots of sandy soil under bell-glass in temp. 55° in March, April, or May.

**CULTURE OF PERENNIALS:** Soil, ordinary. Position, sunny rockeries or borders. Plant, Oct. or April. Propagate by seeds sown  $\frac{1}{2}$  in. deep outdoors in April, or division of roots in Oct.

**CULTURE OF HARDY SHRUBS:** Soil, ordinary. Position sheltered, warm shrubberies, or south or west walls. Plant Oct. Prune straggly shoots after flowering. Increased by cuttings in cold frame in autumn.

**GREENHOUSE SPECIES:** *C. coronata*, yellow, July, 2 ft., S. Europe; *glauca*, yellow, May, 3 ft., France; *glauca variegata*, variegated; *pentaphylla*, yellow, June, 2 ft., Algiers; *valentina*, yellow, March, 3 ft.; *viminalis*, red, Aug., 3 ft., Mogador.

**PERENNIAL SPECIES:** *C. cappadocica*, yellow, July, 6 in., Iberia; *emeroides*, yellow, May, 6 in., Europe; *minima*, yellow, June, 6 in., S. Europe; *varia*, pink and white, June, trailer, Europe.

**HARDY SHRUBS:** *C. Emerus* (*Scorpion Senna*), red and yellow, April, 3 to 6 ft., deciduous, Europe.

**Correa** (Australian Fuchsia).—Ord. Rutaceæ. Greenhouse evergreen shrubs. First introduced 1793.

**CULTURE:** Compost, two parts peat, one part fibrous loam & sand. Position, pots, well drained, in light, airy greenhouse. Repot in July when new growth begins. Prune directly after flowering. Water moderately April to July & Oct. to April, freely July to Oct. Temp., Sept. to March 40° to 45°; March to Sept. 55° to 65°. Place plants outdoors in sunny position July to Sept. Propagate by cuttings inserted in well-drained pots of sandy peat under bell-glass in temp. 65° to 75° in April; grafting on *Correa alba* or *Eriostemon buxifolia* in March.

**SPECIES CULTIVATED:** *C. alba*, white, June, 5 to 6 ft.; *cardinalis*, scarlet, March, 3 ft.; *lawrenciana*, green and white, April, 3 ft.; *speciosa*, scarlet, June, 3 ft., and its varieties bicolor, crimson and white, *Harrisii*, crimson, *pulchella*, scarlet. All natives of Australia.

**Corsican Pine-tree** (*Pinus Laricio*).—See *Pinus*.

**Cortaderia** (Pampas Grass).—Ord. Gramineæ. Hardy herbaceous perennial grass. Flowering & orn. foliage. First introduced 1843. Inflorescence (male & female borne on different plants), white, purple, yellow; Sept. to Nov.

**CULTURE:** Soil, rich, light, sandy. Position, sheltered shrubberies or lawns. Plant, Oct., March, or April. Water freely in dry weather. Gather plumes for winter decoration directly fully developed. Propagate by seeds sown 1-16 in. deep in sandy soil in well-drained pots or pans under bell-glass in temp. 55° to 65° in Feb., March or April. Transplant seedlings outdoors in Aug. or Sept. Female plumes best & most durable for winter decoration.

**SPECIES CULTIVATED:** *C. argenteum* (Pampas Grass), Syn. *Gynerium argenteum*, 5 to 7 ft., Brazil; *argenteum argenteo-lineatum*, leaves green and golden; *conspicua* (Syn. *Arundo conspicua*), New Zealand Silvery Reed Grass, 3 to 12 ft., New Zealand; *jubata*, 4 to 6 ft., Ecuador.

**Cortusa** (Bear's-ear Sanicle).—Ord. Primulaceæ. Hardy perennial alpine plants. First introduced 1596.

**CULTURE:** Soil, sandy peat. Position, shady border or rockery.

Plant, March or April. Propagate by seeds sown 1-16 in. deep in sandy peat in cold frame in March or Aug.; division of plant in March.

SPECIES CULTIVATED: *C. Matthiola*, red, April, 1 ft., Europe; *Matthiola grandiflora*, purple, April, 18 in.; *pubens*, magenta purple, May, 6 in., Transylvania.

**Coryanthes** (Helmet-orchid).—Ord. Orchidaceæ. Stove epiphytal orchids. First introduced 1829.

CULTURE: Compost, equal parts peat & sphagnum moss. Position, baskets suspended from roof of stove. Re-basket in March. Water freely April to Sept., very little afterwards. Temp., April to Aug. 65° to 85°; Aug. to April 50° to 65°. Growing season, April to Aug. Resting period, Aug. to April. Flowers appear on new growth. Propagate by division of plant in March.

SPECIES CULTIVATED: *C. macrantha*, green, purple, yellow and crimson, June, 1 ft., Venezuela; *maculata*, yellow and purple, June, 1 ft., Trop. America; *speciosa*, yellow and green, March, 1 ft.

**Corydalis** (Fumitory).—Ord. Fumariaceæ. Hardy biennial & perennial herbs.

CULTURE: Soil, ordinary, good. Position, well-drained sunny borders, ledges of rockeries, fissures in old walls. Plant perennial & biennial species in March. Propagate annual species by seeds sown in April where plants are to flower; biennials by seed sown in boxes of light soil in cold frame or outdoors in April; perennials by seed similar to biennials, transplanting seedlings to permanent positions when large enough to handle; also by division of the plants after flowering; bulbous species by offsets in March.

PERENNIAL SPECIES: *C. bulbosa* (Syn. *Solida*), purple, April, 6 in., Europe; *lutea*, yellow, May, 1 ft., Europe; *lutea alba*, white; *nobilis*, yellow, May, 1 ft., Siberia; *tuberosa* (Syn. *Cava*), purple, March, 6 in., Europe; *ledebouriana*, purple, summer, 1 ft., Altai Mountains.

BIENNIAL SPECIES: *C. glauca*, scarlet, violet and orange, summer, 1 ft., Canada.

**Corylopsis**.—Ord. Hamamelidaceæ. Hardy deciduous flowering shrub. First introduced 1864.

CULTURE: Soil, sandy loam. Position, open, moist shrubbery in S. England; south walls in other parts of country. Plant, Oct. to Feb. Propagate by layering shoots in Oct.

SPECIES CULTIVATED: *C. himalayana*, yellow, March, 20 ft., Himalayas; *pauciflora*, yellow, Feb., 6 ft., Japan; *spicata*, yellow, Feb., 6 ft., Japan.

**Corylus** (Hazel; Cob-nut; Filbert).—Ord. Corylaceæ. Hardy deciduous shrubs. Orn. foliage & nut-bearing. Flowers, male—grey, female—crimson; March, April. Nuts ripe in Oct.

CULTURE: Soil, rich loam, well manured & deeply trenched. Position, open, sunny. Plant cob & hazel nuts 10 ft. apart each way, & filberts 15 ft. apart, in Oct. Prune end of March, cutting away shoots not less than two years old & shortening those of previous year's growth about one-third. Train each tree to have six main branches only. Gather nuts when husk becomes brown. Hang branches of hazel catkins (male flowers) in filbert bushes in Feb., if filbert catkins are scarce, to ensure fertilisation. Propagate by seeds (nuts) 2 in. deep in Oct. in open garden. transplanting seedlings two years afterwards; suckers removed from base of old plants replanted in Oct.; layering strong young shoots in Nov.; grafting on seedlings of Constantinople Nut in March to form standards, half standards, & dwarf standards.

MARKET CULTURE: Soil, deep loam, well-drained, stony. Position, uplands. Plant 13 ft. apart each way. Trees to plant an acre, 243. Manures, shoddy, wool waste, or fish at rate of 2 to 3 tons per acre. Apply in winter. Cost of manure, £3 per ton. Prune as above.



to ensure fertilisation. Propagate by seed (nuts) 2 in. deep in Oct. Harvest ripe nuts in Sept., green ones in Aug. Market ripe nuts in sieves of 40 lb.; green ones, 28 lb. Average yield per acre, 8 to 10 cwt. Average price per lb., 5d. to 10d. Average returns per acre, £20 to £30. Average rental value of nut plantation, £6 to £7.

**SPECIES:** *C. avellana* (Common Hazel), Europe (Britain); *avellana aurea*, golden leaved; *maxima atropurpurea*, purple-leaved, S. Europe; *colurna* (Constantinople Nut), S.E. Europe.

**VARIETIES:** Kentish Cob or Lambert's Filbert, nuts large a good market kind; Cosford, nuts round, shells thin, free bearer; Webb's Prize Cob, large, good market sort; Prolific Frizzled Filbert, free bearer, ripens early.

**Corypha.**—See *Livistonia*.

**Cos Lettuce.**—See *Lactuca*.

**Cosmos** (Purple Mexican Aster).—Ord. Compositæ. Half-hardy annuals. First introduced 1799.

**CULTURE:** Soil, ordinary. Position, warm, dryish border. Propagate by seeds sown in light soil in temp. of 65° to 70° in March, transplanting seedlings outdoors 3 to 4 ft. apart in May.

**SPECIES CULTIVATED:** *C. bipinnatus*, various colours, Aug., 3 ft.; Mexico; *diversifolius*, lilac, Sept., 3 ft., N. America; *diversifolius atrosanguineus*, a superior variety; *hybridus*, various colours, Sept., hybrids.

**Costmary.**—See *Tanacetum*.

**Cotoneaster** (Quince-leaved Medlar; Rose Box).—Ord. Rosaceæ. Hardy evergreen & deciduous shrubs, bearing scarlet fruits in winter.

**CULTURE:** Soil, ordinary. Position, shrubberies, open, or in shade, trailing species against walls or growing over tree roots & rocks, or bare ground under trees. Plant, Oct. to Feb. Propagate by seeds sown 1 in. deep outdoors in March; cuttings inserted in sandy soil outdoors in Oct.; layering shoots in Oct.; grafting on common species, quince, or hawthorn in March.

**EVERGREEN SPECIES:** *C. buxifolia* (Syn. *repens*), white, April, 3 ft., Himalayas; *horizontalis*, rose, April, 2 ft., Himalayas; *microphylla*, white, April, 5 ft., Himalayas; *microphylla glacialis* (Syn. *congesta*); *pannosa*, white, April, 6 ft., Yunnan; *thymifolia*, white, April, 1 ft., Himalayas; *uniflora*, white, May, Siberia.

**DECIDUOUS SPECIES:** *C. affinis*, pink, April, 4 ft., Himalayas; *frigida*, white, April, 10 ft., Himalayas; *Nummularia*, white, April, 10 ft., Europe; *integerrima* (Syn. *vulgaris*), pink, May, 10 ft., Europe; *Simonsii*, white, April, 6 ft., Himalayas.

**Cotton-plant** ((*Gossypium herbaceum*).—See *Gossypium*.

**Cotton Thistle** (*Onopordon acanthium*).—See *Onopordon*.

**Cotton-wood** (*Populus deltoides*).—See *Populus*.

**Cotyledon.**—Ord. Crassulaceæ. Greenhouse & hardy evergreen succulent-leaved plants. Natives of Mexico, except when otherwise mentioned.

**CULTURE OF GREENHOUSE SPECIES:** Compost, two parts loam, one part sand & fine brick rubbish. Position, pots well drained, close to glass in window or greenhouse. Repot, March or April. Water freely March to Sept., very little afterwards. Temp., Sept to March 50° to 55°; March to Sept. 60° to 70°. Can also be grown outdoors in beds, June to Sept.

**CULTURE OF HARDY SPECIES:** Grow in ordinary soil on sunny rockeries, or as edgings to beds. Plant in May. Lift and plant in boxes in a cold frame in Oct. Propagate by seeds sown on surface of above soil in well-drained pan or pot in temp. 55° to 65° in March; cuttings of leaves with base inserted in well-drained pots of sandy soil in Aug., Sept., or Oct. in temp. 55° to 60°. Do not water leaves or cuttings until they begin to shrivel.

**GREENHOUSE SPECIES:** *C. agavoides* (Syn. *Echeveria agavoides*), orange, Sept., 1 ft.; *atropurpurea* (Syn. *Echeveria atropurpurea*), red, Sept., 1 ft.; *Californica* (Syn. *Echeveria californica*), yellow, summer, 1 ft., California; *coccinea*, scarlet and yellow, Oct., 2 ft.; *fulgens* (Syn. *Echeveria fulgens*), red and yellow, summer, 1 ft.; *gibbiflora* (Syn. *Echeveria gibbiflora*), yellow and scarlet, autumn, 2 ft.; *gibbiflora metallica*, leaves purplish glaucous; *glauca* (Syn. *Echeveria glauca*), scarlet and yellow, autumn, 1 ft.; *retusa* (Syn. *Echeveria retusa*), crimson and yellow, autumn, 1 ft.

**HARDY SPECIES:** *C. secunda glauca* (Syn. *Echeveria secunda glauca*), red and yellow, summer, 1 ft.; *secunda glauca major*, large-leaved variety; *Sempervivum*, red, summer, 6 in.

**Couve Tronchuda.**—See *Brassica*.

**Cow-berry** (*Vaccinium vitis-idaea*).—See *Vaccinum*.

**Cow-horn Orchid** (*Schomburgkia Tibicinis*). — See *Schomburgkia*.

**Cow Parsnip** (*Heracleum villosum*).—See *Heracleum*.

**Cowslip-scented Orchid.**—See *Vanda*.

**Crab's Claw** (*Stratiotes aloides*).—See *Stratiotes*.

**Crab's Eyes** (*Abrus precatorius*).—See *Abrus*.

**Crack Willow** (*Salix fragalis*).—See *Salix*.

**Cradle Orchid.**—See *Anguloa*

**Crambe** (Seakale).—Ord. *Cruciferae*. Hardy herbaceous perennials & esculent vegetables.

**CULTURE OF PERENNIAL SPECIES:** Soil, ordinary, rich. Position, open borders. Plant roots 3 in. deep in groups of three or six in March.

**CULTURE OF SEAKALE:** Soil, deep, rich, sandy. Position, open, sunny. Trench soil 2 ft. deep in autumn, burying in abundance of manure. Plant roots 4 to 6 in. long, 2 in. deep, uprightly, 18 in. apart in rows 30 in. asunder in Feb. or March. Pare off crown buds before planting. Mulch beds with stable manure in April. Apply common salt at the rate of 1 lb. to a square rod, or 2 lb. of nitrate of soda to same area in June. Lift and replant every five years. Manure & dig between rows in Nov. Blanching: Cover roots in open ground with inverted pots, dry tree leaves, or cinder ashes in Nov.

**FORCING OUTDOORS:** Cover roots with inverted pots in Nov. & put thick layers of fresh manure and leaves on these in Jan.

**FORCING INDOORS:** Lift roots in Nov., Dec., or Jan. & place them close together in large pots or boxes, with ordinary soil between, in temp. 50° to 60°. Keep roots moist & dark. Roots of no value after forcing.

**MARKET CULTURE OF SEAKALE:** Soil, sandy loam deeply dug. Manures: Stable dung 20 to 30 tons & kainit 3 cwt. per acre applied before planting; superphosphate, 3 cwt. per acre, in spring. Plant cuttings 18 in. apart each way in March; 20,000 cuttings required to plant an acre. Force as above. Market from Nov. to April in 2 lb. punnets. Average price per punnet, 1s. to 1s. 9d. Best variety, *Lily White*.

**PROPAGATE** seakale by seed sown 1 in. deep in rows 12 in. apart in March, thinning seedlings to 6 in. apart in June & transplanting them to permanent beds when a year old, or by cuttings of roots as advised for planting; perennials by seeds sown  $\frac{1}{2}$  in. deep outdoors in March, transplanting seedlings in July; cuttings of shoots or division of roots in March. Seeds germinate in 18 to 20 days. Crop arrives at maturity 2 years after sowing. Seeds retain germinating powers for 3 to 5 years.

**SPECIES CULTIVATED:** *C. maritima* (Seakale), white, May and June, Europe

(Britain); *cordifolia* (Flowering Seakale), white, May, 5 ft., Caucasus; *orientalis*, white, fragrant, June, 4 ft., Orient. Last two hardy perennials.

**Cranberry.**—See *Oxycoccus*.

**Crane's-bill.**—See *Geranium*.

**Crape Fern.**—See *Todea*.

**Crape Myrtle** (*Lagerströmia indica*).—See *Lagerströmia*.

**Crassula.**—Ord. *Crassulacæa*. Greenhouse evergreen plants. First introduced 1711.

**CULTURE:** Compost, equal parts sandy loam, brick rubble, dried cow manure & river sand. Position, well-drained pots in light greenhouse, close to glass. Pot, March. Water freely April to Aug., moderately Aug to Nov., very little afterwards. Temp., March to Sept. 55° to 65°; Sept. to March 45° to 50°. Propagate by seeds sown in well-drained pots or pans of sandy soil, just covering seeds with fine mould, in temp. 60° to 70° in March or April, seedlings to be kept close to glass & have little water; cuttings of shoots 2 to 3 in. long, exposed to sun for few days, then inserted in June, July or Aug. in well-drained pots of sandy soil, placed on greenhouse shelf & given very little water. See also the genus *Roecha*.

**SPECIES CULTIVATED:** *C. arborescens*, pink, May, 2 ft., S. Africa; *columnaris*, white, summer, 6 in., S. Africa; *falcata* (Syn. *Roecha falcata*), yellow and red, summer, 6 in., S. Africa; *lactea*, white, autumn, 9 in., S. Africa.

**Crataegus** (May; Hawthorn; Quick; Black Thorn; White Thorn; Glastonbury Thorn; Christ's Thorn; Evergreen Fire Thorn).—Ord. *Rosacæa*. Hardy deciduous and evergreen trees & shrubs.

**CULTURE:** Soil, ordinary, rich. Position, trees & shrubs in woods, shrubberies, lawns, & pleasure grounds; evergreen species against east or north walls; common quick in hedges. Plant, Oct. to Feb. Prune Evergreen Fire Thorn in Feb., spurting back shoots that have borne berries only; deciduous kinds in Nov., simply cutting tree or shrub into shape where necessary. Hedges: Soil, ordinary, trenched 2 ft. deep & 2 ft. wide. Plant, Nov. to March. Distance apart, 4 in. single row, 6 in. double row 6 in. asunder. Quantity of plants required per yard for single row, 9; double row, 12. Cost of plants per 100, 3s. to 4s. Cost of preparing site and planting per lineal yard, 9d. Cost of trimming per chain, 4d. Time to trim, July & Aug.

**POT CULTURE:** Double pink and white kinds adapted for pot culture in cool greenhouse, or for forcing. Pot, Oct. or Nov., in good soil. Water moderately Oct to March, freely afterwards. Keep plants in cool structure till Jan., then place in temp. 55° to 65° to flower early or leave them in cool house to flower naturally. After flowering, place plants outdoors to make new growth. Propagate by seeds (berries) sown 1 in. deep in open garden in Nov., transplanting largest seedlings following Oct., the remainder the next year; budding choice varieties on common hawthorn in July; grafting in March. Berries require to be stored in sand for a year before sowing.

**DECIDUOUS SPECIES:** *C. Azarolus*, white, fragrant, May, 15 ft., S. Europe; *Carrieri*, white, May, 12 to 15 ft., hybrid; *coccinea* (Scarlet Thorn), white, May, 20 ft., N. America; *cordata*, white June, 15 ft., United States; *crus-galli* (Cockspur Thorn), white, June, 20 ft., N. America; and its varieties *arbutifolia*, *Downingii*, *fontanesiana*, *linearis*, *ovalifolia*, *prunifolia* and *pyracanthifolia*; *Douglasii*, white, May, 15 ft., N.W. America; *melanocarpa*, white, May, 15 ft., *Tauria*; *mollis*, white and red, May, 20 ft., United States; *orientalis*, white, May, 15 ft., Orient; *Oxycantha* (Common Hawthorn), white, May, 15 ft., Europe; *Oxycantha monagyna præcox* (Glastonbury Thorn), white, Dec. to March; 15 ft.; *Oxycanthus oxyanthoides flore-pleno albo* (Double White Thorn), white, May and June; *Oxycanthus oxyanthoides flore-pleno coccineo* (Double Scarlet Thorn), scarlet, May and June;

puniceo flore-pleno (Paul's Double Scarlet), rich scarlet, May; pinnatifida, white, May, 15 ft., Asia; tanacetifolia (Tansy-leaved Thorn), white, May, 15 ft., Levant.

EVERGREEN SPECIES: *C. Pyracantha* (Firethorn), white, May, followed by scarlet berries in autumn, S. Europe, 10 to 15 ft.; *Pyracantha Lelandi*, a superior variety with richer coloured berries.

**Creeping Fig-tree** (*Ficus pumila*).—See *Ficus*.

**Creeping Forget-me-not** (*Omphalodes verna*)—See *Omphalodes*.

**Creeping Jenny** (*Lysimachia nummularia*).—See *Lysimachia*.

**Creeping Phlox** (*Phlox reptans*).—See *Phlox*.

**Creeping Sailor** (*Saxifraga sarmentosa*).—See *Saxifraga*.

**Creeping Speedwell** (*Veronica repens*).—See *Veronica*.

**Creeping Willow** (*Salix repens*).—See *Salix*.

**Creeping Winter Green** (*Gaultheria procumbens*).—See *Gaultheria*.

**Crepis** (Hawk's Beard).—Ord. Compositæ. Hardy herbaceous perennials & annuals.

CULTURE: Soil, ordinary, sandy. Position, sunny borders, banks, or rockeries. Plant perennial species in March or April. Propagate annual species by seeds sown  $\frac{1}{2}$  in. deep in April where plants are required to flower; perennial species by seeds sown  $\frac{1}{2}$  in. deep outdoors in April, transplanting seedlings in July, or by division of roots in March or April.

PERENNIAL SPECIES: *C. aurea*, orange, autumn, 12 in., Europe.

ANNUAL SPECIES: *C. rubra*, red, autumn, 1 ft., S. Europe.

**Cress**.—See *Lepidium*.

**Cretan Mullein** (*Celsia Arcturus*).—See *Celsia*.

**Cretan Mullein** (*Celsia cretica*).—See *Celsia*.

**Cretan Rock Rose** (*Cistus creticus*).—See *Cistus*.

**Cretan Spikenard** (*Valeriana Phu*).—See *Valeriana*.

**Crimean Snowdrop** (*Galanthus plicatus*).—See *Galanthus*.

**Crimson Flag** (*Schizostylis coccinea*).—See *Schizostylis*.

**Crimson-flowered Flax** (*Linum grandiflorum*).—See *Linum*.

**Crimson Satin-flower** (*Brevoortia Ida-Maia*).—See *Brevoortia*.

**Crimson Stonecrop** (*Sedum spurium*).—See *Sedum*.

**Crinum** (Cape Lily; Cape Coast Lily).—Ord. Amaryllidacæ. Stove, greenhouse & hardy deciduous bulbous plants. First introduced 1732.

CULTURE OF STOVE AND GREENHOUSE SPECIES: Compost, two parts turfy loam, one part peat & silver sand. Position, pots in light plant stove or greenhouse. Pot, March, in large pots or tubs well drained. Water freely March to Oct., very little afterwards. Store pots containing bulbs on their sides in stove or greenhouse during winter. Repot every 3 or 4 years. Apply liquid manure to established bulbs in summer. Temp., March to Sept. 75° to 85° for greenhouse. Propagate by seeds sown in sandy soil in a temp. of 65° to 75° in spring; also by offsets at potting time. Seedling plants take several years to flower.

CULTURE OF HARDY SPECIES: Soil, rich, deep. Position, south, well-drained border. Plant bulbs 6 in. deep in March. Increased as above.

STOVE SPECIES: *C. amabile*, red, fragrant, summer, 3 ft., Sumatra; *Kirkii*, white and red, Oct., 2 ft., Zanzibar.

GREENHOUSE SPECIES: *C. Macowanii*, white and purple, autumn, 3 ft., Natal; *Moorei*, white and red, April to Oct., 2 ft., S. Africa; *Moorei album*,

white; *Moorei variegatum*, leaves variegated; *Powellii*, rose, summer, 3 ft., hybrid; *Powellii album*, white; *Powellii rubrum*, red.

**HARDY SPECIES:** *C. longifolium* (Syn. *C. Capense*), pink, summer, 3 ft., S. Africa; *longifolium album*, white.

**Crithmum** (Samphire).—Ord. Umbelliferae. Hardy perennial herb. Leaves used for pickling.

**CULTURE:** Soil, sandy. Position, shady border. Sow seeds thinly in bed of ordinary sandy soil in March. Not an easy plant to grow away from the seashore.

**SPECIES CULTIVATED:** *C. maritimum*, white, summer, 1 ft., Seashores of Britain.

**Crocsmia**.—Ord. Iridaceae. Hardy bulbous-rooted flowering plants. First introduced 1846.

**OUTDOOR CULTURE:** Soil, light, rich, sandy. Position, well-drained south border. Plant bulbs, Sept. or Oct., 6 in. deep & 4 in. apart, surrounding each bulb with an inch of sand & protecting during winter with a covering of dry leaves or ashes. Lift and replant every three years.

**POT CULTURE:** Compost, equal parts turfy loam, peat, leaf-mould & silver sand. Position, cold frame or greenhouse. Pot, Oct., placing six bulbs 1 in. deep in a 5 in. pot, well drained, with an inch of decayed cow manure over drainage. Water when new growth commences, afterwards keep moderately moist until foliage dies down, then keep dry. Propagate by seeds sown  $\frac{1}{2}$  in. deep in well-drained pans or boxes filled with sandy soil in cold greenhouse in Sept. or Oct.; offsets in Oct.

**SPECIES CULTIVATED:** *C. aurea*, orange red, summer, 2 ft., S. Africa; *aurea imperialis*, orange red, 4 ft.

**Crocus**.—Ord. Iridaceae. Hardy bulbous flowering plants.

**OUTDOOR CULTURE:** Soil, light, rich. Position, margins of beds or borders or in grass plots & lawns, open or in shade, for common sorts; sunny, well-drained beds, or on rockeries, for rare & choice kinds. Plant spring-flowering species & varieties in Oct., Nov., or Dec.; autumn-flowering species in Aug. & Sept. Depth & distance: Common kinds, 3 in.; choice & rare sorts, 2 in. Leave corms undisturbed for four or five years, unless their place is wanted for other plants. Lift when necessary in June or July, drying corms in sun & storing in cool room till planting time. Foliage should not be removed until it turns yellow.

**CULTURE IN GRASS:** Bore holes 3 in. deep and 2 in. apart, insert a corm in bottom of each, then fill up with ordinary soil; or lift turf, fork up soil below, add a little bonemeal, place bulbs thereon & replace turf. Grass should not be cut till foliage turns yellow.

**POT CULTURE:** Compost, light, rich, sandy soil. Position, 3 or 5 in. pot, or four in a 3 in. size, in Oct., Nov., or Dec. After potting, place pots in cold frame or under a wall & cover with cinder ashes till growth begins, then remove to greenhouse, etc. Water freely when growth begins; give less as foliage fades. Corms of no use for flowering second time in pots, but may be planted out in garden. To force, place in temp. 55° to 65° in Dec. or Jan.

**PROPAGATE** by seeds sown  $\frac{1}{2}$  in. deep & 1 in. apart in light sandy soil in cold frame in Sept., Oct., or Nov., transplanting seedlings in Aug. of second year; offsets removed from old corms in July or Aug. & replanted 2 in. deep & 2 in. apart at same time. Seedling corms flower when three & four years old.

**SPECIES CULTIVATED:** *C. aureus*, yellow, Feb., S.E. Europe; *alatavicus*, white, Feb., Siberia; *asturicus*, violet, autumn, Spain; *Balanseæ*, orange-yellow, March, Asia Minor; *banaticus*, white and purple, March, Hungary; *biflorus*

(Sootch Crocus), lavender, Feb., Tuscany; cancellatus, yellow, white and purple, autumn, Asia Minor; chrysanthus, orange-yellow, Jan. to March, S.E. Europe; Clusii, white and purple, autumn, Spain; dalmaticus, yellow and purple, Feb. to March, Dalmatia; etruscus, lilac and yellow, March, Italy; Fleischeri, yellow and purple, March, Asia Minor; Imperati, lilac-purple, fragrant, Jan to March, Italy; iridiflorus, purple and lilac, autumn, E. Europe; Korolkowi, yellow and brown, Feb. to March, Central Asia; longiflorus, lilac, yellow and purple, autumn, Italy; Malvi, yellow, orange, and purple, March, Dalmatia; medius, white and purple, autumn, Italy; minimus, purple, March and April, Corsica; nudiflorus, purple, autumn, Pyrenees; ochroleucus, white and orange, autumn, Asia Minor; pulchellus, lavender, blue, or yellow, autumn, Turkey; reticulatus, white, lilac and purple, March, E. Europe; sativus (Saffron Crocus), white, lilac, and purple, autumn, Western Asia; Sisberi, lilac and yellow, Feb. to March, Greece; speciosus, lilac and purple, autumn, Central Europe; suavolens, orange, lilac, and purple, March, Italy; susianus, orange and brown, Feb., Crimea; vernus, lilac, violet and white Feb., to April, Europe; versicolor, white to purple, March, France and Italy. The numerous Dutch forms in cultivation were originally derived from *O. vernus*.

**Crossandra.**—Ord. Acanthaceæ. Stove evergreen flowering shrub. First introduced 1800.

**CULTURE:** Compost, equal parts loam, peat & sand. Position, pots in moist plant stove. Pot, March. Water moderately during winter, freely other times. Temp., Oct. to March 55° to 65°; March to Oct. 75° to 85°. Propagate by cuttings of shoots 2 or 3 in. long, inserted in sand under bell-glass, in temp. of 85° at any time of year.

**SPECIES CULTIVATED:** *C. guineensis*, lilac, October, 6 in.; *undulæfolia*, orange-scarlet, March, 12 to 18 in., India.

**Cross of Jerusalem** (*Lychnis chalconica*)—See *Lychnis*.

**Cross Vine** (*Bignonia capreolata*).—See *Bignonia*.

**Cross-wort** (*Crucinella stylosa*).—See *Crucinella*.

**Cross-wort** (*Gentiana cruciata*).—See *Gentiana*.

**Croton.**—See *Codiaeum*.

**Crowberry.**—See *Empetrum*.

**Crowea.**—Ord. Rutaceæ. Greenhouse evergreen shrubs. First introduced 1700.

**CULTURE:** Compost, two parts peat, one fibrous loam, & little sand. Position, pots in light airy greenhouse. Pot, March or April. Prune straggling shoots into shape in March. Water very little Oct. to March, moderately March to Oct. Temp., Sept. to March 40° to 45°; March to Sept. 55° to 65°. Propagate by cuttings inserted in sand under bell-glass in temp. of 65° to 75° in March or April; grafting on *Correa alba* or *Eriostemon buxifolia* in March.

**SPECIES CULTIVATED:** *C. angustifolia*, red, summer, 1 to 3 ft., Australia; *saligna*, pink, summer, 1 to 2 ft., Australia.

**Crown Imperial Lily.**—See *Fritillaria*.

**Crown-of-Thorns** (*Medicago echinus*).—See *Medicago*.

**Crown Vetch** (*Coronilla varia*).—See *Coronilla*.

**Crucianella** (Cross-wort).—Ord. Rubiaceæ. Hardy herbaceous perennial. First introduced 1640.

**CULTURE:** Soil, sandy or chalky. Position, dry banks, rockeries, or borders. Plant, Oct. or March. Propagate by seeds sown outdoors in March, transplanting seedlings to permanent positions in July or Aug.; division of roots in March, April, Oct. or Nov.

**SPECIES CULTIVATED:** *C. stylosa*, rose, summer, 9 to 12 in., Caucasus; *stylosa coccinea*, scarlet; *stylosa purpurea*, purple.

**Cryptanthus.**—Ord. Bromeliaceæ. Stove & evergreen perennials; flowering & orn. foliage. First introduced 1826.

**CULTURE:** Compost, equal parts fibrous loam, rough peat, leaf-mould & silver sand. Pot, March. Water freely always; good drain-

age essential. Temp., Sept. to March, 65° to 75°; March to Sept. 75° to 85°. Propagate by large-sized offsets inserted singly in small pots in temp. of 85° in April.

SPECIES CULTIVATED: *C. Beuckeri*, red and white, summer, 6 in., Brazil; *bivittatus*, white, Aug., 8 to 10 in., Trop. America; *undulatus*, white, August, 10 in., Brazil.

**Cryptogramme** (Parsley Fern; Rock Brake).—Ord. Filices. Hardy deciduous ferns with Parsley-like fronds.

CULTURE: Soil, equal parts loam & peat with a liberal supply of broken bricks or stone, quite free from lime. Position, cool, moist rockery. Does well in the moist fissures of rocks. Plant in spring. Propagate by division in spring.

SPECIES CULTIVATED: *C. crispa* (Syn. *Allosorus crispa*), 3 to 6 in., Mountains of Wales, Scotland, etc.; *crispa acrostichoides*, 6 to 8 in., N. America.

**Cryptomeria** (Japanese Cedar).—Ord. Coniferae. Hardy evergreen coniferous trees. Orn. foliage. Nat. Japan. First introduced 1844. Foliage bright green in spring & summer; bronzy crimson during winter.

CULTURE: Soil, deep rich, moist loam. Position, sheltered on lawns. Plant, Oct. to April. Propagate by seeds sown  $\frac{1}{2}$  in. deep in sandy loam in temp. of 55° in March or outdoors in April; cuttings of side shoots 2 or 3 in. long, inserted in sandy soil under hand-light, or in cold frame, in Sept. or Oct.

SPECIES CULTIVATED: *C. japonica*, 70 to 100 ft. Varieties: *araucarioides*, 7 to 8 ft.; *elegans*, 70 to 100 ft.; *elegans nana*, 3 to 4 ft.; *Lobbii*, 60 to 80 ft.; *pungens* and *spiralis*.

**Cuban Lily** (*Scilla peruviana*).—See *Scilla*.

**Cuckoo-Flower** (*Cardamine pratensis*).—See *Cardamine*.

**Cucumber** (*Cucumis sativa*).—See *Cucumis*.

**Cucumber Tree** (*Magnolia acuminata*).—See *Magnolia*.

**Cucumis** (Cucumber; Melon; Gherkin).—Ord. Cucurbitaceae. Half-hardy trailing perennial fruiting plants.

CULTURE OF CUCUMBERS: Compost, two parts decayed turfy loam, one part horse droppings or decomposed manure. Position, pots or beds in heated or cold greenhouse & frames, or in sheltered corner outdoors in summer. Sow seed in Feb. or March for heated greenhouse or frame in summer, April for cold frames or outdoors, Sept. or Oct. for winter use. Plant, March, April, Sept., or Oct. in heat; June in cold frames or outdoors. Train main shoot up roof of greenhouse, pinching out its point when 3 ft. high, also points of side (lateral) shoots at first joint beyond the young fruit; or, when grown in frames, along surface of bed, removing point of main shoot when a foot long and points of side shoots at first joint beyond young fruit. Prune away old shoots that cease to bear & train young ones in their stead. Water moderately at first, freely afterwards. Syringe twice daily. Apply liquid manure to plants bearing heavy crops only. Ventilate when temp. reaches 90°, closing again when it falls below this. Temp., Feb. to Sept., for greenhouse & frame, 75° to 85°; Sept. to Feb. 65° to 75°. Shade from hot sun. Fertilise first female blooms by divesting a male blooms of its petals and applying powdery parts to centre of former; fertilisation not needful afterwards, except seed is wanted. Fumigate occasionally to destroy insects.

CULTURE OF GHERKINS OR RIDGE CUCUMBERS: Dig a hole in May 2 ft. deep & 3 ft. wide in a sunny position, putting soil on north side. Fill hole with heated manure and cover with 3 in. of soil. Plant at once. Train as advised above. Water moderately at first, freely

afterwards. Protect with hand-light until end of June. Sow seeds in light soil in temp. 55° in April. Japanese climbing cucumber requires to have its shoots trained up pea sticks.

**CULTURE OF MELONS:** Compost, three parts good turfy loam, one part decayed manure. Position, beds in greenhouses, pits, or frames, with shoots trained to roof or along surface of ground. Plant, March, April, or May. Sow seeds singly in 2 in. pits in temp. 75° in Feb. or March. Pinch out point of main shoot when 6 in. long, also of lateral shoots when 1 ft. long, & further shoots at the first joint beyond the young swelling fruit. Fertilise all the female blooms about 12 a.m. as directed for cucumbers. Allow one fruit to each shoot, removing any others gradually. Prune away any weak shoots not showing fruit. Water moderately at first, freely afterwards, less when fruit changes April or May. Sow seeds singly in 2 in. pots in temp. 75° in Feb. or shoots when 1 ft. long, & further shoots at the first joint beyond the colour. Syringe twice daily until fruit begins to ripen, then cease. Shade from hot sun. Apply liquid manure when fruit begins to swell. Temp., March to time fruit is ripe, 75° to 85°. Ventilate when temp. reaches 85°, close when it falls below this.

**USEFUL DATA:** Longevity of Seeds—Cucumber, 10 years; gherkin, 6 years; melon, 6 years. Germinating period—6 to 10 days. Melons usually ripen about 120 to 140 days after sowing seeds. Artificial manures for melons & cucumbers: 1 part nitrate of potash, 1 part dried blood, 2 parts superphosphate, &  $\frac{1}{4}$  part sulphate of iron. Dose,  $\frac{1}{2}$  oz. per square yard once a week.

**SPECIES CULTIVATED:** *C. Melo* (Melon), intro. 1570; *sativus* (Cucumber), intro. 1573. Natives of Tropics.

**Cucurbita** (Gourd; Pumpkin; Squash; Vegetable Marrow).—Ord. Cucurbitaceæ. Half-hardy trailing annual edible or orn. fruited plants. First introduced 1570. Flowers, yellow, male & female distinct. Fruit globular, oval, or oblong.

**CULTURE OF MARROWS AND PUMPKINS:** Soil, ordinary, rich. Position, beds in frames, on heaps of decayed manure or refuse, or on banks, the shoots running down the slope, or, as in beds in open garden formed by digging out soil 15 in. deep, filling holes with heated manure and covering this with soil. Sow seeds in a temp. of 55° in April, or where the plants are intended to grow in May. Plant, May, under hand-light, or in June without protection. Pinch out points of main shoots when 18 in. long; no pinching required afterwards. Fertilise first female blooms; not later ones. Water freely in dry weather. Apply liquid manure frequently after fruit is set. Fruit for preserving should be cut when yellow & then hung up in a dry room till wanted for use. Young shoots of marrows and gourds may be used as a substitute for spinach.

**CULTURE OF GOURDS:** Soil, rich, ordinary. Position, beds at base of low, sunny fences or walls, or on the summit of banks, shoots growing at will up & over the former or down the latter; sunny. Plant, June. Water freely in dry weather. Apply liquid manure occasionally when plants are laden with fruit. Gather fruit when yellow, & hang it up till wanted for use in dry room. No pinching of shoots required. Propagate by seeds sown  $\frac{1}{2}$  in. deep in light soil in temp. 55° to 65° in April, or where plants are to grow in May & June.

**SPECIES CULTIVATED:** *C. maxima* (Pumpkin), Trop. Asia; *Pepo* (Gourd), Trop. Africa; *Pepo ovifera* (Vegetable Marrow). Numerous varieties, for which see trade lists.



**Cunonia** (Red Alder).—Ord. Saxifragaceæ. Greenhouse evergreen flowering tree. Nat. Cape of Good Hope. First introduced 1816.

**CULTURE**: Compost, equal parts sandy loam & peat. Position, pots in light airy greenhouse. Pot, March. Prune into shape in March. Water moderately Oct. to March, freely afterwards. Temp., March to Sept. 55° to 65°; Sept. to March 45° to 50°. Propagate by cuttings of firm shoots inserted in sandy soil under bell-glass in temp. of 65° to 75° in summer.

**SPECIES CULTIVATED**: *C. capensis*, white, Aug., 10 to 20 ft., S. Africa.

**Cup and Saucer Flower** (*Cobæa scandens*).—See *Cobæa*.

**Cupania**.—Ord. Sapindaceæ. Stove orn. foliage evergreen trees. First introduced 1818.

**CULTURE**: Compost, equal parts loam & peat. Position, pots in moist plant stove. Pot, March. Water moderately in winter, freely other times. Prune occasionally to maintain a dwarf habit. Temp., Oct. to March 55° to 65°; March to Sept. 75° to 85°. Propagate by cuttings of firm shoots inserted in sand under bell-glass in temp. of 85° in summer.

**SPECIES CULTIVATED**: *C. anacardioides*, 20 to 30 ft., Australia; *elegantissima*, 15 to 20 ft.; *grandidens*, 20 to 30 ft., Zanzibar.

**Cup Fern** (*Cyathea arborea*).—See *Cyathea*.

**Cup-flower** (*Nierembergia rivularis*).—See *Nierembergia*.

**Cuphea** (Mexican Cigar Flower).—Ord. Lythrarieæ. Greenhouse evergreen and deciduous flowering plant. First introduced 1845.

**CULTURE**: Compost, equal parts loam, leaf-mould, peat & sand. Position, 5 to 6 in. pots in greenhouse, or in beds outdoors in summer. Pot March or April. Plant outdoors in June. Water moderately Oct. to March, freely afterwards. Temp., March to Sept. 60° to 70°; Sept. to March 50° to 55°. Propagate by seeds sown in light soil in temp. 65° to 75° in March; cuttings of young shoots inserted in sandy soil in temp. 65° to 75° in March, April, or Aug.

**SPECIES CULTIVATED**: *C. aequipetala*, purple, June, 2 ft., Mexico; *cyanea*, yellow and red, July, 2 ft., Peru; *hookeriana*, vermilion and orange, July, 2 to 3 ft., Mexico; *ignea* (Syn. *Cuphea platycentra*), scarlet, black and white, July, 1 ft., Mexico; *ignea alba*, white; *lanceolata*, blue, July, 18 in., annual, Mexico; *micropetala*, scarlet, white and red, July, 1 ft., Mexico.

**Cupidone** (*Catananche cærulea*).—See *Catananche*.

**Cupid's-flower** (*Quamoclit vulgaris*).—See *Quamoclit*.

**Cup Plant** (*Silphium perfoliatum*).—See *Silphium*.

**Cupressus** (Cypress).—Ord. Coniferæ. Hardy evergreen trees. Orn. foliage. Leaves, small dark green or glaucous, or variegated with white or yellow.

**CULTURE**: Soil, deep rich loam. Position, single specimens on lawns or pleasure grounds, or in mixed shrubberies. Plant, Sept. to Nov. Distance apart for planting in avenues, 20ft.

**HEDGE CULTURE**: Trench soil 3 ft. wide and deep for site, adding little well-rooted manure if poor. Plant shrubs 2 ft. high 2 ft. apart in Sept. or Oct. Cost of plants per 100, 30s.; preparing and planting per lineal yard, 9d. Trim sides in annually in April and Sept. *Cupressus macrocarpa* good for seaside gardens. *Cupressus lawsoniana* & *macrocarpa* suitable for peaty or chalky soils. Propagate by seeds sown  $\frac{1}{2}$  in. deep in pans of light soil in April, transplanting seedlings singly into small pots following spring, and planting outdoors a year afterwards; by cuttings of branchlets 2 in. long, inserted in sandy soil in cold frame, or under hand-light, in Sept.

**SPECIES CULTIVATED:** *O. funebris* (Funeral Cypress), weeping habit, 40 to 50 ft., China; *goveniana*, compact habit, 20 to 30 ft., California; *lawsoniana* (Lawson's Cypress), pyramidal habit, 100 to 150 ft., California, and its varieties, *albospica*, *albo-variegata*, *argentea*, *argenteo-variegata*, *aureo-variegata*, *erecta viridis*, *filiformis*, *gracilis pendula*, *lutea*, *nana*, *nana albo* and *nana glauca*; *macrocarpa* (Monterey Cypress), spreading habit, 60 to 90 ft., California; *nookkatensis* (Alaska Cypress), pyramidal habit, 100 to 120 ft., Vancouver's Island, and its varieties, *argenteo-variegata*, *aureo-variegata*, *compacta*, *glauca*, *pendula*, *variegata*, and *viridis*; *obtusa* (Syn. *Retinospora obtusa*), spreading habit, 50 to 70 ft., Japan, and its varieties, *albo-picta*, *aurea*, *compacta*, *filicoides*, *gracilis aurea*, *lycopodoides*, *nana*, *plumosa* (Syn. *Retinospora plumosa*), *plumosa argentea*, *plumosa aurea*, *plumosa tetragonia aurea*, and *plumosa variegata*; *pisifera* (Syn. *Retinospora pisifera*), slender, graceful habit, 18 to 20 ft., Japan, and its varieties, *filifera*, *plumosa*, and *squarrosa*; *sempervirens*, pyramidal habit, 40 to 60 ft., S. Europe, and its varieties *horizontalis* and *orientalis*; *thyoides* (Syn. *Retinospora ericoides*), the White Cedar, 80 to 90 ft., United States, and its varieties, *glauca* (*kewensis*), *variegata* and *leptoclades*.

**Cups-and-Saucers** (*Cobæa scandens*).—See *Cobæa*.

**Curculigo** (Weevil-plant).—Ord. Amaryllidaceæ. Stove orn. evergreen foliage plants. First introduced 1805. Leaves, strap-like, recurved, dark green, variegated with white.

**CULTURE:** Compost, equal parts lumpy peat & loam & little silver sand. Position, pots in moist plant stove. Pot, Feb. or March. Water moderately in winter, freely other times. Temp., Sept. to March 55° to 65°; March to Sept. 75° to 85°. Propagate by suckers inserted in small pots of sandy soil in temp. 85° in March.

**SPECIES CULTIVATED:** *C. recurvata*, 3 to 4 ft., Trop. Asia; *recurvata variegata*, variegated foliage.

**Currant**.—See *Ribes*.

**Cushion Pink** (*Silene acaulis* & *Armeria maritima*).—See *Silene* & *Armeria*.

**Custard Apple** (*Anona reticulata*).—See *Anona*.

**Cyananthus**.—Ord. Campanulaceæ. Hardy alpine herbaceous perennials. First introduced 1844.

**CULTURE:** Compost, equal parts sandy peat & leaf-mould. Position, sunny banks or crevices of rockeries. Plant, March or April. Protect in severe weather with ashes or leaves. Propagate by cuttings of shoots 2 in. long inserted in sandy peat, in April, May, or June, & kept under bell-glass; division of fleshy roots in March or April.

**SPECIES CULTIVATED:** *C. incanus*, azure-blue, August, 3 to 4 in., Sikkim; *lobatus*, purplish blue, August, 4 in., Himalayas.

**Cyanella**.—Ord. Hæmodoraceæ. Half-hardy bulbous plants. Nat. Cape of Good Hope. First introduced 1768. Flowers, fragrant.

**CULTURE:** Compost, two parts sandy soil, one part leaf-mould or decayed cow manure. Position, pots 4½ in. in diameter, well drained, in cold frame or greenhouse. Pot, Oct., placing five bulbs 2 in. deep in each pot, & covering pots with cocoanut-fibre refuse until growth begins. Water moderately when bulbs begin to grow; keep bulbs dry Sept. to Jan. Propagate by offsets in Nov.

**SPECIES CULTIVATED:** *C. alba*, white, July, 1 ft.; *capensis*, blue, July, 1 ft.; *lutea*, yellow, July, 1 ft.

**Cyanophyllum**.—See *Miconia*.

**Cyathea** (Tree Fern).—Ord. Filices. Stove & greenhouse evergreen tree ferns. First introduced 1793.

**CULTURE:** Compost, two-thirds peat & loam, & abundance of sand. Position, large pots or tubs, well drained, in shady stove, greenhouse, or conservatory. Repot, Feb. or March. Water moderately Oct. to March, freely afterwards. Syringe trunks daily March to Sept. Temp., Sept. to March 50° to 65° for stove, 45° to 55° for greenhouse;

March to Sept. 65° to 75° for stove, 55° to 65° for greenhouse. Shade in summer essential. Propagate by spores sown at any time on surface of finely-sifted loam & peat in shallow well-drained pans; cover with sheet of glass, & keep moist in shady position in temp. 75° to 85°.

STOVE SPECIES: *C. arporea*, 15 ft., W. Indies; *Dregei*, 10 to 12 ft., Trop. Africa.

GREENHOUSE SPECIES: *C. dealbata*, 10 ft., New Zealand; *medullaris*, 15 to 20 ft., New Zealand.

**Cycas** (Sago Palm).—Ord. Cycadaceæ. Stove ornamental-leaved plants. Leaves feather-shaped, dark green.

CULTURE: Compost, two parts turfy loam, one part silver sand. Position, well-drained pots in moist plant stove. Repot, Feb. & Mar. Water moderately Oct. to March, freely afterwards. Temp., March to Sept. 75° to 80°; Sept. to March 55° to 65°. *C. revoluta* may be stood outdoors in sheltered position from June to Sept. Propagate by seeds sown 1 in. deep in light soil in temp. 85° to 90° in March or April; suckers obtained from base of plants inserted in small pots in temp. 80° to 85° at any time.

SPECIES CULTIVATED: *C. circinalis*, 8 ft., E. Indies; *revoluta*, 6 to 8 ft., China.

**Cyclamen** (Sowbread).—Ord. Primulaceæ. Hardy & greenhouse perennial flowering plants. Tuberos-rooted. Deciduous. First introduced 1596. Flowers, fragrant.

CULTURE OF GREENHOUSE SPECIES: Compost, two parts loam, one part leaf-mould & sand. Position, pots in greenhouse. Sept. to May; cold frame other times. Repot, July or Aug.; corm to be above surface of soil. Water moderately until new growth begins, then increase supply, decreasing it when plants have ceased to flower; keeping roots nearly dry & cool May to July. Apply liquid manure when in flower. Temp., Sept. to April 50° to 55°. Corms should not be grown for more than two years. Best results obtained from seedling plants one year old. Shade from sun essential.

CULTURE OF HARDY SPECIES: Soil, rich, friable loam containing plenty of leaf-mould. Position, sheltered partially shady nooks of rockery or in turf under trees. Plant, Aug. or Sept., 2 or 3 in. apart & 1½ in. deep. Top-dress with cow manure & rich soil annually after leaves die down, first removing old soil as far as corms. May also be grown in pots or pans in cold greenhouse or frame.

Propagate greenhouse kinds by seed sown ½ in. deep & 1 in. apart in well-drained pans of light soil in temp. of 55° Aug. to Nov., or Jan. to March; hardy species by seeds sown similarly in cold frame in Oct. or Nov., transplanting seedlings following spring. Cover surface of soil in seed pans with layer of moss to keep soil uniformly moist. Seeds take several weeks to germinate.

GREENHOUSE SPECIES: *C. latifolium* (Syn. *persicum*), red, white, etc., winter, 6 to 8 in., Asia Minor.

HARDY SPECIES: *C. africanum*, red and white, autumn, 6 in., N. Africa; *Coum*, red, Feb. and March, 4 in., Greece and Asia Minor; *europæum*, red, autumn, 4 in., Europe; *ibericum* (Syn. *C. vernum*), red, Feb. and March, 3 in., Caucasus; *neapolitanum*, red, autumn, 4 in., Europe; *neapolitanum album*, white; *repandum* (Syn. *hederaefolium*), rosy red, March to May, 4 in., S. Europe; *Atkinsii*, purple and white, winter, 3 in., a hybrid.

**Cyclamen-flowered Daffodil** (*Narcissus cyclamineus*).—See *Narcissus*.

**Cyclobothra**.—See *Calochortus*.

**Cycnoches** (Swan's-neck Orchid).—Ord. Orchidaceæ. Stove deciduous orchids. First introduced 1830.

**CULTURE:** Compost, good fibry peat. Position, pots or hanging baskets, well drained. Water freely from time new growth begins until leaves fall off; very little other times. Temp., March to Sept. 65° to 85°; Sept. to March 60° to 70°. Growing period, Feb. to Aug. Resting period, Sept. to Feb. Flowers appear at base of new pseudo-bulb. Propagate by division of plants at potting time.

**SPECIES CULTIVATED:** *C. aureum* (Golden Swan Orchid), yellow, summer, Central America; *chlorochilum*, yellow, June, Demerara; *pentadactylon*, yellow and brown, various seasons, Brazil.

**Cydonia.**—See *Pyrus*.

**Cymbidium.**—Ord. Orchidaceæ. Stove terrestrial orchids. First introduced 1789. Flowers, fragrant.

**CULTURE:** Compost, equal parts rough fibry peat, sphagnum moss, & sand. Position, pots, well drained. Repot, Feb. or March. Water freely in summer, moderately in winter. Temp., March to Sept. 65° to 85°; Sept. to March 60° to 65°. Growing period, March to Aug. Resting period, Sept. to Feb. Flowers appear at base of pseudo-bulb last formed. Propagate by division of plant at potting time.

**SPECIES CULTIVATED:** *C. aloifolium*, purple, autumn, India and Ceylon; *dayanum*, yellowish white, autumn, Assam; *eburno-lowianum*, creamy white and crimson, spring, hybrid; *eburnum*, white and yellow, Feb. and March, Khasya; *giganteum*, yellow, purple and crimson, winter, Nepal; *grandiflorum*, yellow, crimson, and purple, winter, Sikkim; *lowianum*, yellow, cream, and maroon, Feb. and March, Burma; *Lowio-eburnum*, white, Feb., hybrid; *Parishii*, white, orange, and purple, summer, Moulemein; *tigrinum*, yellow, red, and crimson-purple, spring, Burma; *traceyanum*, yellow and crimson, winter, Burma.

**Cynara** (Cardoon; Globe Artichoke).—Ord. Compositæ. Hardy herbaceous perennials. Immature flower heads of artichoke used as a vegetable; blanched stalks and mid ribs of leaves of cardoon also edible.

**CULTURE OF CARDOON:** Soil, light, deep rich ordinary.. Position, open and sunny. Prepare trenches 12 in. deep, 18 in. wide, and 4 ft. apart from centre to centre in Oct. Fork 6 in. of rotten manure into the soil in bottom of trench. The third week in April spread 2 to 3 in. of light vegetable mould along the trench. Sow the seeds in patches of three or four, 1 in. deep & 18 in. apart, along the centre of trench. Thin seedlings when 3 in. high to one in each patch. Place a stake to each plant when a foot high, & secure the leaves loosely to this. In Aug. draw the leaves tightly together, carefully wind a small hayband round each plant & cover with mould. Plants are sufficiently blanched for cooking eight weeks after earthing up. Seeds may be sown two in a 3 in. pot filled with ordinary soil, placed in temp. 55° to 65° in March, hardened off in April, & planted out in May.

**MARKET CULTURE:** Same as above. Market and trim as advised for celery; sell by the dozen roots.

**CULTURE OF GLOBE ARTICHOKE:** Soil, deep rich loam, liberally manured and trenched three spits deep. Position, open & sunny. Plant suckers, i.e., offshoots, 4 in. deep in triangular groups 9 in. from plant to plant, 2 ft. apart in rows 4 ft. asunder, early in April. Keep well watered first season. In Nov. surround each plant with dry litter & in severe weather cover with similar material, uncovering in mild weather. Fork surface over in March, & mulch with decayed manure. Apply liquid manure freely to establish plants during summer. Gather flower heads for use when fully developed. Seaweed an excellent manure. Apply in spring. Replant bed every four years. Propagate by offsets or suckers removed in April. Seeds do not ripen in England.

**MARKET CULTURE:** Same as above. Market heads with stalks about 3 in. long, & sell by the dozen. Average price, 1s. 6d. to 2s. per doz. Average yield per acre, 10,000 to 20,000 heads.

**SPECIES CULTIVATED:** *C. cardunculus* (Cardoon), purple, Aug., 4 to 6 ft., S. Europe; *scolymus* (Globe Artichoke), purple, Sept., 3 to 6 ft., Europe.

**Cynorchis.**—Ord. Orchidaceæ. Stove terrestrial orchids. First introduced 1835.

**CULTURE:** Compost, equal parts fibrous peat & sphagnum moss. Position, well-drained pots in moist part of stove. Pot in spring. Water freely whilst growing; give little when at rest. Propagate by division after flowering.

**SPECIES CULTIVATED:** *C. elegans*, white and rose, winter, 4 in., Madagascar; *grandiflora*, green, rose, and purple, winter, 6 in., Madagascar; *lowianum*, white, green, and lilac, winter, Madagascar.

**Cypella.**—Ord. Iridææ. Half-hardy bulbs. Adapted for cool greenhouse and outdoor culture. First introduced 1823.

**OUTDOOR CULTURE:** Soil, light rich sandy. Position, sunny well-drained border. Plant, Sept. to Jan., placing bulbs 4 in. deep & 2 in. apart. Lift & replant bulbs annually. Mulch surface of bed in March with cow manure.

**POT CULTURE:** Compost, two parts sandy loam, one part leaf-mould or decayed cow manure. Pots, 4½ in. in diameter, well drained. Place five bulbs, 3 in. deep, in each pot in Nov., & cover with cocoanut-fibre refuse in cold frames or under cool greenhouse stage until growth begins. Water moderately from time bulbs begin to grow until flowers fade, then gradually cease, keeping bulbs dry till Jan. Temp., Sept. to March 40° to 50°; other times 50° to 60°. Propagate by offsets treated as advised for bulbs.

**SPECIES CULTIVATED:** *C. Herbertii* (Syn. *Tigridia Herbertii*), yellow, summer, 1 ft., S. America; *peruviana*, yellow and brown, summer, 1 ft., Peru.

**Cyperus** (Umbrella plant; Galingale).—Ord. Cyperaceæ. Greenhouse & hardy perennials. Orn. foliage. Foliage, grass-like, dark green, or variegated with white.

**CULTURE OF GREENHOUSE SPECIES:** Compost, two parts loam, one leaf-mould & sand. Position, pots in shady greenhouse. Water moderately in winter, freely other times. Repot, Feb. to March. Temp., March to Sept. 55° to 65°; Sept. to March 45° to 55°.

**CULTURE OF HARDY SPECIES:** Soil, mud. Position, margins of lakes, ponds, etc. Plant, Oct. to March. Propagate by seeds sown in shallow boxes or pans of light soil in temp. 55° to 65° in March or April; division of roots in March or April.

**GREENHOUSE SPECIES:** *C. alternifolius*, 2½ ft., leaves green, Madagascar; *alternifolium variegatum*, leaves striped with white; *Papyrus* (Syn. *Papyrus Antiquorum*), 8 to 10 ft., leaves green, Trop. Africa.

**HARDY SPECIES:** *C. longus* (Galingale), 4 ft., Europe.

**Cyphomandra** (Tree Tomato).—Ord. Solanaceæ. Greenhouse evergreen orn. foliage & fruiting shrub. First introduced 1836. Fruit, large, egg-shaped red & edible; ripe in Aug. & Sept.

**CULTURE:** Compost, two parts loam, one part leaf-mould & sand. Position, pots in light sunny greenhouse. Pot, March or April. Water moderately Oct. to March, freely afterwards. Temp., Oct. to March 45° to 55°; March to Sept. 55° to 65°. Prune plants into shape March or April. Propagate by seeds sown ½ in. deep in light soil in temp. 75° to 85° in March or April; cuttings of side shoots 3 in. long inserted in sandy soil under bell-glass in temp. 75° to 80°.

**SPECIES CULTIVATED:** *C. betacea*, purple and green, spring, 6 to 10 ft., S. America.

**Cypress.**—See *Cupressus*.

**Cypress Oak** (*Quercus pedunculata fastigiata*).—See *Quercus*.

**Cypress Sponge** (*Euphorbia Cyparissias*).—See *Euphorbia*.

**Cypress Vine** (*Ipomœa Quamoclit*).—See *Ipomœa*.

**Cypripedium** (*Lady's Slipper*; *Moccasin-flower*).—Ord. Orchidaceæ. Stove, greenhouse, & hardy orchids. First introduced 1731.

**CULTURE OF STOVE SPECIES:** Compost, two parts rough fibry peat, one part sphagnum moss & sand. Position, pots or pans drained one-third of their depth. Repot, April. Temp., March to Sept. 65° to 85°; Sept. to March 60° to 65°. Water freely April to Aug., moderately afterwards.

**CULTURE OF GREENHOUSE SPECIES:** Compost & position, same as above. Repot, April. Water freely April to Aug., moderately other times. Temp., March to Sept. 60° to 65°; Sept. to March 50° to 55°. Resting period, none. Flowers appear when growth is finished.

**CULTURE OF HARDY SPECIES:** Compost, equal parts loam, leaf-mould, road grit & small stones. Position, partially shady sheltered nooks on rockery. Plant, March or April. Water in dry weather. Propagate all the species by division of the roots at potting or planting time.

**STOVE SPECIES:** *C. Argus*, rose, white, and purple, June, Philippines; *herbatum*, white and purple, March and April, Malaya; *bellatulum*, white and purple, May, Burma; *Boxallii*, green and purple, Dec. to Feb., Burma; *callosum*, white and purple, Dec. to Feb., Cochin China; *Charlesworthii*, rose and white, autumn, Burma; *concolor*, white, March to May, Burma; *dayanum*, white and purple, Feb., Borneo; *laurencianum*, white and purple, April, Borneo; *niveum*, white and rose, spring, Malaya; *rothschildianum*, yellow, purple and brown, March, Borneo; *superbiens*, white and purple, Nov.; *venustum*, green and red, Oct., Himalayas.

**STOVE HYBRIDS:** We can only find space for a very brief selection of these, namely, *calurium*, green, red, and crimson; *calypso*, white and yellow; *dominicum*, yellow, green and brown; *leanum*, white, mauve and red; *Schroderæ*, red, purple, white, and crimson; *Sedenii*, white, crimson and purple; *selligerum*, white and crimson.

**GREENHOUSE SPECIES:** *C. insigne*, white, purple and brown, Dec. to Feb., Khasia; *insigne Maulei*, white and purple; *insigne Sanderæ*, yellow; *insigne sanderianum*, yellow; *spicerianum*, white and purple, autumn, Assam; *villosum*, brown and purple, winter, Moulmein.

**HARDY SPECIES:** *C. Calceolus* (*Lady's Slipper*), yellow, summer, Europe (Britain); *guttatum*, white, rose, and purple, N. America and Siberia; *macranthum*, purple, June, Siberia; *japonicum*, green, white, and pink, summer, Japan; *parviflorum*, yellow and red, June, N. America; *pubescens*, yellow and purple, June, N. America; *spectabile*, rose and white, May, N. America.

**Cyrilla** (*Leatherwood*).—Ord. *Cyrtillæ*. Hardy evergreen flowering shrub. Flowers, borne in tufts on the ends of old wood. First introduced 1765.

**CULTURE:** Soil, loam & peat. Position, warm, sheltered nooks. Plant, Sept. or April. Propagate by cuttings in silver sand under bell-glass in temp. 55° to 65°.

**SPECIES CULTIVATED:** *C. racemiflora*, white, summer, 6 ft., S.U. States.

**Cyrtanthus.**—Ord. *Amaryllidaceæ*. Greenhouse bulbous plants. First introduced 1774. Flowers, fragrant.

**CULTURE:** Compost, two parts loam, one part sand & peat. Position, well-drained pots on shelf in light greenhouse. Pot bulbs in Oct. or Nov., 2 in. deep. Water freely March to Oct., very little other times. Temp., Nov. to April, 50° to 55°; April to Nov. 60° to 65°. Propagate by offsets in Nov.

**SPECIES CULTIVATED:** *C. carneus*, red, summer, 1 ft., S. Africa; *collinus*, red, Aug., 1 ft., S. Africa; *Mackenii*, white, Dec. to March, 1 ft., Natal; *sanguineus*, red, summer, 1 ft., S. Africa.

**Cyrtochilum.**—See *Oncidium*.

**Cyrtomium.**—See *Aspidium*.

**Cyrtopodium.**—Ord. Orchidacææ. Stove epiphytal orchids. First introduced 1804.

**CULTURE:** Compost, two parts rich fibrous loam & decayed manure. Position, large pots or pans, well drained, in plant stove. Pot, March or April. Water freely April to Aug., moderately Aug. to Nov., afterwards keep nearly dry. Temp., March to Sept. 70° to 80°; Sept. to March 60° to 70°. Growing period, March to Aug. Resting period, Aug. to March. Flowers appear with new growth. Propagate by division of pseudo-bulbs at potting time.

**SPECIES CULTIVATED:** *C. Aliceæ*, yellow and brown, autumn, Brazil; *Ander-soni*, yellow and green, spring, West Indies; *cardiochilum*, yellow and green, Dec. to March, India; *punctatum*, yellow, red, and purple, April and May, West Indies.

**Cystopteris** (Bladder Fern).—Ord. Filices. Hardy deciduous ferns.

**CULTURE:** Soil, rich, deep, sandy loam, freely mixed with pieces of limestone or dried mortar. Position, well-drained shady sheltered rockery. Plant, March or April. Water moderately in dry weather.

**POT CULTURE:** Compost, two parts good loam, one part leaf-soil mixed with old mortar or sand. Position, well drained in cold frame or cold greenhouse in shade. Repot, March or April. Water freely April to Sept., moderately Sept. to Nov., keeping nearly dry afterwards. Propagate by spores sown on surface of fine sandy soil in shallow boxes or pans, cover with sheet of glass, & place in cold frame at any time; division of plant in March or April.

**SPECIES CULTIVATED:** *C. alpina*, 4 to 6 in., Europe and Asia Minor; *bulbifera*, 6 to 12 in., N. America; *fragalis*, 6 to 8 in., and its varieties *angustata* and *dickeana*, Europe (Britain), etc.; *montana*, 6 to 8 in., Europe and N. America.

**Cytisus** (Broom).—Ord. Leguminosæ. Greenhouse & hardy deciduous evergreen flowering shrubs.

**CULTURE OF GREENHOUSE SPECIES:** Compost, two parts turfy loam, one part lumpy peat & sharp sand. Position, pots in greenhouse. Pot, May or June. Prune shoots to within 2 in. of base directly after flowering, & place plants in temp. 50° to 55° to make new growth before potting. Place plants in sunny position outdoors from end of July to Oct. to ripen growth. Water freely March to May, moderately during May & June, freely June to Nov., moderately afterwards. Apply weak liquid or artificial manure to plants during time they are in flower. Temp., Nov. to Feb. 45° to 50°; Feb. to May 50° to 55°; May to June 55° to 60°.

**CULTURE OF HARDY SPECIES:** Soil, ordinary. Position, sunny rockery for *C. Ardoini*; shrubbery borders for *C. albus*, *kewensis*, *C. purpureus*, *præcox*, *scoparius andreasus*, & choice kinds; rough banks, woodlands, etc., for *C. scoparius*. Plant Oct. to Dec. Prune directly after flowering, shortening old shoots to base of promising young ones. Transplant best when young. *C. præcox*, *C. purpureus*, & *C. andreasus*, make excellent pot plants for flowering early in cold greenhouse.

**PROPAGATE** greenhouse species by cuttings of young shoots 3 in. long, with small portions of branches attached, inserted in sandy soil in well-drained pots under bell-glass in temp. 75° to 80° in March, April, or May; seeds sown ½ in. deep in well-drained pots of light soil in temp. 65° to 70° in March; hardy species by seeds sown ½ in. deep outdoors in March or April; layers in Oct. or Nov.; grafting in March or

April. Seeds of Common Brown may be scattered broadcast on banks or in woodlands; & the choice kinds increased by cuttings in cold frame in Sept. This is the only way to rear brooms true to colour.

GREENHOUSE SPECIES: *C. filipes*, white, March, 4 to 6 ft., Canaries; *fragrans* (Syn. *C. racemosa*), yellow, summer, 2 to 3 ft., Canaries; *fragrans elegans*, yellow, 4 ft.; *fragrans everestianus*, rich yellow.

HARDY SPECIES: *C. albus* (White Spanish Broom), white, May, 6 to 8 ft., Spain; *albus incarnatus*, reddish; Ardoini, yellow, spring, 4 to 6 ft., Maritime Alps; *biflorus*, yellow, May, 3 ft., E. Europe; *kewensis*, creamy white, May, prostrate, hybrid; *nigricans*, yellow, June, 4 to 6 ft., Europe; *præcox*, creamy yellow, May, 4 to 6 ft., hybrid; *purpureus*, purple, May, prostrate, E. Europe; *scoparia* (Common Broom), yellow, April to July, 5 to 10 ft., Europe (Britain); *scoparius sulphureus*, sulphur yellow; *scoparius andreaus* (Syn. *Genista andreaus*), yellow and crimson, hybrid.

**Daboëcia** (Irish St. Dabeoc's Heath).—Ord. Ericaceæ. Evergreen flowering shrub.

CULTURE: Compost, sandy peat & loam. Position, sunny banks or rockeries. Plant, Sept., Oct., March, or April. Propagate by cuttings inserted in sandy soil in summer under hand-light; layers of shoots in autumn.

SPECIES CULTIVATED: *D. polifolia* (Syn. *Menziesia polifolia*), purple, July, 2 ft., Europe (Ireland); *polifolia alba*, white.

**Dactylis** (Cock's-foot Grass).—Ord. Gramineæ. Hardy orn. grass. Leaves, variegated with white.

CULTURE: Soil, ordinary. Position, margins of flower beds or borders in sun or shade, or mixed with bedding plants. Plant, Oct. or April, 3 to 6 in. apart. Propagate by division of plants in Oct. or April.

SPECIES CULTIVATED: *D. glomerata variegata*, leaves silvery, 6 to 8 in., Britain.

**Dæmonorops**.—Ord. Palmaceæ. Stove ornamental-leaved palms Useful for table decoration.

CULTURE: Compost, equal parts loam, peat, leaf-mould & sand. Position, pots in a young state; in beds or tubs with shoots trained up pillars when large. Pot or plant in March. Water freely in summer, moderately in winter. Syringe daily; moist atmosphere essential. Temp., March to Oct. 75° to 85°; Oct. to March 60° to 65°. Propagate by seeds sown in above compost in spring.

SPECIES CULTIVATED: *D. Draco*, Malaya; *grandis*, Malaya; *jenkinsianus*, India; *lewisianus*, Penang; *palembicus*, Sumatra.

**Daffodil**.—See *Narcissus*.

**Daffodil Garlic** (*Allium neapolitanum*).—See *Allium*.

**Daffodil Lily** (*Amaryllis belladonna*).—See *Amaryllis*.

**Dahlia**.—Ord. Compositæ. Half-hardy herbaceous tuberous-rooted perennials. Nat. Central America, Mexico. First introduced 1789. Types.—Show: Flower large, circular; florets, quilled; colour, all one tint. Fancy: Flower, large, circular; florets, quilled; colour, florets tipped, striped or flaked different tint to ground colour. Cactus: Flower, high in centre, circular; florets, long, narrow, pointed, not quilled or fluted, reflexed at edges. Pompon: Flower, small, circular, florets and colours like those of show and fancy types. Single: Flower, circular; florets, broad, flat, eight in number, overlapping each other, rounded, recurving at tips. Pæony-flowered: Flower, semi-double, outer florets, broad; inner ones, short and narrow. Tom Thumb: Habit, dwarf, 1 to 2 ft.; flowers, single. Decorative: Flower, semi-double; florets, flat.

OUTDOOR CULTURE: Soil, ordinary, well enriched with manure. Position, open sunny beds or borders. Plant tubers 3 in. deep in



April, or start them to grow in pots in temp. 55° in March, planting outdoors in May or June. Thin shoots to three on each plant in July; flower buds to one on each shoot in Aug. Apply liquid manure occasionally in July, Aug., & Sept. Lift & store tubers in frost-proof place in Oct., just covering them with soil or cocoanut-fibre refuse. Cut down stems to within 6 in. of tubers before lifting. Tubers may be left in the ground all the year round on dry soils, if surface is covered with a layer of cinder-ashes.

**CULTURE IN POTS:** Compost, two parts turfy loam, one part decayed manure. Place tubers in well-drained 6 in. pots in March, in temp. 55°. Water moderately & keep close to glass. Transfer to 8 in. pots in May. Stand plants outdoors in June. Apply liquid manure in July. Thin shoots to three on each plant; flower buds to one on each shoot in Aug. Withhold water after flowering & store away in frost-proof place. Propagate by seeds sown  $\frac{1}{2}$  in. deep in light soil in temp. 65° to 75° in March; cuttings of shoots 3 in. long issuing from tubers, inserted in 2 in. pots of sandy soil, in temp. 65° to 70° in Feb., March, or April; division of tubers in March or April; grafting shoots on tubers in autumn or spring.

**SPECIES CULTIVATED:** *D. coccinea*, scarlet, autumn, 4 ft. (parent of Single Dahlia); *gracilis*, orange-scarlet, autumn, 5 ft.; *imperialis*, white, lilac and red, Oct., 10 to 12 ft.; *Yuarezi* (parent of Cactus Dahlias), scarlet, autumn, 3 ft.; *Mercki*, lilac and yellow, Oct., 3 ft.; *variabilis* (parent of Show, Fancy, and Pompon Dahlias), scarlet, autumn, 4 ft.; *Zinnpani* (Black Dahlia), *Syn. Bidens atrosanguinea*, black and crimson, July, 3 ft., Mexico. Latter requires to be treated like ordinary species. For varieties see trade lists.

**Dahurian Bell-flower** (*Campanula dahurica*). — See *Campanula*.

**Dahurian Bindweed** (*Calystegia dahurica*).—See *Calystegia*.

**Daisy** (*Bellis perennis*).—See *Bellis*.

**Daisy-bush** (*Olearia Haastii*).—See *Olearia*.

**Dalechampia**.—Ord. Euphorbiaceæ. Stove flowering evergreen shrubs. First introduced 1867. Flowers, insignificant. Bracts, rich carmine, rose, fragrant; summer.

**CULTURE:** Compost, equal parts loam, peat, leaf-mould, & sand. Position, shady part of plant stove. Pot, March. Water moderately Sept. to April, freely afterwards. Temp., Sept. to March 55° to 65°; March to Sept. 70° to 80°. Propagate by cuttings inserted in sandy peat under bell-glass in March, April, or May, in temp. 85°.

**SPECIES CULTIVATED:** *D. roezliana*, 12 in., Mexico.

**Dalmatian Crocus** (*Crocus dalmaticus*).—See *Crocus*.

**Damask Rose** (*Rosa damascena*).—See *Rosa*.

**Dame's Rocket** (*Hesperis matronalis*).—See *Hesperis*.

**Dame's Violet** (*Hesperis matronalis*).—See *Hesperis*.

**Damson**.—See *Prunus*.

**Dandelion** (*Taraxacum officinalis*).—See *Taraxacum*.

**Danebrog Poppy** (*Papaver somniferum*).—See *Papaver*.

**Dane's-blood** (*Sambucus ebulus*).—See *Sambucus*.

**Daphne** (Garland flower; Spurge Laurel; Mezereon). — Ord. Thymelaceæ. Greenhouse & hardy evergreen flowering shrubs. Flowers, fragrant.

**CULTURE OF GREENHOUSE SPECIES:** Compost, two parts loam, one part peat & sand. Position, airy greenhouse from Sept. to June, outdoors June to Sept. Pot, Feb. Pinch out points of young shoots in June. Water moderately Sept. to April, freely afterwards. Temp., Sept. to March 40° to 50°; March to Sept. 55° to 65°. Propagate by

cuttings of side shoots inserted, in Oct. or Nov., in well-drained pots or pans of sandy peat under bell-glass in temp. 50° to 55°; layers in March or April; grafting on *D. laureola* & *D. pontica* in spring.

**CULTURE OF HARDY SPECIES:** Soil, sandy peat. Position, drooping over front of rockeries for trailing species; summit of rockery or open border for erect species. Plant, Oct., Nov., March, or April. Increased by layering shoots in autumn.

**GREENHOUSE SPECIES:** *D. odora*, purple, March, 2 to 3 ft., Japan.

**HARDY SPECIES:** *D. alpina*, white, May, 2 ft., S. Europe; *blagayana*, white, April, 10 in., Carniola; *eneorum* (Garland Flower), pink, April, 1 ft., S. Europe; *mezereum* (Mezereon), red or white, Feb., 3 ft., Europe (Britain); *Laureola* (Spurge Laurel), yellow, Jan., 3 ft., Europe (Britain); *pontica*, yellow, April, 4 ft., Orient.

**Darling River Pea** (*Swainsoniana coronilliflora*).—See *Swainsoniana*.

**Darlingtonia** (Californian Pitcher-plant).—Ord. Sarraceneaceæ. Hardy herbaceous orn. foliage plant. Insectivorous. First introduced 1861. Pitchers, borne on summit of leaves, hood-like, bright green, mottled with white & pink.

**GREENHOUSE CULTURE:** Compost, equal parts peat, chopped sphagnum, sharp sand, & small pieces of limestone. Position, under hand-light in shady greenhouse. Pot, Feb. or March. Water freely at all times. Syringe daily March to Sept. Ventilate hand-light daily.

**OUTDOOR CULTURE:** Compost, spongy fibrous peat & chopped sphagnum moss. Position, damp, by side of stream, or in bog exposed to sun, but sheltered from cold winds. Plant, March or April. Propagate by seeds sown on surface of mixture of fibrous peat, charcoal, sphagnum & sand in a pan stood partly in water & covered with a bell-glass in cool greenhouse in April or May; division of side shoots inserted in small pots at any time of year.

**SPECIES CULTIVATED:** *D. californica*, white, April, 12 in., California.

**Darwinia.**—Ord. Myrtaceæ. Greenhouse evergreen shrubs. First introduced 1820.

**CULTURE:** Compost, equal parts loam, peat, & sand. Position, well-drained pots in airy greenhouse. Pot firmly in Feb. or March. Water moderately Sept. to March, freely March to Sept. Prune, Feb. or March. Temp., Sept. to March 40° to 50°; March to Sept. 50° to 60°. Propagate by cuttings of young shoots 2 or 3 in. long, inserted in sardy peat under bell-glass in temp. 40° to 50° in April or May.

**SPECIES CULTIVATED:** *D. fimbriata*, rose, June, 5 ft., Australia; *macrostegia* (Syn. *Genetyllis tulipifera*), crimson, May, 3 ft., Australia.

**Darwin's Barberry** (*Berberis Darwinii*).—See *Berberis*.

**Dasyliiron.**—Ord. Liliaceæ. Greenhouse evergreen plants. Orn. foliage. First introduced 1835. Leaves, glaucous green, with spiny margins.

**CULTURE:** Compost, two parts loam & peat, one sand. Position, pots or tubs in airy greenhouse, dwelling-rooms, or outdoors in beds May to Sept. Pot firmly Feb. or March. Water very little Oct. to March, freely afterwards. Temp., Sept. to March 40° to 50°; March to Sept. 50° to 60°. Propagate by seeds sown in sandy peat in well drained pans or pots under bell-glass in temp. 50° to 60° in March, April, or May.

**SPECIES CULTIVATED:** *D. acrotrichum*, 6 to 8 ft., Mexico; *glaucophyllum*, 10 ft., Mexico; *Hookeri*, 3 ft., Mexico.

**Date Palm** (*Phoenix dactylifera*).—See *Phoenix*.

**Date-Plum** (*Diospyros virginica*).—See *Diospyros*.

**Datisca** (False Hemp). — Ord. Datisceæ. Hardy herbaceous perennial. Orn. foliage. First introduced 1739. Male & female flowers borne on separate plants. Leaves, pinnate, green.

**CULTURE:** Soil, deep rich, ordinary. Position, open & sunny border. Plant, Oct., Nov., March, & April. Female plant most effective. Propagate by seeds sown 1-16 in. deep in fine soil outdoors in March, April, or May, transplanting seedlings to permanent positions any time.

**SPECIES CULTIVATED:** *D. cannabina*, greenish white, summer, 3 to 6 ft., W. Asia.

**Datura** (Thorn Apple; Trumpet Flower).—Ord. Solanaceæ. Half-hardy & greenhouse annuals, shrubs, & trees.

**CULTURE OF ANNUAL SPECIES:** Soil, light sandy. Position, sunny borders outdoors. Plant, May. Propagate annuals by seed sown  $\frac{1}{2}$  in. deep in light sandy soil in well-drained pots in temp. 55° to 65° in March or April, & transfer the seedlings to small pots until planting time.

**CULTURE OF SHRUBBY SPECIES:** Compost, equal parts loam, fibrous peat, well decomposed manure, & silver sand. Position, pots, tubs, or borders well drained in sunny greenhouse. Pot or plant, March. Prune freely Sept. or Oct. Water very little Oct. to March, freely afterwards. Temp., Sept. to March 45° to 55°, March to Sept. 55° to 65°. Place plants outdoors in sunny position June to Sept. Apply liquid manure occasionally whilst plants are in flower. Propagate shrubby species by cuttings of shoots 6 in. long inserted in sandy soil under bell-glass in temp. 65° to 75° in spring or autumn.

**ANNUAL SPECIES:** *D. ceratocaula*, white, July, 3 ft., Trop. America; *fastuosa*, blue and white, summer, 2 ft., Tropics; *fastuosa flore-pleno*, double white; *fastuosa rubra*, red; stramonium (Thorn Apple), white, July, 2 ft., Britain, etc.

**SHRUBBY SPECIES.**—*D. arborea*, white, Aug. 7 to 10 ft., Pern; *cornigera* (Horn of Plenty), creamy white, summer, 10 ft., Organ Mountains; *metæloides* (Syn. *D. Wrightii*), bluish violet, summer, 2 ft., California; *sanguinea* (Syn. *Brugmansia Sanguinea*), orange yellow, summer, 4 to 6 ft., Peru; *suavolens*, white, fragrant, Aug., 8 to 10 ft., Mexico.

**Daucus** (Carrot).—Ord. Umbelliferæ. Hardy biennial. A well-known edible rooted vegetable. Reputed to be first introduced into England by the Flemings in time of Queen Bess. Types.—Short-horn: Roots, short, conical. Stump-rooted: Roots, medium, blunt at ends. Intermediate: Root, spindle-shaped, midway in length between a Short-horn and Long-rooted carrot. Long-rooted: Roots, long and tapering.

**CULTURE:** Soil, deep, rich, & sandy, well manured for previous crop. Position, open spot for main crops, south border for early ones. Time to sow Short-horn varieties, Feb. & Aug.; others in March or April. Thin seedlings to 6 in. & 9 in. apart when 2 inches high. Lift & store roots in frost-proof place in Oct. & Nov. Artificial manures: Kainit,  $\frac{3}{4}$  lb., sulphate of ammonia, 1 lb., guano, 2 $\frac{1}{2}$  lb.; apply this quantity to each square rod at time of sowing. Seeds germinate in 12 to 18 days; retain germinating powers for 4 years. Crop matures in 20 to 24 weeks from date of sowing.

**FORCING ON HOTBEDS:** Sow seeds thinly on bed of light rich soil over a hotbed of manure covered by a frame in Jan. or Feb. Water moderately, ventilate by day when temp. reaches 75°. Thin seedlings to 3 in. apart, when an inch high. Short-horn varieties best for this purpose.

**MARKET GARDEN CULTURE:** Soil, light. Manure previous

autumn, ploughing in 15 tons of rotten dung and 3 cwt. of kaimit per acre. Before sowing apply 5 cwt. superphosphate per acre, &  $\frac{1}{2}$  cwt. nitrate of soda per acre a month after sowing. Sow Horn varieties in March, others in April & May. Thin Horn varieties to 6 in. & others to 9 in. apart. Market in bunches of fifteen to thirty carrots, according to size; late crops in bags or bushel baskets. Roots best washed. Quantity of seed to sow an acre, 8 lb.; row of 50 ft., 1 oz. Average yield per acre, 600 bunches or 500 bushels. Longevity of seed, 4 to 5 years. Cost of thinning per acre, 5s.; digging, washing, & bunching, 7s. per doz. bunches; lifting & harvesting, 22s. to 26s. Germination of seed, 12 to 18 days. Carrots arrive at maturity 24 weeks after sowing the seed. Average prices of carrots per doz. bunches, 2s. 6d. to 5s.; per bag or sack, 4s. to 5s.

SPECIES: *D. carota*, white, summer, Europe (Britain).

**Davallia** (Hare's-foot Fern; Bear's-foot Fern; Squirrel's-foot Fern).—Ord. Filices. Stove & greenhouse evergreen ferns. The rhizomes of *D. bullata* are extensively used for training round various fancy objects, as boats, monkeys, etc., also balls of peat & moss. First introduced 1699.

CULTURE OF STOVE SPECIES: Compost, two parts loam, one part leaf-mould, peat, pounded charcoal, & sand. Pot, Feb., March, or April. Position, pots or hanging baskets in light part of plant stove. Water moderately Oct. to Feb., freely afterwards. Temp., Sept. to March 55° to 60°; March to Sept. 65° to 75°.

CULTURE OF GREENHOUSE SPECIES: Compost, same as for stove species. Pot, March or April. Position, pots or baskets in partial shade. Water moderately Sept. to March, freely afterwards. Temp., Sept. to March 40° to 50°; March to Sept. 50° to 60°. Propagate by spores sown on surface of sandy peat in pans under bell-glass in temp. 55° to 75° at any time; division of rhizomes in Feb. or March.

STOVE SPECIES: *D. aculeata*, habit climbing, 6 ft., W. Indies; *affinis*, habit creeping, 9 to 12 ins., Ceylon, Java, etc.; *alpina*, habit trailing, dwarf, 6 in., Java, Borneo, etc.; *dissecta*, habit dwarf, Java; *divaricata*, habit robust, creeping, N. India; *elegans*, habit very vigorous, Ceylon, Java, etc.; *fijiensis*, habit free, evergreen, Fiji; *heterophylla*, habit dwarf, creeping, Malay Peninsula; *hirta cristata* (Syn. *Microlepia hirta cristata*), habit spreading, S. Sea Islands; *pallida*, habit robust (Syn. *D. mooreana*), Borneo; *tenuifolia veitchiana*, habit drooping, Malaya.

GREENHOUSE SPECIES: *D. bullata* (Squirrel's-foot Fern), habit, dwarf and creeping, Japan; *canariensis* (Hare's-foot Fern), habit robust, Canaries; *Mariesii*, habit dwarf, deciduous, Japan; *Novæ-Zelandiæ* (Syn. *Aerophorus hispida*), habit, slender creeping, New Zealand; *Tyermanni* (Bear's-foot Fern), habit, creeping, West Africa.

**David's Clematis** (*Clematis davidiana*).—See Clematis.

**David's Harp** (*Polygonatum multiflorum*).—See Polygonatum.

**David's-root** (*Celastrus scandens*).—See Celastrus.

**Daviesia** (Australian Hop).—Ord. Leguminosæ. Greenhouse evergreen flowering shrubs. First introduced 1805.

CULTURE: Compost, equal parts loam, peat, & silver sand. Position, well-drained pots in airy greenhouse. Pot firmly March or April. Water very little Oct. to March, moderately other times. Temp., Sept. to March 40° to 50°; March to Sept. 50° to 60°. Propagate by cuttings of firm young shoots inserted in sand under bell-glass in temp. 50° to 55° in spring; seeds sown 1-16 in. deep in sandy peat in temp. 55° in March.

SPECIES CULTIVATED: *D. alta*, yellow, summer, 3 ft., Australia; *cordata*, yellow, summer, 3 ft., Australia; *ulicina*, yellow, summer, 2 ft., Australia.

**Day-flower** (*Commelina cœlestis*).—See Commelina.

**Day-lily.**—See *Hemerocallis*.

**Dead-Nettle** (*Lamium maculatum*).—See *Lamium*.

**Deciduous Cypress** (*Taxodium distichum*).—See *Taxodium*.

**Decumaria.**—Ord. Saxifragaceæ. Hardy deciduous flowering twiner. First introduced 1785. Flowers, fragrant.

**CULTURE:** Soil, light, rich. Position, against south or west walls, arbours or trellis work. Plant, Oct., Nov., or Dec. Prune away weak & head shoots in Feb. Propagate by cuttings of shoots inserted in ordinary soil under hand-light in shady position outdoors in summer.

**SPECIES CULTIVATED:** *D. barbara*, white, June, 10 to 20 ft., United States.

**Deer Berry** (*Mitchella repens*).—See *Mitchella*.

**Deer Fern** (*Lomaria Spicant*).—See *Lomaria*.

**Deer Grass** (*Rhexia virginica*).—See *Rhexia*.

**Delphinium** (Larkspur).—Ord. Ranunculaceæ. Hardy annuals & herbaceous perennials. Showy plants for border culture.

**CULTURE OF ANNUAL SPECIES:** Soil, ordinary, rich. Position, open beds or borders. Sow seeds  $\frac{1}{2}$  in. deep where plants are to flower in April, or in light soil in shallow boxes in temp. 55° in April, transplanting seedlings in May.

**CULTURE OF PERENNIAL SPECIES:** Soil, deep, rich. Position, sunny beds or borders. Plant 3 ft. apart in Oct., Nov., March, or April. Cut down flower stems in Aug. or Sept. Feed liberally with liquid manures in summer, and mulch with decayed manure in early spring. Lift & replant every three years in Oct. or March. Propagate by seeds sown  $\frac{1}{2}$  in. deep outdoors in April, or in pans or boxes of light soil in temp. 55° in April; cuttings of young shoots, 3 in. long, inserted in 2 in. pots of sandy soil in cold frame in Sept. or March; division of roots in Oct. or March.

**ANNUAL SPECIES:** *D. Ajacis* (Rocket Larkspur), blue, summer, 12 to 18 in., Europe; *Consolida*, blue, summer, 2 ft., Europe; *cardinale*, scarlet, Aug., 3 ft., California. Many beautiful strains of annual kinds to be found in trade lists.

**PERENNIAL SPECIES:** *D. cashmirianum*, blue, July, 18 in., Kashmir; *formosum*, azure blue, summer, 2 to 8 ft., Armenia; *grandiflorum*, blue or white, June to Sept., 3 ft., Siberia; *nudicaule*, red, Aug., 12 to 18 in., California; *Zalil*, yellow, summer, 6 ft., Syria. Latter best grown as a biennial. See trade lists for varieties.

**Dendrobium** (Mouse-tail Orchid).—Ord. Orchidaceæ. Stove epiphytal evergreen & deciduous orchids. First introduced 1801.

**CULTURE:** Compost, equal parts peat, living sphagnum moss, & charcoal. Position, erect species in well-drained pots; drooping species in baskets & on blocks or rafts of wood. Place in pots, etc., Feb. or March. Water freely April to Sept., very little afterwards. Apply weak liquid manure occasionally during growing season. Temp., March to Sept. 75° to 85°; Sept. to Feb. 60° to 65°; Feb. to March 65° to 75°. Growing period, March to Aug. Resting period, Oct. to Feb. Flowers appear before or after resting on old or new pseudo-bulbs. Propagate by offsets or cuttings of pseudo-bulbs inserted in well-drained pots of peat & sphagnum moss under bell-glass, in temp. 85 to 95° at any time.

**SPECIES CULTIVATED:** *D. aduncum*, white and pink, spring, 2 ft., Himalayas; *aggregatum*, golden-yellow, March, 1 ft., N. India; *aggregatum majus*, large-flowered; *albo-sanguineum*, creamy white and crimson, May, 1 ft., Moulmein; *amcnum*, white, magenta, fragrant, June, 1 ft., E. Indies; *Aphrodite*, white, orange and red, spring, 1 ft., Moulmein; *atro-violaceum*, creamy white and purple, spring, New Guinea; *aureum*, yellow and crimson, fragrant, spring, 18 in., India; *barbatulum*, white, March, 1 ft., India; *Bensonia*, creamy white, orange and purple, May, 2 ft., Moulmein; *bigibbum*, purple, autumn, 18 in., N. Australia; *Boxallii*, white, crimson and orange, Feb., 2 to 3 ft., Moulmein; *brymerianum*,

yellow and orange, fragrant, spring, 18 in., Burma; canaliculatum, yellow and mauve, fragrant, spring, 1 ft., N.E. Australia; chrysanthum, yellow and purple, winter, 4 to 6 ft., Nepal; chrysotoxum, yellow and orange, March, 1 ft., Moulmein; crassinode, magenta-purple and white, Jan. and Feb., 2 ft., Siam; Dearei, white, summer, 3 ft., Philippines; densiflorum, yellow and orange, spring, 18 in., India; devonianum, cream, purple and orange, spring, 3 ft., India; Falconeri, white, purple and orange, May and June, 3 ft., N. India; Farmeri, white, pink, and yellow, April and May, 18 in., India; fimbriatum oculatum, orange-yellow and red, March and April, 4 ft., India; fndlayanum, white, pink, and yellow, Jan. and Feb., 18 in., Moulmein; formosum giganteum, white and yellow, May, 18 in., Moulmein; infundibulum, white and yellow, summer, 2 ft., Moulmein; jamesianum, white and red, May, 18 in., Moulmein; nobile, white, rosy purple and crimson, winter, 2 ft., India; Parishii, rose and purple, spring, 12 to 18 in., Moulmein; Phalsenopsis, autumn, 12 to 18 in., N. Australia; Pierardia, blush, white, and purple, winter, 18 in., India; primulinum, rosy lilac and yellow, winter, 12 to 18 in., Burma; pulchellum (Syn. D. dalhousianum), yellow, rose, and crimson, spring, 4 to 5 ft., Burma; speciosum, creamy yellow and purple, spring, 12 in., Australia; superbiens, magenta rose and purple, spring, 3 to 4 ft., Philippines; thyrsiflorum, white, pink, and orange, spring, 2 ft., Burma; wardianum, white, purple and yellow, winter, 2 ft., Assam.

HYBRIDS CULTIVATED: Ainsworthii, white and crimson purple, spring; Curtisii, white, purple, and yellow, fragrant, May; dominianum, rosy purple and white, spring; nobile-wardianum, white, rose, purple and yellow, winter, and many others to be found in lists.

**Dendrochilum.**—See *Platyclinis*.

**Deodar** (*Cedrus Deodara*).—See *Cedrus*.

**Deptford Pink** (*Dianthus armeria*).—See *Dianthus*.

**Desert Rod** (*Eremostachys laciniata*).—See *Eremostachys*.

**Desfontania.**—Ord. *Loganiacæ*. Hardy evergreen flowering shrub. First introduced 1853. Leaves, oval, dark shiny green, with spiny margins.

**OUTDOOR CULTURE:** Compost, equal parts peat & loam. Position, sheltered borders outdoors, or against south wall. Plant, Oct., Nov., or April.

**GREENHOUSE CULTURE:** Compost, equal parts peat, loam, charcoal, & sand. Position, well-drained pots, tubs, or borders. Pot or plant, March or April. Water moderately Oct. to March, freely afterwards. Propagate by cuttings inserted in sandy peat & loam in well-drained pots under bell-glass or hand-light in temp. 55° to 65° in spring.

**SPECIES CULTIVATED:** *D. spinosa*, scarlet and yellow, Aug., 2 to 4 ft., Chili.

**Desmodium** (Tick Trefoil; Telegraph Plant).—Ord. *Leguminosæ*. Hardy & stove flowering shrubs. Leaves of stove species (*D. gyrans*) pinnate; leaflets move rapidly up and down, especially during sunshine.

**CULTURE OF STOVE SPECIES:** Compost, equal parts peat, loam, & silver sand. Position, pots in plant stove. Pot, Feb. or March. Water moderately Oct. to Feb., freely afterwards. Temp., Sept. to March 55° to 65°; March to Sept. 65° to 75°.

**CULTURE OF HARDY SPECIES:** Soil, ordinary. Position, open sunny borders. Plant, Oct. or Nov. Propagate stove species by seeds sown in light sandy soil in temp. 75° to 80° in Feb. or March, or by cuttings inserted in sandy peat under bell-glass in temp. 75° to 80° in March or April; hardy species by division of plants in autumn.

**STOVE SPECIES:** *D. gyrans* (Telegraph Plant), violet, July, 2 to 3 ft., India.

**HARDY SPECIES:** *D. canadense* (Tick Trefoil), purple, July, 3 ft., N. America.

**Deutzia** (Japanese Snow-flower).—Ord. *Saxifragacæ*. Hardy deciduous flowering shrubs.

**OUTDOOR CULTURE:** Soil, ordinary. Position, sunny, well-

drained border. Plant, Oct. to Feb. Prune, June, shortening shoots that have flowered only.

**POT CULTURE OF D. GRACILIS:** Compost, two parts loam, one part decayed manure & sand. Pot, Oct. or Nov. Position, cold frame Nov. to Feb.; greenhouse Feb. to May; outdoors afterwards. Water very little Oct. to Feb., moderately Feb. to April, freely April to Oct. Temp., Feb. to May 55° to 65°. Plants will flower in cold greenhouse without heat if desired. Plant out deutzias that have flowered in heat in open garden for a year, then lift & repot, to flower again. Propagate by cuttings of young shoots, 3 in. long, inserted in sandy soil under bell-glass in cold frame in June or July, also of firm shoots, 10 to 12 in. long, inserted in ordinary soil outdoors in Nov., Dec., or Jan.

**SPECIES CULTIVATED:** *D. crenata*, white, June, 6 ft., Japan; *crenata flore-pleno extus purpurea*, white and rose; *gracilis*, white, April, 2 ft., Japan; *gracilis folius aureis*, leaves variegated with yellow; *Lemoinei*, white, May, 2 ft., hybrid; *soabra*, white, June, 6 ft., Japan.

**Devil-in-a-Bush** (*Nigella damascena*).—See *Nigella*.

**Devonshire Myrtle** (*Myrica Gale*).—See *Myrica*.

**Devonshire Oak** (*Quercus Cerris* var. *Lucombeana*).—See *Quercus*.

**Dew Berry** (*Ribes cæsius*).—See *Ribes*.

**Dianella** (Flax Lily; Paroo Lily).—Ord. Liliaceæ. Half-hardy fibrous-rooted perennials. Orn. foliage & fruiting plants. First introduced 1731.

**OUTDOOR CULTURE:** Compost, equal parts loam & peat. Position, sheltered borders; S. of England only. Plant, Oct., March, or April.

**GREENHOUSE CULTURE:** Compost, equal parts peat, loam, leaf-mould, & sand. Position, well-drained pots in unheated greenhouse. Pot, Feb., March, or April. Water moderately Sept. to March, freely afterwards. Propagate by seeds sown 1-16 in. deep in light soil in temp. 55° to 65° in spring; division of fibrous roots Oct. or March.

**SPECIES CULTIVATED:** *D. cærulea*, blue, May, 2 ft., Australia; *lævis*, blue, spring, 2 ft., Australia.

**Dianthus** (Carnation; Pink; Picotee; Sweet William; Tree, Perpetual, American Carnation; Malmaison Carnation; Indian and Chinese Pink).—Ord. Caryophyllaceæ. Hardy perennials and biennials.

**TYPES.**—Florists' Carnation: Flowers perfectly round. Bizarres: Ground colour one shade, marked or striped with another colour. Flakes: Ground colour of one shade, flaked with other colours. Sels: One shade of colour only. Picotee: Ground colour of one tint, edged or margined with another. Border Carnation: Self-coloured, striped or flaked, laced or fringed, free flowering, some clove-scented, & robust growers. Margaret or Marguerite Carnation: A race of hybrid carnations with fringed, fragrant flowers of all shades of colour. Jacks: A race of coarse-growing, mostly single-flowered kinds, grown largely for sale by costers. Pinks: Show or Laced, petals finely-fringed, broad ends white with a velvet eye, or a velvet eye with laced velvet edges, & a white centre. Sweet Williams: Show type, smooth edged petals with dark centres; Auricula-eyed, smooth-edged petals, white eye, surrounded with crimson or other tints. Tree, Perpetual, or American Carnation: Habit, tall; flowers, self, striped or flaked, appearing all the year round. Malmaison: Habit, sturdy; flowers large, self-coloured.

**CULTURE OF CARNATIONS AND PICOTEEES:** Soil, three parts decayed turfy loam, one part of equal proportions of well-decayed cow manure & river sand for exhibition kinds; good, well-drained, rich, ordinary soil for border kinds. Position, sunny beds or borders. Plant 12 in. apart in Oct. or March. Top-dress with decayed manure in April. Thin flower buds to one on each shoot in June, & place india-rubber band round calyx of flower to prevent bursting early in July. Stake flower stems in May. Apply liquid manure once a week when buds form. Suitable artificial manure: Sulphate of ammonia,  $\frac{1}{2}$  oz., & kainit,  $\frac{1}{2}$  oz. to 2 gallons of water. Shade exhibition blooms from hot sun.

**POT CULTURE:** Compost, as advised for exhibition culture. Position, cold frame, Oct. to Feb., cold greenhouse afterwards. Grow singly in 3-inch pots from Oct. till March, freely afterwards. Apply 8 in. pot. Water moderately Oct. to March, freely afterwards. Apply liquid manure once a week from April to July. Thin buds and place rings round calyces, as above advised. Give plenty of air.

**CULTURE OF TREE OR PERPETUAL CARNATIONS:** Insert cuttings, i.e., points of shoots, 3 in. long, pulled out, & with few lower leaves removed, in well-drained pots of pure sand between Nov. & March. Place in a box or propagator, keep moist, & shaded from sun till rooted. No artificial heat required. When rooted, plant cuttings singly in small pots in compost of two parts sandy loam & one part equal proportions of leaf-mould & sand. Stand potted plants in temp.  $45^{\circ}$  to  $55^{\circ}$  till pots are filled with roots, then repot into larger pots in compost of two-thirds loam, & one part equal proportions old manure, wood ashes, & sand, & handful of bone-meal to each peck of soil. Stop or pinch shoots at the third or fourth joint after first potting; again at intervals when shoots are a few inches long, ceasing to do so in Sept. Feed with liquid manures when well rooted. Stand outdoors May to Sept., then house. Winter temp.  $45^{\circ}$  to  $55^{\circ}$ . Ventilate freely in fine weather. Syringe daily during spring & summer. May also be grown outdoors like border carnations.

**CULTURE OF MALMAISON CARNATIONS:** Propagate by layering shoots in July. Plant rooted layers in small pots in Aug. or Sept. Place in cold frame or greenhouse, and transfer to five or six-inch pot in Oct. Water moderately during winter. Temp.,  $36^{\circ}$  to  $46^{\circ}$ . Feed with liquid manure when buds form. Shade in spring from sun. Admit air freely on fine days.

**CULTURE OF PINKS:** Soil, ordinary rich. Position, sunny borders. Plant 9 in. apart in autumn or spring. Thin shoots to four on each plant to ensure fine blooms. Feed with liquid manure in May and June.

**CULTURE OF SWEET WILLIAMS:** Soil, ordinary, rich. Position, sunny beds or borders. Plant 12 in. apart each way in autumn.

**CULTURE OF BIENNIAL SPECIES:** Sow seeds in gentle heat in spring, harden off seedlings in cold frame, & plant out in beds & borders in May to flower same season; or, sow in open border in April, plant out in July to flower following year.

**CULTURE OF PERENNIAL SPECIES:** Soil, sandy loam. Position, sunny rockeries. Plant, Oct. or March.

PROPAGATE carnations, pinks & picotees by seeds sown in sandy soil in heat or in cold frames in spring; by cuttings or pipings in cold frames in summer; layering in July or Aug. Sweet Williams by seeds



sown outdoors in April or July; cuttings in cold frames in summer; layering in July. Pinks and the species generally by cuttings, seeds, & layering.

**BIENNIAL SPECIES:** *D. chinensis* (Chinese or Indian Pink), various colours, 6 to 12 in., Central Asia.

**PERENNIAL SPECIES:** *D. alpinus*, rose, crimson, summer, 3 to 4 in., Alps; *arenarius*, white, purple, summer, 6 in., N. Europe; *atrorubens*, red, summer, 1 ft., S. Europe; *barbatus* (Sweet William), various colours, 1 to 2 ft., S. Europe; *cæsius* (Cheddar Pink), rose, fragrant, July, 3 to 6 in., Britain; *Caryophyllus* (Carnation, Clove), various, 18 to 24 in., Europe; *deltoides* (Maiden Pink), rose and white, summer, 6 to 9 in., Britain; *cruentus*, scarlet, summer, 18 in., E. Europe; *glacialis* (Glacier Pink), purple, summer, 4 in., S. Europe; *neglectus*, rose, summer, 2 in., Pyrenees; *petræus*, rose, summer, 6 in., E. Europe; *plumosus* (Pink), various, 12 in., E. Europe; *Superbus* (Fringed Pink), rose, summer, 9 to 18 in., Europe.

**HYBRID PINK:** *D. Semperflorens*, a new race of pinks, the result of a cross between the Carnation and the Chinese Pink. Very free flowering, beautiful in colour and fragrant.

**Diapensia.**—Ord. Diapensiaceæ. Hardy dwarf evergreen alpine shrub. First introduced 1801.

**CULTURE:** Soil, deep sandy peat mixed with stones. Position, exposed on sunny rockery. Water freely June, July & Aug. Plant, March or April. Propagate by division of plants in March or April.

**SPECIES CULTIVATED:** *D. lapponica*, white, July, 3 in., Northern Regions.

**Diascia.**—Ord. Scrophulariaceæ. Half-hardy annual. First introduced 1871.

**INDOOR CULTURE:** Compost, two parts sandy loam & one part leaf-mould & sand. Sow seeds in a temp. of 60° in March or April. Transplant seedlings when the third leaf forms, four or five in a 4½ in. pot. Grow on shelf near the glass. Water freely when flower buds form. Give weak liquid manure occasionally. Shoots may require to be supported by twiggy sticks.

**OUTDOOR CULTURE:** Sow seeds in temp. of 60° in March or April. Transplant in pots or boxes when large enough to handle. Gradually harden off in cold frame, & plant out in good ordinary soil in sunny position at the end of May.

**SPECIES CULTIVATED:** *D. Barberæ*, rosy pink, summer, 1 ft., S. Africa.

**Dicentra** (Bleeding Heart; Lyre Flower; Dutchman's Breeches).—Ord. Fumariaceæ. Hardy herbaceous tuberous & fibrous-rooted perennials. First introduced 1731.

**CULTURE:** Soil, deep light rich sandy. Position, warm sheltered borders; dwarf species on rockeries. Plant, Oct., Nov., March, or April. Protect during winter by covering with layers of ashes or manure. Top-dress with decayed manure in March.

**POT CULTURE OF D. SPECTABILIS:** Compost, equal parts loam, leaf-mould & sand. Pot, Oct. or Nov. Position, cold frame Oct. to Feb.; greenhouse Feb. to May; afterwards planting out in borders. Water moderately when new growth begins, freely when in full growth. Apply liquid manure once or twice weekly when flower buds appear.

**FORCING D. SPECTABILIS:** Pot, Oct. Place in cold frame till Jan. Transfer to temp. 55° to 65° in Jan. After forcing, plant out in open border. Plants should only be forced in pots one year. Propagate by dividing the crowns in Feb., March, or April; cuttings of fleshy roots 2 in. long inserted in sandy soil in temp. 55° in March or April.

**SPECIES CULTIVATED:** *D. canadensis* (Bleeding Heart), white, May, 6 in., N. America; *chrysantha*, yellow, Aug. and Sept., 3 to 5 ft., California; *Cucullaria* (Dutchman's Breeches), white and yellow, spring, 6 in., United States; *eximia*, reddish purple, April to Sept., 12 in., N. Carolina; *formosa*, red, May, 6 in., N.

America; spectabilis (Syn. *Dielytra spectabilis*), the Chinaman's Breeches, rosy crimson, spring and summer, 2 ft., Siberia and Japan.

**Dichæa.**—Ord. Orchidacæ. Stove epiphytal orchid. First introduced 1870.

**CULTURE:** Compost, fresh sphagnum moss. Position, blocks of wood suspended from roof of stove. Water daily. Temp., March to Aug. 65° to 85°; Aug. to March 50° to 60°. Propagate by division of plants in Feb. or March.

**SPECIES CULTIVATED:** *D. picta*, green and purple, winter, Trinidad.

**Dichorisandra.**—Ord. Commelinacæ. Stove ornamental-leaved and flowering perennials.

**CULTURE:** Compost, one-third each of peat, loam & leaf-mould & a little silver sand. Position, pots in shady part of stove. Pot in March. Water freely March to Oct., moderately afterwards. Syringe daily in spring and summer. Temp., March to Oct. 75° to 85°; Oct. to March 55° to 65°. Propagate by seeds in spring; division in March.

**SPECIES CULTIVATED:** *D. mosaica*, leaves green marked with white, 2 ft., Peru; *pubescens teniensis*, leaves striped with white, 2 ft., Brazil; *thyrsiflora*, blue, autumn, 5 to 10 ft., Brazil.

**Dicksonia** (Tasmanian Tree Fern; New Zealand Tree Fern; Hay-scented Tree Fern).—Ord. Filices. Stove & greenhouse tree ferns. First introduced 1786.

**CULTURE:** Compost, two-thirds peat & loam, & abundance of sand. Position, large pots or tubs well drained in shady stove, greenhouse or conservatory. Repot, Feb., March. Water moderately Oct. to March, freely afterwards. Syringe trunks daily March to Sept. Temp., Sept. to March 55° to 65° for stove, 45° to 55° for greenhouse; March to Sept. 65° to 75° for stove, 55° to 65° for greenhouse. Shade in summer essential. Propagate by spores sown at any time on surface of finely sifted loam & peat in well-drained pots covered with a sheet of glass, & kept moist.

**STOVE SPECIES:** *D. Schiedeii*, 10 to 15 ft., Guatemala and Mexico; *sellowiana*, 10 ft., Brazil; *Lathamii*, 10 to 15 ft., hybrid.

**GREENHOUSE SPECIES:** *D. antarctica* (Tasmanian Tree Fern), 18 to 20 ft., Tasmania; *Culcita* (Cushion Fern), dwarf, Madeira; *squarrosa* (New Zealand Tree Fern), 15 to 20 ft., New Zealand.

**Dictamnus** (Burning Bush; Dittany; Fraxinella; Gas plant).—Ord. Rutacæ. Hardy herbaceous perennial. First introduced 1596. Foliage, fragrant.

**CULTURE:** Soil, ordinary, dryish. Position, sunny or partially shady borders. Plant, Oct., Nov., March or April. Propagate by seeds sown  $\frac{1}{2}$  in. deep in light soil outdoors in Aug. or Sept.; cuttings of fleshy roots inserted 2 in. deep outdoors in March or April; division of roots in Oct., Nov. or March.

**SPECIES CULTIVATED:** *D. albus* (Syn *D. Fraxinella*), white, May, 3 ft., Europe; *albus purpureus*, purplish, May, 3 ft.

**Dictyosperma.**—Ord. Palmacæ. Stove Palms. Orn. foliage. First introduced 1842. Leaves, pinnate.

**CULTURE:** Compost, equal parts loam, leaf-mould & sand. Position, pots in shady moist plant stove. Pot, Feb. or March. Water freely at all times. Temp., March to Sept. 70° to 85°; Sept. to March 60° to 65°. Propagate by seeds sown 1 in. deep in pots of sandy peat in temp. 85° in Feb., March, or April.

**SPECIES CULTIVATED:** *D. album*, 15 to 20 ft., Mauritius; *aureum*, 10 ft., Mauritius; *fibrosum*, 5 ft., Madagascar.

**Didymocarpus.**—Ord. Gesneracæ. Stove perennial herbs. First introduced 1845.

**CULTURE:** Compost, equal parts peat & loam, one-fourth part cow dung & sand. Position, well-drained pots in moist plant stove. Pot, Feb., March, or April. Water moderately Oct. to Feb., freely afterwards. Temp., Sept. to March 55° to 65°; March to Sept. 65° to 75°. Propagate by cuttings of young side shoots inserted in sandy soil under bell-glass in temp. 80° to 85° in March or April.

**SPECIES CULTIVATED:** *D. humboldtiana*, lilac, autumn, 3 to 4 in., Ceylon; *malayana*, yellow, summer, 4 to 6 in., Malaya.

**Didymochlaena.**—Ord. Filices. Stove fern. First introduced 1838.

**CULTURE:** Compost, two parts loam, one part, pounded charcoal & sand. Pot, Feb. or March. Position, well-drained pots in shady part of greenhouse. Water moderately Oct. to Feb., freely afterwards. Temp., Sept. to March 60° to 70°; March to Sept. 70° to 80°. Propagate by spores sown on surface of sandy peat under bell-glass in temp. 70° to 80° at any time

**SPECIES CULTIVATED:** *D. lunulata*, tree-like habit, Tropics.

**Dieffenbachia** (Dumb Cane).—Ord. Aroideæ. Stove evergreen perennials. Orn. foliage. First introduced 1863. Leaves, broad, deep green, variegated with white or yellow.

**CULTURE:** Compost, equal parts peat & loam, one-fourth part decayed manure & silver sand. Position, well-drained pots in moist plant stove. Pot, Feb. or March. Water moderately Sept. to Feb., freely afterwards. Syringe daily, June, July & Aug. Shade in summer essential. Temp., Sept. to Feb. 55° to 65°; Feb. to Sept. 65° to 85°. Propagate by cuttings of stems 1 to 2 in. long inserted in sandy soil under bell-glass in temp. 75° to 85° in spring.

**SPECIES CULTIVATED:** *D. Carderi*, leaves variegated, Colombia; *Chelsoni*, leaves, green and yellow, Colombia; *Leopoldii*, leaves, green and white, S. America; *magnifica*, leaves, green and white, Venezuela; *nobilis*, leaves, green and white, Brazil; *Regina*, leaves, white and green, S. America; *Rex*, leaves, white and green, S. America; *picta*, green and white, Brazil.

**Dielytra.**—See *Dicentra*.

**Diervilla** (Bush Honeysuckle).—Ord. Caprifoliaceæ. Hardy deciduous shrubs. First introduced 1739. Formerly known by the generic name of *Weigela*.

**CULTURE:** Soil, ordinary. Position, moist shady shrubberies, or against south, east, or west walls or fences. Plant, Oct. to Feb. Prune directly after flowering, shortening shoots that have borne flowers. No winter pruning required. Propagate by cuttings of young shoots inserted in pots of sandy soil under bell-glass in cool greenhouse in spring; cuttings of firm shoots 6 in. long inserted 3 in. deep & 2 in. apart in north border under hand-light in Oct. or Nov.

**SPECIES CULTIVATED:** *D. floribunda*, purple, June, 3 ft., Japan; *florida* (Syn. *Weigela rosea*), rose and white, May, 6 to 8 ft., China; *grandiflora*, pink, June, 6 to 8 ft., Japan; *japonica hortensis*, white, summer, 4 ft., Japan; *middendorffiana*, yellow, summer, 4 ft., Siberia. *Abel Carrière*, *Eva Rathe*, *Van Houttei*, and *variegata* are popular varieties or hybrids.

**Digitalis** (Foxglove).—Ord. Scrophulariaceæ. Hardy biennial & perennial herbs.

**CULTURE OF PERENNIAL SPECIES:** Soil, rich ordinary. Position, open shady border, or naturalising in woodlands and wild gardens. Plant, Oct., Nov., or April.

**CULTURE OF BIENNIAL SPECIES:** Sow seeds 1-16 in. deep in shady border outdoors in April. Transplant seedlings 3 in. apart in shady bed in June. Transfer seedlings to flowering position in Oct. or Nov. Propagate perennials by seeds sown as directed for biennials; division of plants in March.

**PERENNIAL SPECIES:** *D. ambigua* (Syn. *D. grandiflora* and *ochroleuca*), yellow, July and Aug., 3 ft., Europe.

**BIENNIAL SPECIES:** *D. purpurea* (Foxglove), purple, July to Sept., 3 to 5 ft., Europe (Britain). There are numerous varieties and strains of this species, the *gloxinia*-flowered being the most beautiful.

**Dill.**—See *Peucedanum*.

**Dillwynia.**—Ord. Leguminosæ. Greenhouse evergreen flowering shrubs. First introduced 1794.

**CULTURE:** Compost, equal parts fibry peat & loam, one-fourth part sand. Position, pots in sunny greenhouse. Pot, March or June; firm potting essential. Prune straggling shoots little after flowering. Water freely March to Sept., moderately afterwards. Temp., March to Sept. 60° to 65°; Sept. to March 45° to 50°. Place plants outdoors July to Sept. to mature growth. Propagate by seeds sown 1-16 in. deep in light sandy compost in temp. 65° to 70° in March; cuttings inserted in pots of sandy peat under bell-glass in temp. 65° in summer.

**SPECIES CULTIVATED:** *D. ericifolia*, yellow and red, spring, 2 ft., Australia; *floribunda*, yellow and red, spring, 18 in., Australia; *hispida*, orange and red, spring, 1 ft., Australia.

**Dimorphotheca.**—Ord. Compositæ. Half-hardy annuals. First introduced 1774.

**INDOOR CULTURE:** Compost, two parts sandy loam, one part leaf-mould & a liberal addition of silver sand. Pot, March or April. Grow in cool sunny greenhouse. Water freely during spring & summer, moderately in autumn & winter. Temp., Oct. to March 40° to 50°.

**OUTDOOR CULTURE:** Soil, ordinary, sandy. Position, sunny, warm border. Plant, May & June. Propagate by seeds sown in a temp. of 55° to 65° in sandy soil in early spring.

**SPECIES CULTIVATED:** *D. Ecklonis*, white and purple, summer, 2 ft.; *pluvialis*, white and purple, summer, 18 in., *pluvialis flore-pleno*, double. Native of S. Africa.

**Dionæa** (Venus' Fly-trap).—Ord. Droseraceæ. Greenhouse herbaceous perennials. Insectivorous plants. Leaves, two-lobed, margined with teeth & sensitive.

**CULTURE:** Compost, equal parts peat & living sphagnum. Position, pots or pans well drained & partly immersed in pans of water, & placed under glass in cool greenhouse. Pot, March or April. Water freely always. Temp., Oct. to March 40° to 45°; March to Sept. 45° to 55°. Propagate by seeds sown in mixture of sphagnum moss & peat, kept moist under bell-glass in March or April; division of plants in March.

**SPECIES CULTIVATED:** *D. muscipula*, white, July and Aug., 6 in., Carolina.

**Dioscorea** (Yam).—Ord. Dioscoreaceæ. Hardy tuberous-rooted climbing perennials. Tubers, large, milky, edible, cooked like potatoes.

**CULTURE:** Soil, ordinary. Position, sunny, open. Plant small tubers 3 in. deep & 12 in. apart in March. Fix stakes or branches for shoots to climb on. Lift & store tubers in frost-proof place in Oct. Propagate by cuttings of stems 1 in. long with leaf attached, inserted ¼ in. deep in sandy soil under bell-glass in temp. 55° in summer.

**SPECIES CULTIVATED:** *D. Batatas* (Yam), white, summer, 12 ft., Philippines.

**Diosma** (African Steel-bush).—Ord. Rutaceæ. Greenhouse evergreen flowering shrub. Leaves fragrant.

**CULTURE:** Compost, two parts fibrous peat, one part loam, & silver sand. Pot, May, June. Pinch off points of vigorous shoots in July & Aug. Water very little Oct. to March, moderately afterwards. Temp., Sept. to March 40° to 45°; March to Sept. 50° to 55°. Propa-

gate by cuttings inserted in sandy peat under bell-glass in temp. 55° to 65° in March, April, or May.

SPECIES CULTIVATED: *D. ericoides*, white, spring, 2 to 3 ft., S. Africa.

**Diospyros** (Date Plum; Persimmon).—Ord. Ebenaceæ. Hardy deciduous trees. First introduced 1596. Fruit yellow, plum-shaped, sweet flavour.

CULTURE: Soil, ordinary. Position, shrubberies for *D. Lotus* and *D. virginiana*; south wall for *D. Kaki*, except in extreme S. of England. Plant, Oct to Feb. Prune similarly to apple trees. Propagate by seeds sown 1 in. deep outdoors in Sept. or Oct.

SPECIES CULTIVATED: *D. Kaki* (Date Palm), white and green, spring, 12 to 20 ft., China; *Lotus* (Common Date Palm), reddish white, July, 20 to 30 ft., S. Europe; *virginiana* (Persimmon), yellow, July, 20 to 30 ft., N. America.

**Diphyllia** (Umbrella-leaf).—Ord. Berberidaceæ. Hardy herbaceous perennial. First introduced 1812.

CULTURE: Soil, peaty. Position, moist shady borders. Plant, Oct. to March. Propagate by division of plants in March or April.

SPECIES CULTIVATED: *D. cymosa*, white, May, 1 ft., N. America.

**Diplacus**.—See *Mimulus*.

**Dipladenia**.—Ord. Apocynaceæ. Stove flowering climbers. Evergreen. First introduced 1841.

CULTURE: Compost, rough fibry peat & one-fourth silver sand. Position, well-drained pots, with shoots trained to roof of stove or to wire trellis. Pot, Feb. or March. Prune, Oct., cutting away shoots that have flowered only. Water very little Oct. to Feb., moderately Feb. to April, freely afterwards. Temp., Oct. to Feb. 55° to 60°; Feb. to Oct. 65° to 75°. Propagate by cuttings of young side shoots 3 in. long inserted in pots of sandy peat under bell-glass in temp. 80° in Feb., March, or April.

SPECIES CULTIVATED: *D. atropurpurea*, purple, summer, 10 ft., Brazil; *boliviensis*, white and yellow, summer, 8 to 10 ft., Bolivia; *Sanderi*, rose, summer, 10 ft., Brazil.

VARIETIES CULTIVATED: *D. amabilis*, rosy crimson, summer, 10 to 12 ft.; *brearleyana*, crimson, summer, 12 ft.; *hybrida*, crimson, summer, 10 ft.; *profusa*, carmine, summer, 10 ft.

**Diplopappus**.—See *Cassinia*.

**Disa** (Flower of the Gods; Table Mountain Orchid).—Ord. Orchidaceæ. Greenhouse terrestrial orchids. First introduced 1825.

CULTURE: Compost, equal parts peat & living sphagnum moss. Position, pots or pans, well drained, in shady cold greenhouse Sept. to June; shady corner outdoors June to Sept. Pot, Feb. keeping roots well above rim. Water moderately Sept. to March, freely afterwards. Atmosphere airy, but not draughty. Resting period, autumn. Growing period, Dec. to June. Flowers appear in centre of new growth. Propagate by seeds sown on living sphagnum moss under bell-glass in cold greenhouse in spring.

SPECIES CULTIVATED: *D. Barellii*, orange, scarlet, and crimson, June, S. Africa; *Cooperi*, carmine-rose, June, 1 to 2 ft., S. Africa; *cornuta*, yellow, carmine, and purple, winter, 10 in., S. Africa; *crassicornis*, white and purple, Sept., 1 to 2 ft., S. Africa; *graminifolia*, blue, June, 18 in., S. Africa; *grandiflora*, crimson, July, 1 ft., S. Africa; *incarnata*, orange and red, June, 1 ft., Madagascar; *racemosa*, rosy purple, summer, 18 in., S. Africa; *Veitchii*, rosy purple, summer, hybrid.

**Dittany** (*Dictamnus albus*).—See *Dictamnus*.

**Dittany of Crete** (*Origanum dictamnus*).—See *Origanum*.

**Dodecatheon** (American Cowslip).—Ord. Primulaceæ. Hardy herbaceous perennials. First introduced 1744.

OUTDOOR CULTURE: Soil, light loam enriched with plenty of

leaf-mould. Position, sheltered beds on rockeries, or in borders under shade of trees. Plant, Jan. or Feb. Top-dress in Feb. with well-decayed manure.

**POT CULTURE:** Compost, equal parts loam, leaf-mould, & sand. Position, 6 in. pots, well drained, in cold frame Nov. to March, then in unheated greenhouse till after flowering, when stand outdoors. Pot, Nov. Water moderately when new growth appears, freely when in full growth. Propagate by seeds sown in pots of light sandy soil in cold frame in Sept. or March; division of crowns in Oct. or March.

**SPECIES CULTIVATED:** *D. Clevelandii*, violet-blue, May, 1 ft., California; *Hendersoni*, crimson and yellow, March, 6 in., Oregon; *Jeffreyi*, purple-rose, spring, 6 in., California; *Meadia*, rosy purple, white and lilac, April, 12 in., N. America; *Meadia album*, white, *Meadia lilacinum*, lilac.

**Dog-berry** (*Cornus sanguinea*).—See *Cornus*.

**Dog Rose** (*Rosa canina*).—See *Rosa*.

**Dog-wood**.—See *Cornus*.

**Dog's-Tooth Violet** (*Erythronium Dens-canis*).—See *Erythronium*.

**Dolichos** (*Hyacinth Bean*).—Ord. Leguminosæ. Greenhouse evergreen twiner. First introduced 1776.

**CULTURE:** Compost, equal parts loam & peat, little sand. Position, well-drained pots, shoots twining round trellis, posts or pillars. Pot, Feb. Water moderately in winter, freely in summer. Temp., Sept. to March 50° to 55°; March to Sept. 55° to 65°. Propagate by seeds sown in light soil in temp. 65° in March; cuttings inserted in sandy soil under bell-glass in temp. 65° in April.

**SPECIES CULTIVATED:** *D. Lablab*, rosy purple, July, 1 to 2 ft., Tropics.

**Doodia**.—Ord. Filices. Greenhouse evergreen ferns. Nat. Australia. First introduced 1808.

**CULTURE:** Compost, two parts loam, one part leaf-mould, charcoal & sand. Pot, Feb., March or April. Position, pots in shady part of greenhouse. Water moderately Sept. to March, freely afterwards. Temp., Sept. to March 40° to 50°; March to Sept. 50° to 60°. Propagate by spores sown on surface of sandy peat in pans under bell-glass in temp. 65° to 75° at any time.

**SPECIES CULTIVATED:** *D. aspera*, 6 to 8 in., Australia, and its varieties *corymbifera* and *multifida*; *caudata*, 6 to 12 in., Australia; *media*, 12 to 18 in., Australia and New Zealand.

**Doronicum** (*Leopard's-bane*).—Ord. Compositæ. Hardy herbaceous perennials.

**CULTURE:** Soil, ordinary rich. Position, open borders, banks, or under shade of trees. Plant, Oct., Nov., March, or April. Propagate by division of roots in Oct. or March. This genus also does well in pots for early flowering in cold greenhouse.

**SPECIES CULTIVATED:** *D. austriacum*, yellow, March, 18 in., Europe; *caucasicum*, yellow, April, 1 ft., Europe; *Pardialanches*, yellow, May, 2 ft., Europe (Britain); *plantagineum*, yellow, March, 3 ft., Europe (Britain); *plantagineum excelsum*, an improved form.

**Doryanthes** (*Australian Giant Lily*; *Spear Lily*).—Ord. Amaryllidaceæ. Greenhouse flowering plants. Orn. foliage. First introduced 1800.

**CULTURE:** Equal parts loam & leaf-mould, little sand. Position, well-drained pots in light airy greenhouse. Pot, Feb., March, or April. Water very little Sept to April, moderately afterwards. Temp., Sept. to March 50° to 55°; March to Sept. 65° to 70°. Propagate by suckers removed from old plants & placed in small pots in temp. 55° to 65° at any time.

**SPECIES CULTIVATED:** *D. excelsa*, scarlet, summer, 8 to 12 ft., N.S. Wales; *Guilfoylei*, crimson, summer, 12 to 15 ft., Queensland; *Palmeri*, red, summer, 12 ft., Queensland.

**Double Arrow-head** (*Sagittaria sagittæfolia* fl.-pl.). — See *Sagittaria*.

**Double Bindweed** (*Calystegia pubescens* fl.-pl.).—See *Calystegia*.

**Double Cherry** (*Prunus Cerasus Rhexii* fl.-pl.).—See *Prunus*.

**Double Chinese Cherry** (*Prunus japonica* fl.-pl.). — See *Prunus*.

**Double Chinese Plum** (*Prunus sinensis* fl.-pl.).—See *Prunus*.

**Double Dropwort** (*Spiræa filipendula plena*).—See *Spiræa*.

**Double Furze** (*Ulex europæus plenus*).—See *Ulex*.

**Double Horse Chestnut** (*Æsculus hippocastanum* fl.-pl.).—See *Æsculus*.

**Double Jasminum** (*Jasminum officinale* fl.-pl.).—See *Jasminum*.

**Double Marsh Marigold** (*Caltha palustris* fl.-pl.).—See *Caltha*.

**Double Mayweed** (*Matricaria inodora* fl.-pl.).—See *Matricaria*.

**Double Myrtle** (*Myrtus communis* var. *belgica* fl.-pl.).—See *Myrtus*.

**Double Peach** (*Prunus Persica flore-pleno*).—See *Prunus*.

**Double Persian Ranunculus** (*Ranunculus asiaticus* fl.-pl.).—See *Ranunculus*.

**Double Red Campion** (*Lychnis dioica* fl.-pl.).—See *Lychnis*.

**Double Red Daisy** (*Bellis perennis rubra plena*).—See *Bellis*.

**Double Rocket** (*Barbarea vulgaris*).—See *Barbarea*.

**Double Rose Campion** (*Lychnis coronaria* fl.-pl.). — See *Lychnis*.

**Double Scarlet Avens** (*Geum coccineum* fl.-pl.).—See *Geum*.

**Double Seaside Catchfly** (*Silene maritima* fl.-pl.).—See *Silene*.

**Double Siberian Larkspur** (*Delphinium grandiflorum* fl.-pl.).—See *Delphinium*.

**Douglasia.** — Ord. Primulaceæ. Hardy evergreen alpine plants. First introduced 1827.

**CULTURE:** Compost, equal parts peat & loam. Position, sunny rockery. Plant, Oct., Nov., March or April. Propagate by seeds sown 1-16 in. deep in sandy peat in cold frame, or under hand-light in March or April; division of plants in autumn.

**SPECIES CULTIVATED:** *D. lævigata*, rosy pink, March to Sept., 1 in., Oregon Mountains; *navalis*, pink, April, 1 in., Rocky Mountains; *vitaliana* (Syn. *Androsace vitaliana*), yellow, May to July, 2 in., Alps.

**Dovaston Yew Tree** (*Taxus baccata* var. *Dovastoni*).—See *Taxus*.

**Dovedale Moss** (*Saxifraga hypnoides*).—See *Saxifraga*.

**Dove Orchid** (*Peristeria elata*).—See *Peristeria*.

**Dove's-foot Geranium** (*Geranium molle*).—See *Geranium*.

**Downingia.**—Ord. Campanulaceæ. Hardy annuals. First introduced 1827.

**CULTURE:** Soil, ordinary rich. Position, sunny beds or borders. Sow seeds where plants are to flower in April. Thin seedlings to 6 in. apart in May or June.

**POT CULTURE:** Compost, equal parts loam, leaf-mould & sand. Sow seeds 1-16 in. deep in 5 or 6 in. pots placed in temp. 55°, or in cold frame in April or May. Water moderately. Apply weak liquid manure when plants are in flower. Place plants when in flower in cool greenhouse or window.

**SPECIES CULTIVATED:** *D. elegans* (Syn. *Clintonia elegans*), blue and white, summer, 6 in., N.W. America; *pulchella* (Syn. *Clintonia pulchella*), blue, white, and yellow, summer, 6 in., W. America.

**Down Thistle** (*Onopordon acanthium*).—See *Onopordon*.

**Downton Elm** (*Ulmus glabra* var. *pendula*).—See *Ulmus*.

**Draba** (Whitlow Grass).—Ord. Cruciferae. Hardy perennials. Pretty rockery plants.

**CULTURE:** Soil, ordinary. Position, crevices in sunny rockeries, or on old walls. Plant, March or April. Propagate by seeds sown where plants are to grow in April; division of roots in March.

**SPECIES CULTIVATED:** *D. aizoides*, yellow, March, 3 in., Europe (Britain); *Aizoon*, yellow, April, 3 in., W. Europe; *alpina*, yellow, April, 3 in., N. Europe; *Maevii*, white, spring, 3 in., Spain; *pyrenaica*, lilac purple, fragrant, April, 3 in., S. Europe; *rupestris*, white, summer, 3 in., N. Europe.

**Dracæna** (Dragon-plant; Dragon Blood-tree).—Ord. Liliaceae. Stove evergreen plants. Orn. foliage. First introduced 1640. Leaves, variegated with various colours.

**CULTURE:** Compost, two parts peat, one part loam & sand. Position, well-drained pots in stove or greenhouse. Pot, Feb. to March. Water moderately Oct. to March, freely afterwards. Temp., March to Sept. 75° to 85°; Sept. to March 55° to 65°. Propagate by seeds sown 1 in. deep in pots of light sandy soil in temp. 85° in March; cuttings of main stems cut into lengths of 1 in. & partially buried horizontally in pots of sandy soil in March; cuttings of fleshy roots, inserted 1 in. deep in pots of sandy soil in temp. 75° to 80° in March or April; stem-rooting March or April; offsets inserted 2 in. deep at any time. See also the genus *Cordyline* for so-called greenhouse *dracænas*.

**SPECIES CULTIVATED:** *D. concinna*, leaves green, margined with red, 4 to 6 ft., Mauritius; *Draco* (Dragon Tree), leaves glaucous, hardy in Cornwall and Solly Isles, 40 to 50 ft., Canary Islands; *fragrans*, leaves green, 6 ft., Trop. Africa; *fragrans Lindenii*, leaves, yellow and green; *fragrans massangeana*, leaves, white and green; *godseffiana*, leaves white and green, 3 ft., Trop. Africa; *goldiana*, leaves, green and white, 4 to 6 ft., Trop. Africa; *sanderiana*, leaves, white and green, 5 ft., Trop. Africa. See also trade lists for varieties.

**Dracocephalum** (Dragon's-head; Moldavian Balm).—Ord. Labiatae. Hardy annual & perennial herbs. First introduced 1596.

**CULTURE:** Soil, light ordinary. Position, cool partially shady borders. Plant, Oct., Nov., March, or April. Propagate annual & perennial species by seeds sown ½ in. deep in light sandy soil outdoors in April; cuttings of young shoots inserted in light sandy soil under hand-light or in cold frame in April or May; division of roots in Oct., Nov., or March.

**ANNUAL SPECIES:** *D. canescens*, lilac blue, Aug., 12 to 18 in., E. Europe; *Moldavica* (Moldavian Balm), blue, July and Aug., 12 to 18 in., E. Siberia.

**PERENNIAL SPECIES:** *D. austriacum*, blue, summer, 12 to 18 in., Europe; *grandiflorum*, blue, summer, 6 to 9 in., Siberia; *ryschianum*, purplish blue, June, 12 to 18 in., Alps; *speciosum*, lilac, June, 18 in., Himalayas.

**Dracunculus** (Dragon; Snake-plant).—Ord. Aroides. Hardy tuberous-rooted perennial. First introduced 1548. Leaves, flesh colour mottled with black, resembling skin of snake.

**CULTURE:** Soil, sandy. Position, well-drained sunny border. Plant tubers 3 in. deep in Oct. or Nov. Propagate by division of tubers in Oct. or March.



**SPECIES CULTIVATED:** *D. vulgaris* (Syn. *Arum dracunculus*), chocolate-brown, July, 3 ft., S. Europe.

**Dragon Arum.**—See *Dracunculus*.

**Dragon Tree** (*Dracæna draco*).—See *Dracæna*.

**Dragon's-head** (*Dracocephalum grandiflorum*).—See *Dracocephalum*.

**Dragon's-mouth.**—See *Helicodiceros*.

**Dragon's-mouth Orchid.**—See *Epidendrum*.

**Dropwort** (*Spiræa filipendula*).—See *Spiræa*.

**Drosera** (Sundew; Youth-wort).—Ord. *Droseraceæ*. Greenhouse and hardy perennial insectivorous plants.

**CULTURE:** Compost, equal parts living sphagnum moss, peat, potsherds. Position, well-drained pots partly immersed in pan of water & covered with bell-glass in cool greenhouse. Water daily. Propagate by seeds sown on surface of living sphagnum moss and peat in well-drained pots under bell-glass in temp. 55° to 65° at any time; division of the crowns in March or April; cuttings of roots  $\frac{1}{2}$  to 1 in. long embedded in pan of moss & peat under bell-glass in temp. 65° to 75°.

**SPECIES CULTIVATED:** *D. intermedia*, white and red, July, 3 in., Europe; *longifolia* (Syn. *D. anglica*), white, July, 3 in., Europe (Britain); *rotundifolia*, white, July, 4 in., Europe (Britain).

**Drosophyllum** (Portuguese Sundew).—Ord. *Droseraceæ*. Greenhouse shrubby insectivorous plants. First introduced 1869.

**CULTURE:** Soil, light sandy loam. Position, well-drained pots close to glass in light, airy greenhouse. Water once or twice Sept. to April, very little afterwards. Temp., Sept. to March 40° to 50°; March to Sept. 50° to 60°. Propagate by seeds sown on the surface of sandy loam in well-drained pots in spring.

**SPECIES CULTIVATED:** *D. lusitanicum*, yellow, May, 1 ft., Portugal.

**Drumhead Cabbage.**—See *Brassica*.

**Drummond's Side-saddle-flower** (*Sarracenia Drummondii*).—See *Sarracenia*.

**Dryas** (Mountain Avens).—Ord. *Rosaceæ*. Hardy evergreen trailing plants.

**CULTURE:** Soil, moist peat. Position, sunny rockery or borders. Plant, Oct., Nov. or March. Propagate by seeds sown 1-16 in. deep in sandy peat in shallow pans or boxes in cold frame April or May; cuttings of shoots 2 in. long inserted in sandy soil in cold frame in autumn; division of plants in Oct., Nov. or March.

**SPECIES CULTIVATED:** *D. Drummondii*, yellow, June, 3 in., N. America; *octopetala*, white, June, 3 in., trailing, Europe.

**Drymoglossum** (Wood Tongue Fern).—Ord. *Filices*. Stove evergreen creeping fern. First introduced 1828.

**CULTURE:** Compost, equal parts loam, peat, leaf-mould, pounded charcoal & sand. Pot or plant, Feb., March, or April. Position, well-drained shallow pans or beds in Wardian case. Water moderately Oct. to Feb., freely afterwards. Temp., Sept. to March 55° to 60°; March to Sept. 65° to 75°. Propagate by spores sown on surface of sandy peat in temp. 65° to 75° at any time; division of rhizomes in Feb. or March.

**SPECIES CULTIVATED:** *D. carnosum*, Himalayas; *floselloides*, India.

**Drynaria.**—See *Polypodium*.

**Drypis.**—Ord. *Caryophyllaceæ*. Hardy herbaceous perennial. First introduced 1775.

**CULTURE:** Soil, ordinary. Position, sunny rockeries or borders.

Plant, Oct., Nov., March, April. Propagate by seeds sown in light soil in cold frame or under hand-light in March or April; cuttings inserted in sandy soil under hand-light or in cold frame in Sept. or Oct.

SPECIES CULTIVATED: *D. spinosa*, blue, summer, 9 in., Mediterranean Region.

**Duck's-foot** (*Podophyllum peltatum*).—See *Podophyllum*.

**Duke of Argyll's Tea-plant** (*Lycium barbarum*).—See *Lycium*.

**Dumortier's Day Lily** (*Hemerocallis Dumortieri*).—See *Hemerocallis*.

**Dusty Miller** (*Primula auricula* and *Senecio cineraria*).—See *Primula* and *Senecio*.

**Dutch Agrimony** (*Eupatorium cannabinum*).—See *Eupatorium*.

**Dutch Honeysuckle** (*Lonicera periclymenum belgica*).—See *Lonicera*.

**Dutchman's Breeches** (*Dicentra cucullaria*).—See *Dicentra*.

**Dutchman's Pipe** (*Aristolochia Siphon*).—See *Aristolochia*.

**Dutch Myrtle** (*Myrica Gale*).—See *Myrica*.

**Dyckia**.—Ord. Bromeliaceæ. Greenhouse succulent orn. foliage plants. First introduced 1839.

CULTURE: Compost, two parts loam, one part leaf-mould & little sand. Position, pots in light, airy greenhouse; outside June to Sept. Water moderately April to Aug., little afterwards. Repot every five or six years; good drainage essential. Temp., Sept. to March 50° to 55°; March to Sept. 55° to 65°. Propagate by offsets or suckers inserted in small pots in greenhouse at any time.

SPECIES CULTIVATED: *D. altissima*, yellow, autumn, 2 ft., Brazil; *brevifolia*, yellow, Aug., 1 ft., Brazil.

**Dyer's Tick-Seed** (*Coreopsis tinctoria*).—See *Coreopsis*.

**Ear Drops**.—See *Fuchsia*.

**Earth Nut** (*Arachis hypogæa*).—See *Arachis*.

**Easter Flower** (*Euphorbia pulcherrima*).—See *Euphorbia*.

**East Indian Cedar** (*Cedrus deodara*).—See *Cedrus*.

**East Indian Coral-tree** (*Erythrina indica*).—See *Erythrina*.

**East Indian Flax** (*Reinwardti trigynum*).—See *Reinwardti*.

**East Indian Guava-tree** (*Psidium indicum*).—See *Psidium*.

**East Indian Periwinkle** (*Vinca rosea*).—See *Vinca*.

**East Indian Pitcher-plant** (*Nepenthes sanguinea*).—See *Nepenthes*.

**East Indian Rose-bay** (*Tabernæmontana coronaria*).—See *Tabernæmontana*.

**Eccremocarpus** (Chilian Glory-flower).—Ord. Bignoniaceæ. Half-hardy evergreen climbing plants. First introduced 1825.

CULTURE: Soil, light rich. Position, against south or south-west walls. Plant, June. Protect roots in Oct. by layer of cinder ashes on surface of soil; branches in severe weather by mats. Propagate by seeds sown 1-16 in. deep in well-drained pots of light sandy soil in temp. 65° to 75° in March or April.

SPECIES CULTIVATED: *E. scaber*, scarlet and yellow, summer, 15 to 20 ft., Chili.

**Eccremocarpus Vine** (*Eccremocarpus scaber*).—See *Eccremocarpus*.

**Echeveria**.—See *Cotyledon*.

**Echinacea** (Purple Cone-flower).—Ord. Compositæ. Hardy herbaceous perennials. First introduced 1799.

**CULTURE:** Soil, deep rich light loam. Position, well-drained sunny borders or rockeries. Plant, Oct., Nov., or March. Propagate by seeds sown  $\frac{1}{2}$  in. deep in boxes of light soil in temp.  $50^{\circ}$  to  $55^{\circ}$  in March, or outdoors in sunny position in April; division of roots in Oct., March, or April.

**SPECIES CULTIVATED:** *E. purpurea*, purplish red, Aug., 3 ft., N. America.

**Echinocactus** (Hedge-hog Cactus).—Ord. Cactaceæ. Greenhouse succulent plants. First introduced 1796.

**CULTURE:** Compost, two parts fibrous sandy loam, one part brick rubble, old mortar & sand. Position, well-drained pots in sunny greenhouse or window. Repot every three or four years in March. Water once a month Sept. to April, once a week afterwards. Temp., Sept. to March  $50^{\circ}$  to  $55^{\circ}$ ; March to Sept.  $65^{\circ}$  to  $75^{\circ}$ . Propagate by seeds sown  $\frac{1}{2}$  in. deep in well-drained pans of sandy soil in temp.  $75^{\circ}$  in March, keeping soil moderately moist; cuttings of stems inserted in small pots of sandy soil kept barely moist in summer; grafting on common kinds in April.

**SPECIES CULTIVATED:** *E. brevihamatus*, pink and rose, summer, 4 to 6 in., New Mexico; *centeterius*, yellow, summer, 6 in., Mexico; *cinnabarinus*, red, summer, 4 in., Bolivia; *concinus*, yellow, summer, 4 in., Mexico; *coptonogonus*, white and purple, May, 4 in., Mexico; *cornigerus*, purple, summer, Mexico; *corynodes*, yellow, summer, 4 in., Argentina; *crispatus*, purple, summer, 8 in.; *Cunninghamii*, yellow, summer, Bolivia; *cylindraceus*, yellow, summer, 4 ft., Colorado; *Emoryi*, yellow and red, autumn, Colorado; *gibbosus*, white, June, 4 in., Mexico; *Grusonii*, red and yellow, summer, 6 in., Mexico; *leanus*, white and rose, May, Argentina; *multiflorus*, white, summer, 5 in., Mexico; *scopa*, yellow, spring, 12 to 18 in., Brazil; *scopa crista*, stem fasciated; *Simpsoni*, purple, summer, 4 in., Mexico, a very hardy species. May be grown outdoors in S. of England.

**Echinops** (Globe Thistle).—Ord. Compositæ. Hardy biennials and perennials. First introduced 1570.

**CULTURE:** Soil, ordinary. Position, well-drained sunny borders. Plant, Oct., Nov. or March. Propagate by seeds sown  $\frac{1}{2}$  in. deep in sunny position outdoors in April; division of roots in Oct., Nov. or March.

**BIENNIAL SPECIES:** *E. bannaticus* (Syn. *E. ruthenicus*), violet-blue, summer, 2 to 3 ft., Hungary.

**PERENNIAL SPECIES:** *E. Ritro*, blue, summer, 3 ft., S. Europe; *sphaercephalus*, pale blue, summer, 3 to 4 ft., Europe.

**Echinopsis** (Hedge-hog Cactus).—Ord. Cactaceæ. Greenhouse succulent plants. First introduced 1835.

**CULTURE:** Compost, two parts fibrous sandy loam, one part brick rubble, old mortar & sand. Position, well-drained pots in sunny greenhouse or window. Repot every three or four years in March. Water once a month Sept. to April, once a week afterwards. Temp., Sept. to March  $50^{\circ}$  to  $55^{\circ}$ ; March to Sept.  $65^{\circ}$  to  $75^{\circ}$ . Propagate by seeds sown  $\frac{1}{2}$  in. deep in well-drained pans of sandy soil in temp.  $75^{\circ}$  in March, keeping soil moderately moist; cuttings of stems inserted in small pots of sandy soil, kept barely moist in summer; grafting on common kinds in April.

**SPECIES CULTIVATED:** *E. campylacantha*, rose, summer, 1 ft., Chili; *cristata*, creamy white, summer, 1 ft., Bolivia; *decalsneana*, white and yellow, July, 1 ft.; *Eyriesii*, white, fragrant, July, 4 to 6 in., Mexico; *Eyriesii flore-pleno*, double; *oxygonus*, rose, summer, 6 in., Brazil; *Pentlandii*, white and red, July, 6 in., Mexico; *tubiflorus*, white, summer, 4 in., Mexico.

**Echites**.—Ord. Apocynaceæ. Stove evergreen flowering & climbing shrubs. First introduced 1823.

**CULTURE:** Compost, rough fibry peat & one-fourth silver sand. Position, well-drained pots, with shoots trained to roof of stove or to wire trellis. Pot, Feb. or March. Prune, Oct., cutting away shoots

that have flowered only. Water very little Oct. to Feb., moderately Feb. to April, freely afterwards. Temp., Oct. to Feb. 55° to 60°; Feb. to Oct. 65° to 75°. Propagate by cuttings of young side shoots 3 in. long inserted in pots of sandy peat under bell-glass in temp. 80° in Feb., March, or April.

**SPECIES CULTIVATED:** *E. paniculata*, yellow, summer, 6 to 10 ft., Brazil.

**Echium** (Viper's Bugloss).—Ord. Boraginaceæ. Hardy annuals, biennials & perennials.

**CULTURE:** Soil, ordinary. Position, sunny, well-drained borders or wild garden. Plant, Aug. or April. Propagate by seeds sown  $\frac{1}{2}$  in. deep in sunny position outdoors in April or Aug.

**BIENNIAL SPECIES:** *E. plantagineum*, bluish purple, summer, 2 to 3 ft., S. Europe (Britain); *vulgare*, purple or blue, summer, 3 to 4 ft., Britain.

**ANNUAL SPECIES:** *E. creticum*, violet, July, 12 to 18 in., S. Europe.

**PERENNIAL SPECIES:** *E. albicans*, rose or violet, summer, 1 ft., Spain.

**Edelweiss** (*Leontopodium alpinum*).—See *Leontopodium*.

**Eel-Grass** (*Vallisneria spiralis*).—See *Vallisneria*.

**Egg-plant** (*Solanum melongena*).—See *Solanum*.

**Eggs-and-Bacon Daffodil** (*Narcissus incomparabilis fl.-pl.* var. *Orange Phoenix*).—See *Narcissus*.

**Eglantine** (*Rosa rubiginosa*).—See *Rosa*.

**Egyptian Bean** (*Nelumbium speciosum*).—See *Nelumbium*.

**Egyptian Kidney Bean** (*Dolichos Lab-lab*).—See *Dolichos*.

**Egyptian Lily** (*Richardia africana*).—See *Richardia*.

**Egyptian Lotus** (*Nymphæa lotus*).—See *Nymphæa*.

**Egyptian Onion** (*Allium Ceba proliferum*).—See *Allium*.

**Egyptian Rose** (*Scabiosa atropurpurea*).—See *Scabiosa*.

**Egyptian Water Lily** (*Nymphæa lotus*).—See *Nymphæa*.

**Elæagnus** (*Oleaster*; Wild Olive).—Ord. Elæagnaceæ. Hardy deciduous & evergreen shrubs. Orn. foliage. First introduced 1633. Leaves, green or variegated with white.

**CULTURE:** Soil, ordinary. Position, open sheltered dryish borders, or against south or west walls. Plant deciduous species in Oct., Nov. or Dec.; evergreen in April or Sept. Propagate by seeds sown  $\frac{1}{2}$  in. deep in boxes of light soil in temp. 55° in March; cuttings inserted in sandy soil in cold frame in Sept.; layering in Oct.

**EVERGREEN SPECIES:** *E. glabra*, white, Aug., 4 to 6 ft., China and Japan; *macrophylla*, yellow, Sept., 6 ft., Japan; *pungens*, yellow, autumn, 6 ft., China and Japan; *pungens aureo-maculata*, golden leaved; *pungens variegata*, silver leaved.

**DECIDUOUS SPECIES:** *E. argentea* (Syn. *Shepherdia argentea*), yellow, July, 8 ft., N. America.

**Elder** (*Sambucus nigra*).—See *Sambucus*.

**Elderberry** (*Sambucus nigra*).—See *Sambucus*.

**Elder-scented Orchis** (*Orchis sambucina*).—See *Orchis*.

**Elecampane** (*Inula helenium*).—See *Inula*.

**Elephant's Ear** (*Begonia Rex*).—See *Begonia*.

**Elephant's Ear Fern** (*Acrostichum crinulatum*).—See *Acrostichum*.

**Elephant's Foot** (*Testudinaria elephantipes*).—See *Testudinaria*.

**Elephant's-tooth Cactus** (*Mammillaria elephantidens*).—See *Mammillaria*.

**Eleven o'Clock Lady** (*Ornithogalum umbellatum*).—See *Ornithogalum*.

**Elisena**.—Ord. Amaryllidæ. Warm greenhouse bulbous plant First introduced 1837.

**CULTURE:** Compost, two parts light sandy loam, one part leaf-mould & one part of coarse sand. Position, well-drained pots in warm, sunny greenhouse. Pot, autumn. Water freely during growing period. Keep nearly dry when at rest. Temp., Sept. to March 55° to 65°; March to Sept. 65° to 75°. Propagate by offsets removed & treated as parent bulbs at potting time.

**SPECIES CULTIVATED:** *E. longipetala*, white, spring, 3 ft., Peru.

**Elizabeth's Catchfly** (*Silene Elizabethæ*).—See *Silene*.

**Elk's-horn Fern** (*Platycterium alcorni*).—See *Platycterium*.

**Elk Tree** (*Andromeda arborea*).—See *Andromeda*.

**Elm** (*Ulmus campestris*).—See *Ulmus*.

**Elwes's Crocus** (*Crocus sativus* Elwesi).—See *Crocus*.

**Elwes's Snowdrop** (*Galanthus Elwesi*).—See *Galanthus*.

**Embothrium**.—Ord. Proteaceæ. Half-hardy evergreen shrub. First introduced 1851.

**OUTDOOR CULTURE:** soil, sandy peat. Position, against south walls outdoors S. of England, pots in cold greenhouse N. of England. Protect with mats in severe weather. Plant, March or April.

**GREENHOUSE CULTURE:** Compost, two parts peat, one part loam, & one part sand. Pot, March. Prune, March. Water moderately Oct. to April, freely in summer. Place plants in sunny position outdoors May to Oct. Propagate by cuttings inserted in sandy peat under bell-glass in temp. 55° in spring; also by cuttings of roots inserted in sandy peat in temp. 75° in spring; by grafting young shoots on portions of its own roots in spring; also by sowing imported or home-saved seeds in sandy peat, in temp. 75°, in spring.

**SPECIES CULTIVATED:** *E. coccineum*, scarlet, May to July, 10 to 15 ft., Chili.

**Empetrum** (Black-berried Heath; Crake-berry; Crow-berry).—Ord. Empetraceæ. Hardy evergreen fruiting shrub. Berries, black, edible; ripe in Sept.

**CULTURE:** Soil, boggy. Position, damp, moist, shady. Plant, March or April. Propagate by cuttings inserted in June, July or Aug. in sandy peat under bell-glass in shady position.

**SPECIES CULTIVATED:** *E. nigrum*, pink, May, 8 to 10 in., N. Hemisphere. *Nigrum scoticum* and *rubrum* are varieties.

**Encephalartos** (Caffer Bread).—Ord. Cycadaceæ. Greenhouse evergreen plants. First introduced 1835. Leaves, feather-shaped, bluish green.

**CULTURE:** Compost, two parts good loam, one part sand. Position, well-drained pots in light part of greenhouse. Repot, March. Water liberally April to Aug., very little afterwards. Growth occasionally stationary for a few years. Temp., Sept. to April 55° to 60°; April to Sept. 65° to 75°. Propagate by seeds sown  $\frac{1}{2}$  in. deep in light soil in temp. 85° to 95° in March or April.

**SPECIES CULTIVATED:** *E. Altensteinii*, 8 ft., S. Africa; *Caffer*, 8 to 10 ft., S. Africa.

**Endive**.—See *Cichorium*.

**Endres's Crane's-bill** (*Geranium Endresi*).—See *Geranium*.

**English Elm** (*Ulmus campestris*).—See *Ulmus*.

**English Iris** (*Iris xiphoides*).—See *Iris*.

**English Maiden-hair Fern** (*Asplenium trichomanes*).—See *Asplenium*.

**English Stonecrop** (*Sedum anglicum*).—See *Sedum*.

**English Sundew** (*Drosera longifolia*).—See *Drosera*.

**Enkianthus**.—Ord. Ericaceæ. Hardy evergreen shrubs.

**CULTURE:** Soil, ordinary mixed with a little peat and leaf-mould. Position, warm, sheltered shrubberies or beds. Plant, Sept. or April. Propagate by cuttings of firm shoots in sandy soil in heat in spring.

**SPECIES CULTIVATED:** *E. campanulatus*, red, summer, 6 ft., Japan; *japonicus*, white, Feb., 5 to 6 ft., Japan.

**Eomecon.**—Ord. Papaveraceæ. Hardy perennial. First introduced 1889.

**CULTURE:** Soil, sandy peat & leaf-mould. Position, sunny, well-drained border. Plant, Oct. to March. Water freely in very dry weather. Propagate by division of the roots in March or early April.

**SPECIES CULTIVATED:** *E. chionantha*, white, summer, 1 to 2 ft., China.

**Epacris** (Australian Heath; Tasmanian Heath).—Ord. Epacridæ. Greenhouse evergreen flowering shrubs. First introduced 1803.

**CULTURE:** Compost, three-fourths fibry peat, one-fourth silver sand. Position, light airy greenhouse Sept. to July, sunny place outdoors July to Sept. Repot, April, May, or June; good drainage essential. Prune shoots of erect kinds to within 1 in. of base directly after flowering; pendulous kinds about half-way. Water moderately at all times. Syringe plants daily March to July. Temp., Sept. to March 45° to 50°; March to July, 55° to 60°. Stimulants not essential. Propagate by seeds sown immediately they ripen on surface of sandy peat under bell-glass in temp. 55°; cuttings of ends of shoots inserted in pots of sandy peat covered with bell-glass placed in cool greenhouse in Aug. or April.

**SPECIES CULTIVATED:** *E. hyacinthiflora*, white to red, March, 2 to 3 ft., Australia; *hyacinthiflora candidissima*, white, *hyacinthiflora carminata*, carmine; *hyacinthiflora fulgens*, pink; *longiflora*, crimson and white, May and June, 2 to 4 ft., Australia; *longiflora splendens*, red, tipped white; *purpurascens*, white and red, winter, 2 to 3 ft., Australia. Numerous varieties and hybrids will be found in trade lists.

**Epi-Cattleya.**—Ord. Orchidaceæ. Bigeneric orchids, the result of hybridising two distinct genera—*Epidendrum* and *Cattleya*. Habit, intermediate between the two parents. Flowers borne in terminal spikes. Require similar culture to *Epidendrum*s.

**HYBRIDS CULTIVATED:** *E. matutina* (*C. bowringiana* × *E. radicans*), yellow and vermilion; *radiata-bowringiana* (*E. radiatum* × *C. bowringiana*), rosy purple.

**Epidendrum** (Dragon's-mouth Orchid; Tree Orchid). — Ord. Orchidaceæ. Stove & greenhouse epiphytal orchids. Flowers fragrant. First introduced 1835.

**CULTURE:** Compost, two parts fibry peat, one part chopped living sphagnum moss, charcoal & sand. Position, well-drained pots, hanging baskets, or on blocks of wood. Repot or block, Feb. or March; pots must be well drained. Water three times weekly March to Aug.; once a week Aug. to Nov. & Feb. to March; once a month Nov. to Feb. Temp. for stove species, 65° to 75° March to Sept., 60° to 65° Sept. to March; for greenhouse species, 45° to 55° Nov. to April, 55° to 65° April to Nov. Resting period, March to Nov. Growing period, Nov. to March. Propagate by division of plants, or by offsets when new growth begins.

**STOVE SPECIES:** *E. atropurpureum*, brown, white and purple, spring, 3 ft., Trop. America; *nemorale*, rose and white, July, 3 ft., Mexico; *prismatocarpum*, creamy yellow, purple and rose, summer, 3 ft., Central America; *Wallisii*, yellow, crimson and white, winter, 3 ft., Colombia.

**GREENHOUSE SPECIES:** *E. vitellinum*, orange, scarlet, and yellow, autumn, 1 ft., Guatemala.

**HYBRIDS:** *Clarissa*, red and purple, April; *Endresio-Wallisii*, yellow, white, and purple, spring; *o'brienianum*, yellow and carmine, July. Require stove treatment.

**Epigæa** (American Ground Laurel; New England May-flower).—Ord. Ericaceæ. Hardy evergreen creeping shrub. First introduced 1736.

**CULTURE:** Soil, sandy peat. Position, shady borders or rockeries. Plant, Sept., Oct. or April. Propagate by division of plant in Oct. or April.

**SPECIES CULTIVATED:** *E. repens*, white, fragrant, May, trailing, N. America.

**Epi-Lælia.**—Ord. Orchidaceæ. Bigeneric orchids, the result of hybridising species of *Epidendrum* with those of *Lælia*. Habit, like that of an *Epidendrum*. Flowers borne in erect scapes. Culture, same as required by *Epidendrums*.

**HYBRIDS CULTIVATED:** *E. hardyana* (*L. anceps* × *Epidendrum ciliare*), white, rose, and crimson-purple; *radico-purpurata* (*L. purpurata* × *E. radicans*), orange-scarlet, reddish purple, and lemon-yellow.

**Epilobium** (Willow Herb; Bay Willow; Rose Bay).—Ord. Onagraceæ. Hardy perennial herbs. Showy plants for wild or town gardens.

**CULTURE:** Flowers, rose-pink, crimson; May to Aug. Soil, ordinary. Position, shady or sunny borders, or side of water-courses. Plant, Oct., Nov. or March. Propagate by seeds sown  $\frac{1}{2}$  in. deep in shady position outdoors in March, April or Aug.; division of roots in Oct. or March.

**SPECIES CULTIVATED:** *E. angustifolium* (Rose Bay or French Willow), crimson, July, 3 to 5 ft., Europe (Britain); *angustifolium album*, white, hirsutum (Codlins and Cream), pink or white, July, 4 ft., Britain; *luteum*, yellow, summer, 6 in., N. America; *obcordatum*, rosy purple, summer, 6 in., California; *rosmarinifolium*, red, July, 2 ft., Europe.

**Epimedium** (Barren-wort; Bishop's Hat).—Ord. Berberidaceæ. Hardy herbaceous perennials. First introduced 1830. Leaves, green, margined with coppery bronze.

**CULTURE:** Soil, sandy loam & peat. Position, cool shady border or rockery; will do well under trees. Plant, Oct., Nov., March or April. Propagate by division of roots in July or Aug.

**SPECIES CULTIVATED:** *E. alpinum*, crimson and yellow, May, 9 in., Europe; *concinnum*, purple, March, 8 in., Japan; *macranthum*, white and blue, May, 10 in., Japan; *pinnatum*, yellow, May, 12 in., Persia; *rubrum*, yellow and red, May, 8 in., Japan.

**Epipactus.**—Ord. Orchidaceæ. Hardy terrestrial orchids.

**CULTURE:** Soil, peat & chalk. Position, moist shady borders or near ponds or rivulets. Plant in early autumn. Collect wild specimens directly after flowering. Propagate by division of plant in March or April.

**SPECIES CULTIVATED:** *E. latifolia*, purple, July, 1 ft., Europe (Britain); *palustris*, purple, July, 1 ft., Europe (Britain).

**Epiphronitis.**—Ord. Orchidaceæ. A bigeneric hybrid orchid obtained by crossing *Sophronitis grandiflora* with *Epidendrum radicans*. Habit similar to latter parent, but dwarfer. Flowers, large. Culture, similar to that required by *Epidendrums*.

**HYBRID CULTIVATED:** *E. Veitchii* (*S. grandiflora* × *Epidendrum radicans*), crimson and yellow.

**Epiphyllum** (Leaf-flowering Cactus).—Ord. Cactaceæ. Succulent greenhouse trailing plants. First introduced, 1810.

**CULTURE:** Compost, equal parts turfy loam, peat & leaf-mould, one-fourth silver sand. Position, light warm greenhouse Sept. to June, sunny place outdoors or cold frame June to Sept. Water moderately Sept. to April, little more freely other times. Temp., Nov. to March 50° to 60°; March to June 55° to 65°; Sept. to Nov. 40° to 45°. Propagate by cuttings inserted singly in 2 in. pots filled with sandy soil &

brick dust in March or April; grafting on *Pereskia aculeata* or *P. Bleo* in temp. 65 to 75° in Feb., March or April.

**SPECIES CULTIVATED:** *E. truncatum*, rosy red, winter, Brazil; *russellianum*, rose, May, Brazil.

**HYBRIDS AND VARIETIES:** *E. bicolor*, purple and white; *coccineum*, scarlet; *Gærtneri* (hybrid), scarlet and violet; *salmoneum*, salmon; *violaceum*, carmine, white and purple.

**Epistephium.**—Ord. Orchidacæ. Stove terrestrial orchid. First introduced 1864.

**CULTURE:** Compost, two parts fibrous loam, one part sand. Pot, Feb.; good drainage essential; keep soil below rim of pot. Water three times weekly March to Aug.; once weekly Aug. to Nov. & Feb. to March.; once a month other times. Syringe freely in summer. Temp., March to Sept. 65° to 85°; Sept. to March 60° to 70°. Propagate by division of pseudo-bulbs at potting time.

**SPECIES CULTIVATED:** *E. Williamsii*, mauve, rose, white, and yellow, summer, 12 in., Bahia.

**Equisetum** (Horsetail; Fox-tailed Asparagus). — Ord. Equisetacæ. Hardy deciduous herbaceous perennials. Orn. foliage. Leaves, green, narrow, rush-like, elegant.

**CULTURE:** Soil, ordinary. Position, bogs, margins of ponds, moist shady corners, or in pots in a cool shady greenhouse. Plant or pot, April. Water plants in pots freely whilst growing, moderately at other times. Propagate by division of rootstocks in March or April.

**SPECIES CULTIVATED:** *E. maximum* (Syn. *E. Telmateia*), 3 to 6 ft., Britain.

**Eragrostis** (Feather Grass; Love Grass).—Ord. Gramineæ. Hardy annual flowering grasses. Nat. Temperate Regions. Inflorescence, light, feathery & graceful.

**CULTURE:** Soil, ordinary. Position, open sunny beds or borders. Propagate by seeds sown  $\frac{1}{2}$  in. deep where plants are to grow in April. Gather inflorescence in July & dry for winter use.

**SPECIES CULTIVATED:** *E. ægyptica*, *elegans*, *maxima* and *plumosa*.

**Eranthemum.**—Ord. Acanthaceæ. Stove flowering plants. Orn. foliage. First introduced 1796.

**CULTURE:** Compost, equal parts peat, leaf-mould, loam & sand. Position, well-drained pots in light stove Sept. to June, sunny frame June to Sept. Pot, March or April. Water moderately in winter, freely other times. Temp., Sept. to March 55° to 65°; March to June, 65° to 75°. Prune shoots to within 1 in. of base after flowering. Apply liquid or artificial manure occasionally to plants in flower. Propagate by cuttings of young shoots inserted in sandy peat under bell-glass in temp. 75° March to July.

**SPECIES CULTIVATED:** *E. albiflorum*, white, summer, 2 ft., Brazil; *Andersonii*, white and purple, autumn, 1 ft., Malaya; *cinnabarinum*, scarlet, winter, 3 ft., Burma; *Cooperi*, white and purple, June, 2 ft., New Caledonia.

**Eranthis** (Winter Aconite).—Ord. Ranunculacæ. Hardy tuberous-rooted perennial. First introduced 1596.

**CULTURE:** Soil, ordinary. Position, shady borders, beds, lawns, under trees or on rockeries. Plant 2 in. deep & 2 in. apart in Oct., Nov. or Dec. Tubers should not be lifted, but left permanently in the soil.

**POT CULTURE:** Compost, equal parts leaf-mould, loam & sand. Position, 3 in. pots or large pans in cool greenhouse or window. Plant tubers  $\frac{1}{2}$  in. deep & close together in pots or pans in Oct. or Nov. Water moderately. After flowering, plant tubers out in borders. Propagate by division of tubers in Oct. or Nov.

**SPECIES CULTIVATED:** *E. hyemalis*, yellow, Jan. to March, 3 to 4 in., Europe (Britain).



**Ercilla**.—Ord. Phytolaccaceæ. Hardy evergreen creeper. First introduced 1840.

**CULTURE**: Soil, sandy loam. Position, south or south walls; sunny. Plant, Sept. or April. Prune after flowering, cutting away weak & shortening strong shoots one fourth. Shoots cling to wall like those of ivy. Propagate by cuttings or layers in autumn.

**SPECIES CULTIVATED**: *E. volubilis* (Syn. *Bridgesia spicata*), purple, spring, 10 to 15 ft., Chili.

**Eremostachys** (Desert Rod).—Ord. Labiatae. Hardy perennial. First introduced 1731.

**CULTURE**: Soil, light rich. Position, sunny well-drained borders. Plant, Oct. or April. Cut off spikes after flowering. Propagate by seeds sown 1-16 in. deep in light soil in sunny position outdoors in April; ; division of roots in Oct. or April.

**SPECIES CULTIVATED**: *E. laciniata*, rosy purple and yellow, summer, 2½ ft., Asia Minor.

**Eremurus**.—Ord. Liliaceæ. Hardy herbaceous perennials. First introduced 1800.

**CULTURE**: Soil, light deep rich sandy, well-manured loam. Position, sunny well-drained beds or borders. Plant, Sept. or Oct. Transplanting must not be done oftener than is really necessary. Mulch freely with well-decayed manure in autumn. Water copiously in hot weather. Protect in winter by a covering of bracken or dry litter. Propagate by division of roots in Oct. or March; seeds sown in heat in spring, growing seedlings on in cold frame for first three years.

**SPECIES CULTIVATED**: *E. Aitchinsonii*, red, June and July, 3 to 5 ft., Afghanistan; *aurantiacus*, orange-yellow, May, 2 to 3 ft., Afghanistan; *Bungei*, yellow, June and July, 1 to 3 ft., Persia; *himalaicus*, white, May and June, 8 ft., Himalayas; *kaufmannianus*, yellow, June, 4 ft., Turkestan; *Olgæ*, lilac-purple, fragrant, 2 to 4 ft., Turkestan; *robustus*, pink, May and June, 6 to 10 ft., Turkestan; *spectabilis*, yellow and orange, June, 2 to 4 ft., Siberia; *turkestanicus*, maroon and white, June, 2 to 4 ft., Turkestan.

**Erianthus** (Woolly Beard Grass; Ravenna Grass).—Ord. Gramineæ. Hardy orn. foliage perennial grass. Inflorescence similar to pampas plumes. Leaves, narrow, green.

**CULTURE**: Soil, deep loam. Position, sunny well-drained lawns or borders. Plant, March or April. Propagate by division of roots in March or April.

**SPECIES CULTIVATED**: *E. Ravennæ*, 6 ft., Mediterranean Region.

**Erica** (Heath).—Ord. Ericaceæ. Hardy & greenhouse evergreen flowering shrubs.

**CULTURE OF HARDY SPECIES**: Soil, sandy peat. Position, sunny rockeries, or margins of borders; or massed on banks or in the wild garden. Plant, Oct. or March. Prune straggly shoots in April.

**CULTURE OF GREENHOUSE SPECIES**: Compost, two-thirds fibrous peat, one-third silver sand. Position, well-drained pots, in light airy greenhouse Oct. to July, sunny place outdoors July to Oct. Repot autumn & winter-flowering kinds in March, summer-flowering sorts in Sept. Press the compost firmly in pots. Water carefully always, giving sufficient to keep soil uniformly moist; rain, not spring water, essential. Prune shoots to within 1 or 2 in. of base immediately after flowering. Temp., Oct. to March 40° to 45°; March to July 45° to 55°. Soot-water best stimulant. Propagate greenhouse species by cuttings of shoots 1 in. long inserted in well-drained pot of sandy peat under bell-glass in temp. 60° to 70° in spring; hardy species by cuttings inserted in sandy peat under bell-glass or hand-light outdoors in Sept.

or Oct.; division of plants in Oct.; layering shoots in Sept., Oct. or Nov.

**HARDY SPECIES:** *E. arborea*, white, May, 5 to 10 ft., Mediterranean Region, hardy only in S. of England; *carnea* (Syn. *E. herbacea*), pink, Jan. to April, 6 in., Europe; *carnea alba*, white; *ciliaris* (Dorset Heath), red, summer, 8 to 12 in., Britain; *cinerea* (Scotch Heather), crimson-purple, July to Sept., 6 to 12 in., Britain and Ireland, and its varieties, *alba* (white), *atropurpurea* (purple), *coccinea* (scarlet), *purpurea rosea* (purplish rose); *lusitanica* (Syn. *E. oodonodes*), pinkish white, Jan. to April, 2 to 6 ft., Spain; *Mackaii*, red, July and Aug., 1 ft., Ireland; *mediterranea* (Irish Heath)—Syn. *E. hibernica*—pink, April and May, 4 to 5 ft., Ireland, etc.; *tetralix* (Cross-leaved Heath, or Bell Heather), rosy red, July to Sept., 6 to 12 in., Britain and Ireland; *tetralix alba*, white; *tetralix rubra*, red; *vagans* (Cornish Heath), pink, July to Sept., 6 in. to 2 ft., England, France, and Ireland; *vagans alba*, white; *vagans rubra*, red.

**GREENHOUSE SPECIES:** *E. aitoniana*, white and purple, Aug., 18 in., S. Africa; *cafra*, white, May, 18 in., S. Africa; *cavendishiana* (hybrid), yellow, May, 4 ft.; *coccinea*, scarlet, June, 1 ft., S. Africa; *elegans*, rose and green, Aug., 6 in., S. Africa; *gracilis*, reddish purple, 1 ft., S. Africa; *hyemalis* (hybrid), pink, Dec. to March; *jasminiflora*, pink, Aug., 2 ft., S. Africa; *maenabiana* (hybrid), pink and white, June, 18 in.; *marnockiana* (hybrid), purple, crimson and white, July and Aug., 18 in.; *persoluta*, purple, April, 16 in., S. Africa; *ventricosa*, pink, June, 1 ft., S. Africa, and its varieties *alba* (white), *carnea* (flesh), and *coccinea* (scarlet); *vestita*, white, June, 3 ft., S. Africa, and its varieties *alba* (white), *carnea* (flesh), *coccinea* (scarlet), *incarnata* (pink), *lutea* (yellow), *purpurea* (purple), and *rosea* (rose); *willmoreana*, red, June, 12 in., a hybrid.

**Erigeron** (Flea-bane).—Ord. Compositæ. Hardy herbaceous perennials. First introduced 1628.

**CULTURE:** Soil, ordinary. Position, sunny moist rockeries or borders. Plant, Oct. or March. Cut down stems after flowering. Propagate by seeds sown  $\frac{1}{2}$  in. deep in light soil in shady position outdoors in April, May or June; division of roots in Oct. or March.

**SPECIES CULTIVATED:** *E. alpinus grandiflorus*, purple and yellow, Aug., 12 in., Northern Regions; *aurantiacus* (Orange Daisy), orange, summer, 12 in., Turkestan; *Mucronatus*, white, pink and yellow, summer, 12 in., Australia; *Roylei*, bluish purple and yellow, summer, 6 to 8 in., Himalayas.

**Erinus**.—Ord. Scrophularinæ. Hardy herbaceous perennial. First introduced 1739.

**CULTURE:** Soil, decayed vegetable mould & old mortar. Position, crevices of old sunny walls or dryish rockeries. Plant, March or April. Propagate by seeds sown where plants are to grow in April; division of plants in April.

**SPECIES CULTIVATED:** *E. alpinus*, violet purple, spring, 6 in., Pyrenees.

**Erivotrya** (Loquat; Chinese Medlar).—Ord. Rosacæ. Half-hardy evergreen flowering shrub. Fruit bearing. Fruit of Loquat about the size of green walnut, pale orange-red, downy, borne in bunches.

**OUTDOOR CULTURE:** Soil, light deep loam. Position, against south walls S. & S.W. of England & Ireland only. Plant, Sept. to Nov., April or May. Prune, April. Protect in severe weather with mats or straw hurdles.

**INDOOR CULTURE:** Soil, two parts sandy loam, one part leaf-mould. Position, beds against back wall of cold or slightly heated sunny greenhouse. Plant, Oct. or April. Water moderately Sept. to April, freely afterwards. Syringe daily May to Sept. Prune straggling shoots in April. Propagate by seeds sown  $\frac{1}{2}$  in. deep in pots of light soil in cold greenhouse or frame, spring or autumn; cuttings of firm shoots inserted in sandy soil in cold frame or greenhouse, Aug.; layering in Oct.; grafting on common quince in March; budding on hawthorn in July.

**SPECIES CULTIVATED:** *E. japonica*, white, summer, 10 to 30 ft., China and Japan. Known also as *Photinia japonica*.

**Eriogonum.**—Ord. Polygonacæ. Hardy herbaceous perennials. First introduced 1811.

**CULTURE:** Soil, ordinary. Position, open borders. Plant, Oct. or March. Propagate by seeds sown  $\frac{1}{2}$  in. deep in light soil outdoors in April; division of roots in March.

**SPECIES CULTIVATED:** *E. umbellatum* Sileri, golden yellow, summer, 12 in., N.W. America.

**Eriophorum** (Cotton Grass).—Ord. Cyperacæ. Hardy aquatic perennials. Inflorescence borne in spikelets, with cottony tufts on their extremities.

**CULTURE:** Soil ordinary. Position, margins of ponds. Plant, March. Propagate by seeds sown where plants are to grow; division of plants in March.

**SPECIES CULTIVATED:** *E. alpinum*, 1 ft., N. Hemisphere; *polystachion*, 1 ft., Britain; *vaginatum*, 1 ft., Britain.

**Eriopsis.**—Ord. Orchidacæ. Stove evergreen epiphytal orchid. First introduced 1845.

**CULTURE:** Compost, fibrous peat, little sphagnum moss. Repot, March or April. Position, light sunny part of stove. Water three times weekly March to Aug.; once weekly Aug. to Nov & Feb. to March; once a month other times. Syringe freely in summer. Temp., March to Sept. 65° to 85°; Sept. to March 60° to 70°. Propagate by division of pseudo-bulbs at potting time.

**SPECIES CULTIVATED:** *E. rutidobulbon*, brown and yellow, summer, 2 ft., Colombia; *Helena*, orange, summer.

**Eriostemon.**—Ord. Rutacæ. Greenhouse evergreen shrubs. First introduced 1822.

**CULTURE:** Compost, equal parts sandy loam & peat. Position, well-drained pots in light airy greenhouse. Repot, March, pressing soil down firmly. Water moderately Sept. to April, freely afterwards. Prune straggly growths in Feb. Temp., Sept. to April 45° to 50°; April to Sept. 50° to 60°. Ventilate greenhouse freely in summer. Propagate by cuttings 2 in. long inserted in sandy peat under bell-glass in temp. 60° in March; grafting on *Correa alba* in March.

**SPECIES CULTIVATED:** *E. buxifolium*, pink, May or June, 3 to 4 ft., Australia; *pulehellus*, pink, May, 2 to 3 ft., hybrid; *salicifolius*, red, spring, 2 ft., Australia.

**Eritrichium** (Fairy Borage; Fairy Forget-me-not).—Ord. Boraginacæ. Hardy perennial alpine plant. Nat. Alps. First introduced 1869.

**CULTURE:** Compost, equal parts broken limestone, sandstone, fibry loam, peat & sand. Position, sheltered crannies of exposed rockeries, where foliage can be protected from excessive moisture in winter. Plant, April. Protect by panes of glass in rainy weather. Propagate by division of plants in April; seeds sown in gentle heat in spring.

**SPECIES CULTIVATED:** *E. nanum*, sky blue and yellow, summer, 2 to 3 in., N. Temperate Regions.

**Erodium** (Heron's-bill).—Ord. Geraniacæ. Hardy perennial herbs. First introduced 1640.

**CULTURE:** Soil, sandy. Position, dry sunny borders or rockeries. Plant, March or April. Transplant very seldom. Propagate by seeds sown  $\frac{1}{2}$  in. deep in pots of sandy soil in temp. 55° in March or April, transplanting seedlings outdoors in June or July; division of roots in April.

**SPECIES CULTIVATED:** *E. chamædryoides* (Syn. *E. Reichardi*), white and pink, April to Sept., 2 to 3 in., Balearic Islands; *macradenium*, violet, flesh and purple, summer, 6 in., Pyrenees; *Manescavi*, purplish red, summer, 1 to 2 ft., Pyrenees; *petraeum*, purple, July, 6 in., Pyrenees.

**Eryngium** (Sea Holly).—Ord. Umbelliferæ. Hardy perennial herbs. Orn. foliage. Flower heads surrounded by spiny coloured bracts.

**CULTURE:** Soil, light sandy. Position, dryish sunny borders. Plant, Oct., Nov., March or April. Propagate by seeds sown 1-16 in. deep in boxes of sandy soil in cold frame in April or May; division of plants in Oct. or April.

**SPECIES CULTIVATED:** *E. alpinum*, blue and white, summer, 1 to 2 ft., Europe; *amethystinum*, purple, July and Aug., 12 to 18 in., Europe; *Bourgatii*, blue, June to Aug., 1 to 2 ft., Spain; *giganteum*, blue, summer, 3 to 4 ft., Armenia; *maritimum*, bluish white, July to Oct., 1 to 2 ft., Britain; *oliverianum*, blue, summer, 2 to 4 ft., Orient; *pandanifolium*, purplish, summer, 10 to 15 ft., Monte Video; *planum*, blue, summer, 1 to 2 ft., Europe.

**Eryngo** (*Eryngium amethystinum*).—See *Eryngium*.

**Erysimum** (Alpine Wallflower; Hedge Mustard).—Ord. Cruciferæ. Hardy annuals, biennials, & perennials. First introduced 1823. Ht. 1 to 12 in.

**CULTURE:** Soil, ordinary. Position, dryish sunny beds or rockeries. Plant, March or April. Propagate annual species by seeds sown where plants are required to grow in April; biennials, by seeds sown in sunny place outdoors in June, transplanting seedlings to flowering positions in Aug.; perennials, by seeds sown as advised for biennials, also by cuttings inserted in sandy soil under hand-light or cold frame in Aug.; division of plants in March or April.

**ANNUAL SPECIES:** *E. perofskianum*, reddish orange, spring to autumn, 1 ft., Caucasus.

**BIENNIAL SPECIES:** *E. asperum arkansanum*, yellow and white, July, 8 in., N. America.

**PERENNIAL SPECIES:** *E. ochroleucum*, sulphur-yellow, fragrant, April to July, Europe; *rupestris* (Syn. *E. pulchellum*), sulphur-yellow, fragrant, spring, 1 ft., Asia Minor.

**Erythræa** (Blush-wort; Centaury).—Ord. Gentianaceæ. Hardy annual or perennial alpine plants.

**CULTURE:** Soil, sandy loam. Position, sunny rockeries. Plant, March or April. Propagate by seeds sown 1-16 in. deep in light soil in cold frame in April; division of plants in March or April.

**ANNUAL SPECIES:** *E. centaurium*, pink, June to Sept., 6 to 15 in., Britain; *Muhlenbergi*, pink and white, summer, 6 to 8 in., California.

**PERENNIAL SPECIES:** *Massoni*, rose, summer, 4 to 6 in., Azores.

**Erythrina** (Coral-tree).—Ord. Leguminosæ. Half-hardy herbaceous perennials & greenhouse deciduous shrubs. Flowering & orn. foliage. First introduced 1690.

**CULTURE OF SHRUBBY SPECIES:** Compost, equal parts loam, peat, well-decayed manure & sand. Position, pot in warm greenhouse, or at base of south wall S. of England. Pot or plant, March. Prune shoots away close to old wood in Oct. Water freely April to Sept.; keep almost dry remainder of time. Temp., Sept. to March 45° to 50°; March to Sept. 55° to 65°. Store plants in pots on their sides in greenhouse during winter. Place in light part of structure March to June, then stand in sunny position outdoors. Protect outdoor plants with covering of ashes.

**CULTURE OF HERBACEOUS SPECIES:** Compost, same as above. Position, pot in warm sunny greenhouse. Pot, March. Cut down flowering stems in autumn. Water freely April to Sept.; keep nearly dry afterwards. Temp., Sept. to March 45° to 55°; March to Sept. 60° to 70°. Propagate by cuttings of young shoots removed in spring with portion of old wood attached & inserted singly in well-drained

pots of sandy peat in temp. 75°; herbaceous species by division in spring.

**SHRUBBY SPECIES:** *E. Crista-galli* (Coral Tree), scarlet, June to Aug., 6 to 8 ft., Brazil.

**HERBACEOUS SPECIES:** *E. herbacea*, scarlet, June to Sept., 3 to 4 ft., W. Indies; *Bidwelli*, scarlet, hybrid.

**Erythronium** (Dog's-tooth Violet; Yellow Adder's-tongue).—Ord. Liliaceæ. Hardy bulbous perennials. First introduced 1596.

**CULTURE:** Compost, equal parts loam, peat & leaf-mould. Position, sheltered rockeries, beds, borders, or under shade of trees. Plant bulbs 3 in. deep & 2 in. apart in Aug. Transplant very seldom. Top-dress annually with decayed manure. Propagate by offsets in Aug.

**POT CULTURE:** Compost, same as above. Plant bulbs 1 in. deep & ½ in. apart in well-drained pots in Aug. Store pots in cold frame during winter. Water very little until Feb., then give a moderate supply. Place plants in greenhouse or window to flower in March.

**SPECIES CULTIVATED:** *E. albidum*, white and yellow, April, 6 in., N. America; *americanum* (Yellow Adder's Tongue), golden yellow and purple, May, 6 in., N. America; *citrinum*, yellow, orange, and pink, spring, 6 in., Oregon; *Dens-canis* (Dog's Tooth Violet), rose, spring, 6 in., Europe, and its varieties, *album* (white), *purpureum* (purple), *rosetum* (rose), *violaceum* (violet); *grandiflorum*, white and orange, spring, N.W. America, and its variety *giganteum* large); *Hartwegi*, creamy white, May, 6 in., N.W., America; *Hendersoni*, purple-rose, March, 6 in., Oregon; *Howelli*, yellow and orange, spring, 6 in., Oregon; *Johnsoni*, rosy pink, spring, S. Oregon; *purpurascens*, yellow, purple and orange, spring, California; *purpurascens multiflorum*, lilac.

**Escallonia** (Chilian Gum Box).—Ord. Saxifragaceæ. Half-hardy evergreen shrubs. First introduced 1827.

**CULTURE:** Soil, ordinary rich, well drained. Position, against south walls in Midlands & in open garden S. of England. May also be planted against back walls of cold greenhouses. Suitable for hedges in mild districts. Plant, Oct., Nov., March or April. Prune straggly shoots only in April. Propagate by cuttings of half-ripened shoots Plant, Oct., Nov., March or April. Propagate by seeds sown 1-16 in. deep, inserted in sandy soil under bell-glass Aug. or Sept.; layering shoots in Oct.; suckers removed & replanted in April.

**SPECIES CULTIVATED:** *E. langleyensis* (hybrid), rosy purple, June; *macrantha*, crimson-red, June, 6 ft., Chiloe; *montevidensis* (Syn. *floribunda*), white, July, 10 ft., Monte Video; *philippinana*, white, July, 5 ft., Valdivia; *punctata*, red, July, 4 ft., Chili; *rubra*, red, July to Sept., 6 ft., Chili.

**Eschscholtzia** (Californian Poppy).—Ord. Papaveraceæ. Hardy annuals. First introduced 1790.

**CULTURE:** Soil, ordinary. Position, sunny well-drained beds or borders. Propagate by seeds sown 1-16 in. deep in Aug. or April where plants are to flower. Thin seedlings out to 2 in. apart when 1 in. high.

**SPECIES CULTIVATED:** *E. californica*, orange-yellow, summer, 1 to 2 ft., California; *californica crocea*, orange. Numerous varieties will be found in trade lists.

**Eucalyptus** (Australian Gum; Blue Gum).—Ord. Myrtaceæ. Greenhouse & half-hardy evergreen trees. Orn. foliage. First introduced 1810. Leaves mostly ovate-lanceolate, fragrant.

**CULTURE:** Compost, two parts fibry loam, one part leaf-mould, charcoal & sand. Position, pots in greenhouse heated to temp. 45° to 50° in winter, 55° to 60° other times; dwelling-rooms, sunny beds outdoors in summer; sheltered places outdoors all the year S. of England. Pot, March or April. Plant outdoors June; lift, Oct. Water plants in pots moderately Oct. to April, freely afterwards. Pruning not required. Propagate by seeds sown ½ in. deep in pots of sandy soil in temp. 65° in Feb., March or April; young plants should be raised annually for pot culture.

**SPECIES CULTIVATED:** *E. citriodora* (Citron-scented Gum), 15 to 20 ft., Australia; suitable for pot culture; *globulus* (Blue Gum), 15 to 20 ft., Australia, pots or outdoors; *Gunnii*, 15 to 20 ft., suitable for outdoor culture; *resinifera*, 30 to 60 ft.

**Eucharidium.**—Ord. Onagrarieæ. Hardy annuals. First introduced 1787.

**CULTURE:** Soil, ordinary rich. Position, sunny well-drained beds or borders. Propagate by seeds sown 1-16 in. deep where plants are to grow in Aug. or Sept. for early summer flowering, in March or April for mid-summer flowering, & June for autumn flowering. Thin seedlings to 2 in. apart when 1 in. high.

**SPECIES CULTIVATED:** *E. Breweri*, white, lilac, and purple, summer, 8 in., California; *concinnum*, purple, summer, 1 ft., California.

**Eucharis** (Amazon Lily).—Ord. Amaryllidaceæ. Stove bulbous flowering plants. Evergreen. First introduced 1851.

**CULTURE:** Compost, two parts fibrous loam, one part peat, decomposed sheep manure & sand. Position, well-drained pots on a bed or stage heated beneath to temp. 85° in plant stove. Pot in June or July, placing six bulbs in a 10 in. pot. Press compost down firmly. Repotting not needful oftener than once every three or four years. Water moderately Oct. to April, freely afterwards. Syringe freely in summer. Liquid manure apply twice a week after flower stems appear. Top-dress established plants annually in March with rich compost. Temp., March to Sept. 70° to 80°; Sept. to Dec. 55° to 65°; Dec. to March 65° to 75°. Propagate by seeds sown ½ in. deep in sandy soil in temp. 85° in Feb. or March; offsets removed from old bulbs & placed singly in 3 in. pots in June or July.

**SPECIES CULTIVATED:** *E. candida*, white, autumn, 1 ft., Colombia; *grandiflora* (Syn. *E. amazonica*), white, March to Dec., 1 to 2 ft., Colombia, and its varieties, *Lowii*, *Moorei* and *fragrans*; *Mastersii*, white, spring, 12 to 18 in., Colombia; *Sanderi*, white and yellow, spring, 12 to 18 in., Colombia; *Stevensii*, white and yellow, spring, 1 ft., hybrid.

**Eucomis** (Pine-apple Flower; King's Flower).—Ord. Liliaceæ. Half-hardy bulbous flowering plants. Evergreen. Nat. Cape of Good Hope. First introduced 1760.

**POT CULTURE:** Compost, two parts sandy loam, one part well-decayed manure & sand. Position, well-drained pots in light, warm greenhouse. Pot, Oct. or March, placing one bulb in a 5 in. pot. Water very little Sept. to March, moderately March to May, freely afterwards. Temp., Sept. to March 45° to 50°; March to Sept. 55° to 65°. Apply liquid manure occasionally when flower spike shows.

**OUTDOOR CULTURE:** Soil, ordinary light rich. Position, sunny, well-drained border. Plant, Sept., Oct. or March, placing bulbs 3 in. below surface & 6 in. apart. Protect in winter by covering of ashes, cocoanut-fibre refuse or manure. Propagate by offsets removed & transplanted in Sept. or Oct.

**SPECIES CULTIVATED:** *E. punctata*, green and brown, Aug., 18 in. to 2 ft.; *regia*, green and purple, spring, 2 ft.; *undulata*, green, May, 2 ft.

**Eucryphia.**—Ord. Rosaceæ. Half-hardy evergreen flowering shrub.

**CULTURE:** Soil, good ordinary. Position, warm shrubberies; against S. or S.W. walls; or in cold greenhouse. Plant in autumn. Propagate by layers in autumn.

**SPECIES CULTIVATED:** *E. pinnatifolia*, white, Aug., 8 to 10 ft., Chili.

**Eugenia** (Fruiting Myrtle).—Ord. Myrtaceæ. Stove & greenhouse flowering shrubs. Evergreen. First introduced 1768. Fruit, black, rose; globular, fragrant, edible; autumn.

**CULTURE:** Compost, two parts sandy loam, one leaf-mould or sand. Pot, Feb. or March. Position, pots in stove or greenhouse. Water moderately Oct. to April, freely afterwards. Syringe April to Aug. Prune straggly shoots in March. Temp. for stove species, 55° to 65° Sept. to March; 65° to 75° March to Sept.; for greenhouse species, 40° to 50° Oct. to March, 55° to 65° March to Oct. Propagate by cuttings of firm shoots inserted in sandy soil under bell-glass in temp. 55° to 75° in summer. See also the genus *Myrtus*.

**STOVE SPECIES:** *E. caryophyllata*, white, summer, 15 to 20 ft., Moluccas; *Jambos* (Rose Apple), white, summer, 20 ft., Trop. Asia; *malaccensis* (Malay Apple), scarlet, summer, 15 to 20 ft., Malaya.

**GREENHOUSE SPECIES:** *E. myriophylla*, leaves narrow and elegant, 6 ft., Brazil.

**Eulalia.**—See *Miscanthus*.

**Euonymus** (Spindle-tree; Japanese Spindle-tree).—Ord. Celastraceæ. Hardy & half-hardy deciduous & evergreen shrubs. Orn. foliage. Leaves mostly oval-shaped, green, or variegated with white & yellow.

**CULTURE:** Soil, ordinary. Position, deciduous species in shrubberies; evergreen species against south or west walls, edgings to beds, window boxes, hedges & front of shrubberies. Plant deciduous species in Sept., Oct. or Nov.; evergreen in Sept., Oct., March or April. Prune, Oct. or April. Good seaside shrubs.

**POT CULTURE OF EVERGREEN SPECIES:** Compost, two parts loam, one part leaf-mould & sand. Position, well-drained pots in cool greenhouse, corridors, balconies, windows. Pot, Sept., Oct. or March. Water moderately in winter, freely other times. Syringe foliage frequently in summer. Propagate by cuttings of shoots of previous year's growth, 3 in. long, inserted in sandy soil in cool greenhouse, window or frame, in Sept. or Oct.

**DECIDUOUS SPECIES:** *E. americanus*, 2 ft., United States; *atropurpureus*, 10 ft., N. America; *europæus*, 10 to 15 ft., Europe (Britain) and Siberia; *latifolius*, 8 ft., Europe and Asia.

**EVERGREEN SPECIES:** *E. japonicus*, leaves green, 4 to 6 ft., China and Japan; and its varieties *albo-marginata* (leaves margined with white), *aureus* (leaves yellow), *latifolius albo-variegatus* (leaves broad and variegated with white), *ovatus aureus* (leaves golden); *radicans*, 1 ft., Japan, and its silvery and golden-leaved forms.

**Eupatorium** (Hemp Agrimony).—Ord. Compositæ. Hardy herbaceous and greenhouse shrubby plants.

**CULTURE OF HARDY SPECIES:** Soil, ordinary. Position, open borders, shrubberies. Plant, Oct., Nov., March or April.

**CULTURE OF SHRUBBY GREENHOUSE SPECIES:** Compost, equal parts loam & dried cow manure with a little sand. Position, pots in light greenhouse Sept. to June; cold frame June to Sept. Pot, March to April. Prune immediately after flowering. Water moderately Sept. to March, feely afterwards. Temp., Sept. to March 45° to 50°; March to June 55° to 60°. Apply liquid manure frequently to plants in flower. Both species may be planted out in the open garden in June, have their shoots frequently pinched, & then be lifted & placed in pots for flowering in greenhouse.

Propagate hardy species by division in Oct. or March; greenhouse species by cuttings of young shoots inserted in sandy soil in temp. 55° to 65° in March or April.

**HARDY SPECIES:** *E. ageratoides*, white, summer, 2 to 4 ft., N. America; *cannabinum* (Hemp Agrimony), reddish purple, July, 2 to 4 ft., Britain; *purpureum* (Trumpet Weed), purplish, autumn, 3 to 6 ft., N. America.

**GREENHOUSE SPECIES:** *E. atrorubens* (Syn. *Hebeclinium atrorubens*), red, Jan.

to March, 12 to 18 in., Mexico; ianthemum (Syn. Hebeclinium ianthinum), purple, winter, 2 ft., Mexico; riparium, white, spring, 2 to 3 ft., Mexico; weinmannianum (Syn. E. odoratum), white, autumn, 2 to 3 ft., Mexico

**Euphorbia** (Spurge; Caper Spurge; Poinsettia).—Ord. Euphorbiaceæ. Stove and hardy flowering shrubs or herbs.

**CULTURE OF STOVE SPECIES:** Compost, equal parts fibrous loam & peat with liberal amount of sand. Position, sunny dry part of stove, with shoots trained up roof, wall, or on trellis. Pot, March or June. Water moderately Sept. to Jan.; keep almost dry Jan. to May; freely afterwards. Temp., Jan. to May 50° to 55°; May to Sept. 65° to 75°; Sept. to Jan. 55° to 65°. Prune *E. fulgens* in June, cutting shoots back to within 1 in. of base.

**CULTURE OF POINSETTIA:** Flowers, insignificant. Bracts, scarlet, white; winter. Foliage, green or variegated with creamy white. Compost, four parts fibrous loam, one part decayed cow manure, & half a part silver sand. Position, pots or beds with shoots trained to back wall of stove. **YOUNG PLANTS:** Place old plants in temp. 65° to 75° in May. Remove young shoots when 2 to 3 in. long, insert singly in 2 in. pots filled with sandy loam & peat, and plunge to the rims in bottom heat of 85°, under a bell-glass or in propagator. When rooted, place singly in 4 in. pots, plunge again in bottom heat for a few days, then remove to shelf near glass. As soon as well rooted transfer to 6 or 8 in. pots, keep near glass for week or so, then gradually harden, place in cold sunny frame until Sept., when remove to temp. 55°. Shade from mid-day sun when in cold frame. Water freely. Syringe twice daily. Ventilate freely on fine days. Transfer plants into temp. 60° to 65° end of Sept. Water moderately. Apply stimulants twice a week. After flowering remove to a temp. of 40° to 45°, keep roots quite dry & store pots on their side under staging. **OLD PLANTS:** Prune shoots, unless required for producing cuttings, to second latent bud or eye from their base, end of April. When new shoots form 1 in. long, turn plants out of their pots, remove old soil from roots, cut off the straggling ends of latter, & repot in pots just large enough to take roots & little compost. Place in temp. 65° to 75° from pruning time. Repot into larger size when small pots are filled with roots. Place in cold sunny frame or pits during July & Aug. Water & syringe freely. Remove to temp. 55° to 60°, Sept.; 60° to 70°, Oct. onwards. Apply stimulants twice a week Oct., until bracts are fully developed, then cease. After flowering, treat as advised for young plants. **Beds:** Compost, as above. Plant, July. Train the shoots thinly to wall. Water freely while growing; after flowering keep quite dry. Prune shoots to within one latent bud of their base, end of Sept. Temp., April to Sept. 65° to 75°; Sept. to April 55° to 60°. Average height of a well-grown young plant 12 to 18 in. Average diameter of a well-grown head of bracts 10 to 15 in.

**CULTURE OF HARDY SPECIES:** Soil, ordinary. Position, dry borders, banks, sunny rockeries. Plant, March or April.

**PROPAGATE** stove species by cuttings of young shoots 3 in. long inserted in well-drained pots of sandy compost in temp. 70° in May, June or July; hardy species by cuttings inserted in sandy soil in cold frame in summer, seeds sown in dryish positions outdoors in April, division of plants in Oct. or April.

**STOVE SPECIES:** *E. fulgens* (Syn. *E. jacquinesflora*), scarlet, autumn and winter, 2 to 3 ft., Mexico; *pulcherrima* (Syn. *Poinsettia pulcherrima*), scarlet, autumn, 3 to 6 ft., Mexico; *punica*, scarlet, April, 6 ft., Jamaica; *splendens*, red, summer, 4 ft., Madagascar.



**HARDY SPECIES:** *E. Cyparissias* (Cypress Spurge), yellow, June, 2 ft., Europe; *lathyris* (Caper Spurge), yellow, June and July, 3 to 4 ft., biennial, Europe; *Myrsinites*, yellow, summer, trailing, S. Europe.

**European Box Thorn** (*Lycium europæum*).—See *Lycium*.

**European Cyclamen** (*Cyclamen europæum*).—See *Cyclamen*.

**European Palm** (*Chamærops humilis*).—See *Chamærops*.

**Eurya**.—Ord. Ternströmiaceæ. Half-hardy evergreen shrub. Orn. foliage. Nat. Japan. First introduced 1871. Leaves, ovate, green, creamy white & yellow.

**CULTURE:** Compost, two parts loam, one part peat & sand. Position, pots in cool greenhouses, dwelling-rooms or windows. Pot, March or April. Water moderately in winter, freely other times. May be grown against south wall outdoors in S. of England & Ireland. Propagate by cuttings of young shoots inserted in sandy soil in temp. 60° to 65° in spring.

**SPECIES CULTIVATED:** *E. japonica variegata*, leaves green and white, 5 ft., India, China, and Japan; *latifolia variegata*, leaves broad, green and creamy white, 6 ft.

**Eurycles** (Brisbane Lily).—Ord. Amaryllidaceæ. Stove bulbous plants. First introduced 1759.

**CULTURE:** Compost, three parts sandy loam, one part leaf-mould & sand. Position, well-drained pots in light part of stove. Pot, Feb. Water freely March to Sept., keep nearly dry remainder of time. Temp. for stove species, Sept. to March 50° to 55°; March to Sept. 65° to 75°. Propagate by offsets removed & placed singly in small pots in Feb.

**SPECIES CULTIVATED:** *E. Cunninghamsi*, white, July, 1 ft., Australia; *cupensis*, white, Aug., 1 ft., Malaya and Australia.

**Euterpe**.—Ord. Palmaceæ. Stove ornamental-leaved plants. First introduced 1656.

**CULTURE:** Compost, equal parts loam, peat, leaf-mould & sand. Pot, Feb. to March. Position, pots in shady part of stove. Water freely always. Shade from sun. Temp., March to Sept. 70° to 85°; Sept. to March 60° to 65°. Propagate by seeds sown 1 in. deep in above compost, in temp. 85° in spring.

**SPECIES CULTIVATED:** *E. edulis*, 10 to 20 ft., Trop. America; *oleracea*, 10 to 20 ft., Brazil; *speciosa*, 10 to 20 ft.

**Evening Flower**.—See *Hesperantha*.

**Evening Primrose** (*Oenothera biennis*).—See *Oenothera*.

**Evening Star** (*Cooperia Drummondii*).—See *Cooperia*.

**Evergreen Alkanet** (*Anchusa sempervirens*).—See *Anchusa*.

**Evergreen Candytuft** (*Iberis sempervirens*).—See *Iberis*.

**Evergreen Cypress** (*Cupressus sempervirens*).—See *Cupressus*.

**Evergreen Fire-thorn** (*Cratægus pyracantha*).—See *Cratægus*.

**Evergreen Maple** (*Acer heterophyllum*).—See *Acer*.

**Evergreen Oak** (*Quercus Ilex*).—See *Quercus*.

**Evergreen Orpine** (*Sedum Anacampseros*).—See *Sedum*.

**Evergreen Privet** (*Ligustrum vulgare sempervirens*).—See *Ligustrum*.

**Evergreen Rose** (*Rosa sempervirens*).—See *Rosa*.

**Everlasting Flowers**.—See *Helipterum*, *Helichrysum*, *Waitzia*, & *Xeranthemum*.

**Everlasting Pea** (*Lathyrus latifolius*).—See *Lathyrus*.

**Everlasting Sand-flower** (*Ammobium alatum*).—See *Ammobium*.

**Eve's-cushion** (*Saxifraga hypnoides*).—See *Saxifraga*.

**Ewer's Stonecrop** (*Sedum Ewersi*).—See *Sedum*.

**Exacum**.—Ord. *Gentianaceæ*. Stove annuals and perennials. First introduced 1848.

**CULTURE**: Compost, equal parts peat, loam & sand. Position, pots in light part of plant stove. Water freely. Temp., 65° to 75°. Propagate by seeds sown on surface of fine compost in temp. 75° to 80° in April, transplanting seedlings when large enough to handle into small pots & thence into a larger size later on; perennial species also by cuttings.

**PERENNIAL SPECIES**: *E. affine*, bluish lilac, fragrant, June to Oct., 6 in., Socotra.

**ANNUAL SPECIES**: *E. zelanicum macranthum*, violet purple, autumn, 2 ft., Ceylon.

**Exeter Elm** (*Ulmus montana* var. *fastigiata*).—See *Ulmus*.

**Exeter Oak** (*Quercus* var. *crispa*).—See *Quercus*.

**Exochorda** (Pearl Bush).—Ord. *Rosaceæ*. Hardy deciduous flowering shrubs. First introduced 1854.

**CULTURE**: Soil, ordinary. Position, shrubberies. Plant, Oct. to Feb. Prune after flowering. Propagate by seeds sown in sandy soil in cold frame in spring or autumn; cuttings of young shoots inserted in sandy soil under bell-glass in summer; grafting on portions of its own roots in temp. 60° in spring.

**SPECIES CULTIVATED**: *E. Alberti*, white, May, 5 to 6 ft., Turkestan; *grandiflora* (Syn. *Spiræa grandiflora*), white, May, 6 ft., China.

**Fabiana** (False Heath).—Ord. *Solanaceæ*. Hardy flowering shrub. Evergreen. First introduced 1838.

**CULTURE**: Soil, ordinary. Position, against south or west walls; cool greenhouses N. of England. Plant, Oct. or April. Water plants in pots moderately in winter, freely in summer. Repot, March or April. Propagate by cuttings of firm young shoots inserted in sandy soil under bell-glass in cold greenhouse, or in cold frame in March or April.

**SPECIES CULTIVATED**: *F. imbricata*, white, May, 3 ft., Chili.

**Fagopyrum** (Buckwheat).—Ord. *Polygonaceæ*. Hardy annual. Grown for yielding seed for pheasant and poultry feeding; also for ploughing or digging in as a green manure. Good bee plant also.

**CULTURE**: Soil, light, sandy, or brashy; clay unsuitable. Sow in May in shallow drills 6 in. to 8 in. apart. Harvest when greatest amount of seed has matured, as seeds do not ripen all at once. Cut early in morning when moist with dew. Plough or dig in as green manure when flowering begins. Seed to sow an acre, 1 bushel. Average yield per acre, 25 to 30 bushels. Weight of a bushel of seeds, 50 lb. Average price per bushel, 5s. to 6s.

**SPECIES CULTIVATED**: *F. esculentum*, pink and white, summer, 3 ft., Central Asia.

**Fagus** (Beech).—Ord. *Cupuliferæ*. Hardy deciduous & evergreen orn. foliage trees. Leaves, oblong, light green, silver striped, golden striped, copper, purple.

**CULTURE**: Soil, sandy or chalky, & gravelly loam. Position, open dryish shrubberies, lawns, copses; also good seaside tree. Plant deciduous species & varieties Oct. to Feb.; evergreen, Sept. or April. Common species (*F. sylvatica*) good hedge shrub. Plant 9 in. apart & keep sides closely trimmed. Timber used for making joiners' tools, gun stocks, saddle trees, & wheel felloes. Average value per cubic foot 10d. to 1s. 7d. Propagate by seeds sown  $\frac{3}{4}$  in. deep in rows 15 in. apart

in March or April, transplanting seedlings when two years old; variegated kinds by grafting in March on common species.

**SPECIES CULTIVATED:** *Cunninghamii*, evergreen, 20 to 30 ft., Terra del Fuego; *sylvatica* (Common Beech), 70 to 80 ft., deciduous, Europe (Britain); and its varieties, *cuprea* (Copper Beech), *heterophylla*, *incisa* and *quercifolia* (Out-leaved Beeches), *pendula* (Weeping Beech), *purpurea* (Purple Beech) and *argenteo-variegata* (Silver-leaved Beech).

**Fair Maids of February** (*Galanthus nivalis*).—See *Galanthus*.

**Fair Maids of France** (*Ranunculus aconitifolius*, *Saxifraga granulata*).—See *Ranunculus*, *Saxifraga*.

**Fair Maids of Kent** (*Ranunculus aconitifolius*).—See *Ranunculus*.

**Fairy Borage** (*Eritrichium nanum*).—See *Eritrichium*.

**Fairy Fingers** (*Digitalis purpurea*).—See *Digitalis*.

**Fairy Floating Moss** (*Azolla caroliniana*).—See *Azolla*.

**Fairy Forget-me-not** (*Eritrichium nanum*).—See *Eritrichium*.

**Fairy Heron's-bill** (*Erodium Reichardi*).—See *Erodium*.

**Fairy Rose** (*Rosa indica minima*).—See *Rosa*.

**Fairy Wallflower** (*Erysimum pumilum*).—See *Erysimum*.

**False Acacia**.—See *Robinia*.

**False Brome Grass** (*Brachypodium distachyon*).—See *Brachypodium*.

**False Chamomile** (*Boltonia asteroides*).—See *Boltonia*.

**False Cherry** (*Prunus pseudo-cerasus*).—See *Prunus*.

**False Dragon's Head** (*Physostegia virginiana*).—See *Physostegia*.

**False Goat's-beard** (*Astilbe japonica*).—See *Astilbe*.

**False Grape** (*Vitis quinquefolia*).—See *Vitis*.

**False Heath**.—See *Fabiana*.

**False Hellebore** (*Veratrum nigrum*).—See *Veratrum*.

**False Hemp** (*Datisca cannabina*).—See *Datisca*.

**False Honeysuckle** (*Rhododendron pontica*).—See *Rhododendron*.

**False Indigo** (*Baptisia australis*).—See *Baptisia*.

**False Mallow**.—See *Malvastrum*.

**False Mitre-wort** (*Tiarella cordifolia*).—See *Tiarella*.

**False Plantain**.—See *Heliconia*.

**False Starwort** (*Boltonia asteroides*).—See *Boltonia*.

**Fancy Pansy** (*Viola tricolor*).—See *Viola*.

**Fan Palm** (*Chamærops humilis*).—See *Chamærops*.

**Fan Palm** (*Sabal blackburniana*).—See *Sabal*.

**Farfugium**.—See *Senecio*.

**Fatsia** (Japanese *Aralia*; Rice Paper-plant; Fig-leaf Palm).—Ord. *Araliaceæ*. Half-hardy orn. foliaged shrubs.

**GREENHOUSE CULTURE:** Compost, two parts sandy loam, one part leaf-mould, decayed manure & sand. Position, well-drained pots in cool greenhouse, or dwelling-room. Pot, Feb., March, or April. Water moderately Sept. to April, freely afterwards. Temp., Sept to April 40° to 50°; April to Sept. 55° to 65°.

**OUTDOOR CULTURE:** Soil, ordinary, well-drained. Position, sheltered shrubberies in warm districts. Requires protection in severe weather. Plant, May. Propagate by cuttings of roots inserted in light soil in temp. 80° in March or April; variegated kinds by grafting

on common species in temp. 75° in March or April; tall plants by stem-rooting in spring.

**SPECIES CULTIVATED:** *F. horrida*, leaves palmate and spiny, 4 to 6 ft., Japan, etc.; *japonica* (Syn. *Aralia Sieboldii*), the Japanese *Aralia* or Fig-leaf Palm, leaves green, palmate, 3 to 6 ft., Japan, a popular room and greenhouse plant; *papyrifera* (Chinese Rice Paper-plant), syn. *Aralia papyrifera*, 6 to 8 ft., China. There are silver and golden variegated forms of *F. japonica*.

**Feather-few** (*Chrysanthemum Parthenium*).—See *Chrysanthemum*.

**Feather-foil** (*Hottonia palustris*).—See *Hottonia*.

**Feather Grass** (*Stipa pennata* & *Eragrostis elegans*). — See *Stipa* & *Eragrostis*.

**Fedia** (Horn of Plenty). — Ord. Valerianacæ. Hardy annual. First introduced 1796.

**CULTURE:** Soil, ordinary. Position, open beds, rockeries, or borders. Propagate by seeds sown in boxes or pots of light soil in temp. 55° in March, transplanting into borders in May; or outdoors in April where plants are to grow.

**SPECIES CULTIVATED:** *F. Cornucopiæ*, red, lilac, rose, and carmine, July, 6 in., S. Europe.

**Feea**.—See *Trichomanes*.

**Felt-wort** (*Verbascum Thapsus*).—See *Verbascum*.

**Female Oak** (*Quercus pedunculata*).—See *Quercus*.

**Fennel** (*Foeniculum vulgare*).—See *Foeniculum*.

**Fennel Flower** (*Nigella damascena*).—See *Nigella*.

**Fennel-leaved Pæony** (*Pæonia tenuifolia*).—See *Pæonia*.

**Fen Rue** (*Thalictrum flavum*).—See *Thalictrum*.

**Fenugreek** (*Trigonella fœnum groseum*).—See *Trigonella*.

**Fenzlia**.—See *Gilia*.

**Fern-leaved Beech** (*Fagus sylvatica asplenifolia*). — See *Fagus*.

**Fern-leaved Birch** (*Betula populifolia laciniata*).—See *Betula*.

**Fern-leaved Chestnut** (*Castanea vesca asplenifolia*).—See *Castanea*.

**Fern-leaved Sumach** (*Rhus glabra laciniata*).—See *Rhus*.

**Fern-leaved Weeping Birch** (*Betula populifolia pendula*). See *Betula*.

**Fern Palm** (*Cycas revoluta*).—See *Cycas*.

**Ferraria** (Black Iris).—Ord. Iridacæ. Hardy & half-hardy bulbous plants. Deciduous. First introduced 1755.

**CULTURE OF GREENHOUSE SPECIES:** Compost, two parts sandy loam, one peat. Position, cool greenhouse. Pot, Nov. Place bulbs with point just below surface & 1 to 2 in. apart. Water occasionally Nov. to Feb.; moderately Feb. to June; keep quite dry July to Nov. Temp., Nov. to Feb. 40° to 45°; Feb. to June, 50° to 60°.

**OUTDOOR CULTURE:** Soil, rich sandy. Position, sunny well-drained border. Plant in March or April 2 to 3 in. deep. Lift bulbs in Nov. & store in cool, dry, frost-proof place until planting time, or protect in ground by covering of ashes, decayed leaves, or manure in winter. Propagate by seeds sown  $\frac{1}{2}$  in. deep in well-drained pots of sandy soil in temp. 50° to 60° in March or April; by offsets at potting or planting time.

**SPECIES CULTIVATED:** *F. undulata*, brown and purple, March and April, 6 to 8 in., S. Africa.

**Ferula** (Giant Fennel).—Ord. Umbelliferæ. Hardy herbaceous

plants. Orn. foliage. First introduced 1596. Foliage, elegant, fern-like, deep green.

**CULTURE:** Soil, ordinary. Position, open, margins of shrubberies, borders, ponds, isolated on lawns & summits of rockeries or banks. Plant, Nov. to March. Propagate by seeds sown in Sept., Oct., or Nov. in light soil outdoors, transplanting seedlings following summer; division of roots in Oct. or Nov.

**SPECIES CULTIVATED:** *F. communis* (Giant Fennel), yellow, June, 8 to 12 ft., Mediterranean Region; *glauca*, yellow, June, 6 to 8 ft., S. Europe; *tingitana*, yellow, June, 6 to 8 ft., N. Africa.

**Fescue Grass** (*Festuca ovina*).—See *Festuca*.

**Festuca** (*Festuca* Grass).—Ord. Gramineæ. Hardy perennial grasses. Orn. foliage.

**OUTDOOR CULTURE:** Soil, ordinary. Position, edgings of flower beds or borders. Plant, Sept., Oct., March, or April.

**POT CULTURE:** Compost, two parts good soil, one part leaf-mould & sand. Position, cold or warm greenhouses & windows. Pot, March or April. Water moderately in winter, freely other times. Propagate by seeds sown outdoors in April; division of tufts at potting or planting time.

**SPECIES CULTIVATED:** *F. ovina glauca*, leaves bristly, glaucous green, 6 in., Britain.

**Feverfew** (*Chrysanthemum Parthenium*).—See *Chrysanthemum*.

**Fever Tree** (*Eucalyptus globulus*).—See *Eucalyptus*.

**Ficus** (Fig-tree; India Rubber-plant).—Ord. Urticaceæ. Stove, greenhouse & hardy deciduous & evergreen trees & shrubs. Orn. foliage & fruit-bearing. Flowers unisexual, borne inside the fruit.

**CULTURE OF TENDER SPECIES:** Compost, three parts loam, one part peat & sand. Position, erect species (*F. elasticus*, etc.) in pots in stove, greenhouse, or dwelling-rooms; creeping species (*F. pumila*) in beds with shoots clinging to walls, rockeries, etc. Pot or plant, Feb., March, or April. Water moderately Oct. to March, freely afterwards. Syringe stove species daily Feb. to Aug. Temp. for stove species, 55° to 65° Oct. to Feb., 75° to 85° Feb. to Oct.; for greenhouse species, 50° to 55° Sept. to March, 60° to 70° March to Sept.

**CULTURE OF INDIA RUBBER-PLANT IN ROOMS:** Compost, see above. Position, light, near window, away from draughts. Pot, March or April. Water once a week Nov. to March, twice & three times weekly other times. Temp., Sept. to April 40° to 50°; April to Sept. 55° to 60°. Sponge leaves weekly.

**OUTDOOR CULTURE IN SUMMER:** Plunge pots to rim in sunny beds middle of June. Lift & place in greenhouse again in Sept. Water freely daily.

**PROPAGATE** tender species by cuttings of shoots inserted in sandy peat in a temp. of 75° in spring or summer; cuttings of stem, 1 in. long, and with one leaf attached, slightly burying stem portion in soil and supporting leaf with a stake, and placing in above temp.; stem-rooting in case of tall india-rubber plants in spring. Expose cuttings to air for a short time to allow base to dry before inserting in soil.

**OUTDOOR CULTURE OF FIG:** Compost, two parts fibry loam, one part brick rubbish & old mortar. Position, against south or south-west walls. Plant, April, in border 2 ft. deep & 3 ft. wide, enclosed with brick or concrete wall. Mode of bearing: Entire length of previous year's shoots; only one crop borne outdoors in England. Prune, April or July, simply removing deformed, dead, or very weak

branches. Pinch point off vigorous young shoots in July. Apply liquid manure once, in Aug. to trees bearing heavily. Figlets size of filberts remove in Sept. or Oct. Protect branches in Dec. with straw or mats, removing both in April.

**CULTURE OF FIG UNDER GLASS:** Compost, position, border, time of planting as above. Branches trained up roof or against wall. Mode of bearing: On shoots of previous year's growth for first crop; those of current year for second crop. Prune & pinch as above. Disbud young shoots when too many are forming. Water & syringe freely in summer. Apply liquid manure occasionally in summer. Temp. for forcing, 50° to 65°.

**POT CULTURE OF FIG:** Compost, turfy loam, little bonemeal. Position, ordinary greenhouse,inery or forcing house. Pot, Nov. to April. Size of pots, 10 or 12 in. Water freely when growing, very little when not. Apply liquid manure twice weekly to trees bearing fruit. Syringe daily when in growth. Pinch points off young shoots when latter are 9 in. long. Protect pots with covering of straw Nov. to Jan. & partially expose branches to the air.

**PROPAGATE** the fig by seeds sown in light soil in a temp. of 65° to 70° in Jan., afterwards growing seedlings on in pots until they bear fruit and it can be seen if they are worth growing; cuttings of previous year's shoots 6 in. long and having a heel of older wood attached at base, inserted in a warm border outdoors or in pots in gentle heat between Oct. and March; cuttings of young shoots, 3 or 4 in. long, removed with a heel of older wood, and inserted in pots of light sandy soil in a propagating frame (temp. 70°) in June; layering shoots in summer; grafting by approach just after tree comes into leaf; budding in July; suckers removed in autumn.

**TENDER SPECIES:** *F. elastica* (India-rubber Plant), leaves green, India; *elastica variegata*, leaves variegated; *Parcelli*, leaves green and white, Polynesia; *pumila* (Syn. *E. repens*), leaves green, shoots creeping (a good plant for covering walls), Japan; *pumila minima*, a smaller variety; *radicans variegata*, leaves variegated with silver.

**HARDY SPECIES:** *F. Carica* (Fig), Mediterranean Region; introduced in 1548.

**Fig.**—See *Ficus*.

**Fig Marigold** (*Mesembryanthemum crystallinum*).—See *Mesembryanthemum*.

**Fig Tree** (*Ficus carica*).—See *Ficus*.

**Filbert** (*Corylus Avellana*).—See *Corylus*.

**Filmy Ferns.**—See *Hymenophyllum*, *Todea*, & *Trichomanes*.

**Finger Fern** (*Asplenium ceterach*).—See *Asplenium*.

**Finger Flower** (*Digitalis purpurea*).—See *Digitalis*.

**Fir.**—See *Abies*, *Picea*, & *Pinus*.

**Fire Bush** (*Cratægus pyracantha*).—See *Cratægus*.

**Fire Cracker** (*Brevoortia Ida-Maia* and *Cuphea platycentra*).—See *Brevoortia* & *Cuphea*.

**Fish-bone Thistle** (*Cnicus Casabonæ*).—See *Cnicus*.

**Fittonia.**—Ord. *Acanthaceæ*. Stove evergreen perennial trailing plants. Orn. foliage. First introduced 1869. Leaves, dark green or bright green, with red or pure white veins.

**CULTURE:** Compost, equal parts peat, loam & sand. Position, shallow pans, pots, or surface of beds in shady part of plant stove, also in Wardian cases. Water moderately Nov. to Feb., freely afterwards. Temp., Oct. to March 55° to 60°; March to Oct. 65° to 75°. Propagate

by cuttings of firm shoots inserted in sandy soil in temp. 75° to 85° under bell-glass in Feb., March, or April; division of plants in Feb. or March.

**SPECIES CULTIVATED:** *F. argyryneura*, leaves green, veined with white, 6 in., Peru; *gigantea*, leaves green, veined with red, 12 to 15 in., Peru; *Verschaffeltii*, leaves green, veined with red, 8 in., Peru.

**Five-leaved Indian Cress** (*Tropæolum pentaphyllum*).—See *Tropæolum*.

**Flag** (*Iris germanica*).—See *Iris*.

**Flame Flower** (*Tropæolum speciosum*).—See *Tropæolum*.

**Flamingo Plant** (*Anthurium Scherzerianum*).—See *Anthurium*.

**Flannel Flower** (*Actinotis Helianthi*).—See *Actinotis*.

**Flannel Plant** (*Verbascum Thapsus*).—See *Verbascum*.

**Flat Pea**.—See *Platylobium*.

**Flax**.—See *Linum*.

**Flax Lily** (*Phormium tenax*).—See *Phormium*.

**Flabane**.—See *Inula* and *Erigeron*.

**Flesh-coloured Speedwell** (*Veronica incarnata*). — See *Veronica*.

**Fleur-de-Lis** (*Iris pseudo-acorus*).—See *Iris*.

**Florence Oil-plant** (*Olea europæa*).—See *Olea*.

**Florentine Iris** (*Iris florentina*).—See *Iris*.

**Florentine Rock-rose** (*Cistus florentinus*).—See *Cistus*.

**Florida Water Lily** (*Nymphæa flava*).—See *Nymphæa*.

**Floss-flower** (*Ageratum mexicanum*).—See *Ageratum*.

**Flower-de-Luce** (*Iris pseudo-acorus*).—See *Iris*.

**Flower Fern**.—See *Anemia*.

**Flowering Ash** (*Fraxinus Ornus*).—See *Fraxinus*.

**Flowering Currant** (*Ribes sanguinea*).—See *Ribes*.

**Flowering Dogwood** (*Cornus florida*).—See *Cornus*.

**Flowering Fern** (*Osmunda regalis*).—See *Osmunda*.

**Flowering Grass** (*Lapeyrouisia cruenta*).—See *Lapeyrouisia*.

**Flowering Nutmeg-tree** (*Leycesteria formosa*).—See *Leycesteria*.

**Flowering Rush** (*Butomus umbellatus*).—See *Butomus*.

**Flower-of-a-day** (*Tradescantia virginica*).—See *Tradescantia*.

**Flower-of-an-hour** (*Hibiscus Trionum*).—See *Hibiscus*.

**Flower-of-the-Dead** (*Oncidium tigrinum*).—See *Oncidium*.

**Flower of the Gods** (*Disa grandiflora*).—See *Disa*.

**Fly Honeysuckle** (*Lonicera xylostemma*).—See *Lonicera*.

**Fly Orchis** (*Ophrys mucifera*).—See *Ophrys*.

**Fly-trap** (*Dionæa muscipula*).—See *Dionæa*.

**Foam Flower** (*Tiarella cordifolia*).—See *Tiarella*.

**Fœniculum** (Fennel). — Ord. Umbelliferæ. Hardy perennial herb. Leaves used for sauces & garnishing.

**CULTURE:** Soil, ordinary. Position, sunny border. Plant, March or April, 12 in. apart in rows 15 in. asunder. Remove flower stems as soon as seen, unless seed is wanted. Propagate by seeds sown  $\frac{1}{4}$  in. deep in drills 6 in. apart in March; division of roots in March.

**SPECIES CULTIVATED:** *F. vulgare* (Fennel), yellow, autumn, 2 ft., Europe (Britain).

**Forbidden Fruit** (*Citrus decumana*).—See *Citrus*.

**Forget-me-not**.—See *Myosotis*.

**Forked Spleenwort** (*Asplenium septentrionale*). — See *Asplenium*.

**Forsythia** (Japanese Golden Bell-tree).—Ord. Oleaceæ. Hardy flowering shrubs. Deciduous. First introduced 1845.

**OUTDOOR CULTURE:** Soil, ordinary. Position, against south or west walls, or in sheltered parts of shrubbery. Plant, Oct. to Feb. Prune after flowering.

**POT CULTURE:** Compost, two parts loam, one leaf-mould & sand. Position, well-drained pots in cool or warm greenhouse Dec. to May, outdoors remainder of year. Pot, Oct. to Dec. Water very little till March, then apply freely. Propagate by cuttings inserted in sandy soil under bell-glass or hand-light; or in cold frame, Oct. or Nov.; layering in Oct. or Nov.; grafting on the privet in March or April.

**SPECIES CULTIVATED:** *F. intermedia*, yellow, Feb. and March, 8 ft., hybrid; *suspensa*, yellow, March, 8 ft., China; *viridissima*, yellow, March, 10 ft., China and Japan.

**Fortune's Bamboo** (*Arundinaria Fortunei*).—See *Arundinaria*.

**Fortune's Plantain Lily** (*Funkia Fortunei*).—See *Funkia*.

**Fothergilla** (American Witch Elder). — Ord. Hamamelidææ. Hardy flowering shrubs. Deciduous. First introduced 1765.

**CULTURE:** Compost, well-drained soil, sandy peat. Position, borders. Plant, Oct. to March. Prune after flowering. Propagate by seeds sown 1-16 in. deep in pans of moist sandy peat in temp. of 45° to 55° in March or April; layering shoots in Oct. or Nov.

**SPECIES CULTIVATED:** *F. Gardeni* (Syn. *F. alnifolia*), white, fragrant, May, 3 to 6 ft., United States.

**Fountain Plant** (*Amaranthus salicifolius*).—See *Amaranthus*.

**Fountain Tree** (*Cedrus deodora*).—See *Cedrus*.

**Fox Chop** (*Mesembryanthemum vulpinum*).—See *Mesembryanthemum*.

**Foxglove** (*Digitalis purpurea*).—See *Digitalis*.

**Fox Rose** (*Rosa spinosissima*).—See *Rosa*.

**Fragaria** (Strawberry).—Ord. Rosacææ. Hardy & half-hardy perennial fruit-bearing & orn. trailing plants. Virginian Strawberry first introduced 1629.

**CULTURE OF ORNAMENTAL SPECIES** (*F. indica*): Compost, two parts loam, one part leaf-mould & sand. Position, pots in hanging baskets in cool greenhouse or window, or on sunny well-drained rockery. Pot or plant, March. Water moderately. Apply liquid manure occasionally in summer.

**CULTURE OF STRAWBERRY:** Soil, deep rich sandy loam; clay unsuitable. Position, open plots or borders, trenched 2 ft. deep; alpine kind under shade of trees or on banks. Plant, Aug., Sept., or March 18 in. apart in rows 2½ ft. asunder; alpines 6 in. apart. Mulch annually with manure in March, & a thin layer of straw in May. Suitable artificial manure, 1 oz. sulphate of potash, 2 oz. superphosphate applied in autumn, & 1 oz. of nitrate of soda per square yard, applied when fruit has set. Remove runners when they appear. No digging between rows necessary. Renew beds every three or four years.

**POT CULTURE:** Compost, two-thirds calcareous loam, one-third decayed manure, little bone dust. Position, on bed of cinder ashes outdoors Aug. to Oct.; frames Oct. to Jan.; greenhouses or vineries after Jan. Pot singly in 6 in. pots in Aug. Water moderately till Oct., very little till Jan., freely afterwards. Fertilize blossoms by means of camel-hair brush. Thin fruit when set to a few on each plant. Feed with liquid manure after fruit has set until it begins to



ripen. Plant out in garden after fruiting. Temp. for forcing: Jan. to March 45° to 55°; March to ripening period, 65° to 75°. Propagate by seeds sown 1-16 in. deep in light soil outdoors, or in boxes in greenhouse in March or April; by runners on plants that fruit freely. Pegged on surface of soil in 3 in. pots in June or July, or by removing rooted runners in Aug. Runners rooted into pots best for pot culture.

**MARKET CULTURE:** Soil, loam overlying chalk or gravel. Position, open, not too dry or moist. Plant, Aug to Nov., 18 in. apart in rows 2 ft. 6 in. asunder. Number of plants per acre, 11,000. Average cost per acre: Plants, £3; preparing land, £7; manure, £5; planting, 10s.; trimming, 15s.; gathering fruit, £8; annual manuring, £5; yield, 2 tons; gross returns, £42; net returns, £25. Manures: Farmyard dung, 20 tons; bonemeal, 3 cwt.; and kainit, 1½ cwt. per acre, applied in winter; soot, 40 bushels per acre applied in spring.

**SPECIES CULTIVATED:** *F. chiloensis* (Chili Strawberry), white, May, 1 ft., fruit crimson, Chili, ornamental; *elatior* (Hautbois Strawberry), white, summer, 6 in., fruit red, aroma musky, edible, Europe (Britain); *chiloensis grandiflora* (Pine Strawberry), white, May, 1 ft., fruit, pineapple flavoured, edible, Chili; *Collina* (Green Pine Strawberry), white, May, 6 in., fruit green, pineapple flavoured, edible, Europe; *indica* (Indian Strawberry), yellow, June, trailing, India, an ornamental species suited for rockeries or hanging baskets; *virginiana* (Scarlet Strawberry), white, May, fruit scarlet, edible, United States, parent of the many forms of garden strawberries.

**Fragile Bellflower** (*Campanula fragilis*).—See *Campanula*.

**Fragrant Garland Flower** (*Hedychium coronarium*).—See *Hedychium*.

**Francoa** (Maiden's Wreath; Wedding-flower).—Ord. Saxifragaceæ. Hardy & half-hardy perennial plants. First introduced 1830.

**OUTDOOR CULTURE:** Soil, light rich loam. Position, sunny sheltered borders, banks, or rockeries. Plant, March or April.

**POT CULTURE:** Compost, two parts loam, one part leaf-mould & sand. Position, well-drained pots in cool greenhouse, frame, or window. Pot, March or April. Water moderately Oct. to April, freely afterwards. Apply little liquid or artificial manure to plants in flower. Temp., Oct. to April 40° to 50°; April to Sept. 55° to 65°. Propagate by seeds sown on the surface of a well-drained pan of sandy peat under bell-glass in temp. of 50° to 55° in February, March, or April; division of plants at potting time.

**SPECIES CULTIVATED:** *F. appendiculata*, red, July, 1 to 2 ft., Chili; *ramosa*, white, July and August, 2 ft., Chili; *sonchifolia*, pink, summer, 2 ft., Chili.

**Frankenia** (Sea Heath).—Ord. Frankeniaceæ. Hardy flowering plants. Evergreen. Habit, creeping.

**CULTURE:** Soil, light sandy. Position, sunny dry rockeries or borders. Plant, October or April. Propagate by division of plants in Oct. or April; seeds in cold frame in April.

**SPECIES CULTIVATED:** *F. lævis*, rose, July and Aug., Europe (Britain).

**Frangipanni-plant** (*Plumiera acutifolia*).—See *Plumiera*.

**Frankincense** (*Mohria caffrorum*).—See *Mohria*.

**Fraser's Balsam** (*Abies Fraseri*).—See *Abies*.

**Fraxinella** (*Dictamnus albus*).—See *Dictamnus*.

**Fraxinus** (Ash; Flowering Ash; Manna Ash).—Ord. Oleaceæ. Hardy deciduous trees. Orn. foliage & flowering. Flowers, white, green, yellow; March to May.

**CULTURE:** Soil, ordinary. Position, dryish, sheltered. Suitable for seaside gardens, towns, chalky or gravelly situations. Plant, Oct. to Feb. Prune, Oct. to March. Timber used for tool handles, wooden rakes, ploughs, hoops, dairy utensils, and agricultural implements;

also by cabinet makers for furniture making. Average value of timber per cubic ft. 1s. 6d. to 2s. Average life, 300 years. Timber reaches maturity at 70 years. Highest altitude at which it will thrive, 1,350 ft. Weight of a cubic foot of timber, 48lb. No. of cubic feet to a ton, 48. Propagate by seeds, buried in dry sand for a year, then sown 1 in. deep in light soil outdoors in Feb., transplanting seedlings when a year old; grafting on common species in March.

**SPECIES CULTIVATED:** *F. americana* (White Ash), 30 to 40 ft., Canada; *excelsior* (Common Ash), 40 to 80 ft., Europe (Britain), and its varieties, *crispa* (Curl-leaved Ash), *aurea* (Golden Ash), *pendula* (Weeping Ash); *Ornus* (Flowering or Manna Ash), 20 to 30 ft., S. Europe.

**Freesia.**—Ord. Iridaceæ. Greenhouse bulbous plants. Deciduous. Nat. Cape of Good Hope. Flowers, fragrant.

**INDOOR CULTURE:** Compost, equal parts decayed manure, loam, leaf-mould & sand. Position, pots in cool greenhouse, frame, or window. Pot, Aug. to flower in Jan., Oct. for Feb., Nov. for March, Dec. for April. Plant bulbs 1 in. deep & 2 in. apart. Suitable sized pot, 4½ in. diameter. Stand pots in cool position & give very little water until growth commences. Water freely when growth well advanced & until plants have flowered, then gradually decrease supply, keeping soil quite dry till July. Temp. not lower than 40°. Apply weak liquid or artificial manure to plants showing flower. Repot, annually.

**OUTDOOR CULTURE:** Soil, light rich sandy. Position, sunny well-drained borders S. of England only. Plant bulbs 2 in. deep & 2 in. apart in Aug. or Sept. Protect in winter. Propagate by seeds sown ½ in. deep in pots or pans of light sandy soil in cool greenhouse or frame as soon as ripe, or in March or April; by offsets at potting time. Do not transplant seedlings first year.

**SPECIES CULTIVATED:** *F. refracta*, white and orange, May to Aug., 1 ft.; and its varieties, *Leichtlinii* (yellow, cream, and orange), *alba* (white), *odorata* (yellow and very fragrant). Sutton's Pink is a variety with pink blossoms.

**Fremontia** (Slippery Elm).—Ord. Sterculiaceæ. Hardy deciduous flowering shrub. First introduced 1851.

**CULTURE:** Soil, sandy loam. Position, against west or north walls or fences, or in shrubberies S. of England. Plant, Oct. to March. Prune after flowering. Propagate by seeds sown ½ in. deep in well-drained pots of sandy soil under bell-glass or frame in March or April.

**SPECIES CULTIVATED:** *F. californica*, yellow, June, 6 to 10 ft., California.

**French Bean** (*Phaseolus vulgaris*).—See *Phaseolus*.

**French Fern** (*Asplenium adiantum-nigrum*).—See *Asplenium*.

**French Honeysuckle** (*Hedysarum coronarium*).—See *Hedysarum*.

**French Lavender** (*Lavandula Stæchas*).—See *Lavandula*.

**French Marigold** (*Tagetes patula*).—See *Tagetes*.

**French May** (*Spiræa arguta*).—See *Spiræa*.

**French Mulberry** (*Callicarpa purpurea*).—See *Callicarpa*.

**French Rose** (*Rosa gallica*).—See *Rosa*.

**French Willow** (*Epilobium angustifolium*).—See *Epilobium*.

**Fresh-water Soldier** (*Stratiotes aloides*).—See *Stratiotes*.

**Fringed Buck-bean** (*Limnanthemum peltatum*).—See *Limnanthemum*.

**Fringed Pink** (*Dianthus superbus*).—See *Dianthus*.

**Fringed Water Lily** (*Limnanthemum peltatum*).—See *Limnanthemum*.

**Fringe Flower** (*Schizanthus pinnatus*).—See *Schizanthus*.

**Fringe Tree** (*Chionanthus virginica*).—See *Chionanthus*.

**Fritillaria** (Fritillary, Crown Imperial; Chequered Daffodil; Snake's-head Fritillary; Persian Lily).—Ord. Liliaceæ. Hardy bulbous plants. Deciduous.

**OUTDOOR CULTURE:** Soil, ordinary, deep rich. Position, shady borders for Crown Imperial; Snake's-head Fritillary, borders, or naturalised in turf; well-drained open borders for other species. Plant, 4 to 6 in. deep & 6 to 8 in. apart, Sept. to Nov. Top-dress annually with decayed manure. Do not transplant bulbs oftener than once in four years.

**POT CULTURE:** Compost, equal parts loam, peat, leaf-mould, decayed manure & sand. Position, well-drained pots in cold frame or cold greenhouse. Pot, Sept. or Oct., placing one bulb in centre of 5, 6, or 8 in. pot. Water very little till growth begins, then give moderate supply. Apply liquid manure when plants show flower. After flowering gradually withhold water, keeping soil quite dry after foliage has died. Propagate by seeds sown  $\frac{1}{2}$  in. deep in pots or pans of sandy soil in cold frame or greenhouse as soon as ripe, or in spring; by offsets at planting time. Do not transplant seedlings first year. Seedlings do not flower until four to six years old.

**SPECIES CULTIVATED:** *F. armena*, yellow, April, 6 in., Asia Minor; *aurea*, yellow and brown, 6 in., May, Asia Minor; *citrina*, green and yellow, 8 in., May, Asia Minor; *coccinea*, red, May, 8 in.; *Elwesii*, green and brown, May, 1 ft.; *Imperialis* (Crown Imperial), yellow, May, 2 to 3 ft., Orient, and its varieties *aurora* (orange), *lutea* (yellow), *rubra* (red), and *aureo-marginata* (leaves edged yellow); *latifolia*, red, etc., May, 1 ft., Caucasus; *libanotica*, lilac and yellow, May, 18 in., Syria; *Meleagris* (Snake's Head), purple, yellow and white, May, 12 to 18 in., Europe (Britain); *Meleagris alba*, white; *pallidiflora*, yellow, rose and purple, May, 9 in., Siberia; *persica*, violet blue, May, 2 ft., Asia Minor; *puddica*, golden yellow, April, 6 in., N.W. America; *recurva*, orange-scarlet, May, 2 ft., California; *ruthenica*, black, May, 1 ft., Caucasus.

**Fritillary** (*Fritillaria meleagris*).—See *Fritillaria*.

**Frog-bit** (*Hydrocharis morsus-ranæ*).—See *Hydrocharis*.

**Frog Orchis** (*Habenaria viridis*).—See *Habenaria*.

**Fuchsia** (Ear Drops; Lady's Ear Drops).—Ord. *Onagraceæ*. Greenhouse & hardy flowering shrubs. Deciduous. First introduced 1788.

**CULTURE OF GREENHOUSE SPECIES:** Compost, two parts good fibrous loam, one part well-decayed manure & leaf-mould, with liberal quantity of silver or river sand. Position, shady part of greenhouse or window March to July; sunny place outdoors July to Oct.; cool dry part of greenhouse or room remainder of year. Pot old plants in Feb. or March, young ones when needed. Prune old plants in Feb. Water moderately March to May, freely May to Oct., very little at other times. Temp., Oct. to Feb. 40° to 45°; Feb. to Oct. 55° to 65°. Apply liquid or artificial manure to healthy plants showing flower. Pinch out points of shoots frequently in spring & early summer to induce bushy growth. When repotting old plants, remove soil from roots & place in small pots till growth begins, then shift into larger size. Syringe foliage Feb. to May.

**SUMMER CULTURE IN BEDS:** Plant out in June. Lift, pot & store plants in greenhouse in Sept.

**CULTURE OF HARDY SPECIES:** Soil, ordinary, deep rich. Position, well drained borders, base of south or west walls, or in sheltered position in the open S. of England. Plant, Oct. or April. Prune

shoots off close to base in Nov. Protect in winter with layer of manure or leaves. Propagate by seeds sown 1-16 in. deep in well-drained pots of light sandy soil in temp. 55° in March or April; cuttings of young shoots inserted singly in small pots of sandy soil in temp. 70° to 80° in Jan., Feb., or March, or in cool greenhouse or window in April, May, or June.

**GREENHOUSE SPECIES:** *F. fulgens*, scarlet, July, 3 to 4 ft., Mexico; *procumbens*, yellow and blue, summer, magenta-crimson berries, habit trailing, New Zealand; *splendens*, scarlet, summer, 6 ft., Mexico; *triphylla*, cinnabar red, summer, 2 to 3 ft., Mexico. Numerous varieties in trade lists.

**HARDY SPECIES:** *F. corymbiflora*, scarlet, summer, 4 to 6 ft., Peru; *macrostema*, scarlet and purple, July, 3 ft., Chili, and its varieties, *comica* (scarlet), *corallina* (crimson and plum), *globosa* (purplish red), *gracilis* (scarlet and purple), and *Riccartonii* (scarlet).

**Fulham Oak** (*Quercus Cerris fulhamensis*).—See *Quercus*.

**Fulham Yew** (*Taxus baccata erecta*).—See *Taxus*.

**Fumaria** (Fumitory).—Ord. Fumariaceæ. Hardy annual climber.

**CULTURE:** Soil, ordinary. Position, against S.E. or W. walls, in open borders with shoots running up sticks, or against arbours & trellis-work. Propagate by seeds sown 1-16 in. deep, in April, where plants are to grow & flower.

**SPECIES CULTIVATED:** *F. capreolata*, white and purple, summer, 3 to 4 ft., Europe (Britain).

**Fume-wort** (*Corydalis aurea*).—See *Corydalis*.

**Fumitory**.—See *Corydalis*.

**Funereal Cypress** (*Cupressus funebris*).—See *Cupressus*.

**Funkia** (Plantain Lily; Japanese Day Lily; Corfu Lily).—Ord. Liliaceæ. Hardy orn. foliaged and herbaceous flowering plants. Deciduous. First introduced 1790. Flowers, fragrant. Leaves, large, deep green or variegated with white & yellow.

**CULTURE:** Soil, ordinary, well enriched with decayed manure. Position, open sunny well-drained borders. Plant, Oct. or March. Top-dress annually with decayed manure.

**POT CULTURE:** Compost, two parts loam, one part well-decayed manure & river sand. Position, pots in cold frame Oct. to March, greenhouse or window March to Oct. Pot, March or April. Water moderately Oct. to March, freely March to Oct. Apply liquid manure to healthy plants in flower. Propagate by division of crowns in Oct., March, or April.

**SPECIES CULTIVATED:** *F. Fortunei*, lilac, July, 18 in., Japan; *lanceifolia*, lilac, Aug., 9 in., Japan, and its varieties *alba* (white), *albo-marginata* (leaves edged silvery white), *undulata* (leaves waved), and *variegata* (leaves blotched with white); *ovata* (Syn. *F. œrulea*), bluish lilac, May to July, 1 ft., Japan, and its varieties *aurea* (golden leaved), and *marginata* (leaves edged creamy white); *sieboldiana* (Syn. *F. cordata*), white and lilac, summer, 1 ft.; *subcordata* (Corfu Lily), Syn. *F. grandiflora*, white, Aug., 1 ft., Japan.

**Furcraea** (Giant Mexican Lily).—Ord. Amaryllidaceæ. Greenhouse succulent plants. Orn. foliage. First introduced 1690. Leaves, long, fleshy, & armed with spines.

**CULTURE:** Compost, two parts loam, one part old mortar & river sand. Position, pots or tubs in greenhouses; may be stood outside June to Sept. Water moderately April to Aug., little afterwards. Pot every five or six years; good drainage essential. Temp., winter, 50° to 55°; summer 55° to 65°. Propagate by offsets inserted in small pots at any time.

**SPECIES CULTIVATED:** *F. Bedinghausii*, green, May to Nov., 6 ft., Mexico; *elegans*, green, May to Nov., 10 to 15 ft., Mexico; *Wrightii*, green and white, May to Nov., 6 to 10 ft., Mexico.

**Furze** (*Ulex europæus*).—See *Ulex*.

**Gagea** (Yellow Star of Bethlehem).—Ord. Liliaceæ. Hardy deciduous bulbous plants.

**CULTURE:** Soil, sandy. Position, sunny borders, or in turf. Plant 3 in. deep & 3 in. apart, Aug. to Nov. Lift only when bulbs unhealthy. Propagate by offsets, treated as advised for bulbs.

**SPECIES CULTIVATED:** *G. lutea*, yellow, March to May, 6 in., Europe (Britain).

**Gaillardia** (Blanket-flower).—Ord. Compositæ. Hardy annual & perennial herbaceous plants. First introduced 1787.

**CULTURE:** Soil, moderately light rich. Position, sunny well-drained beds or borders. Plant, March or April. Apply weak liquid manure to plants in flower. Mulch beds with decayed manure in summer. Propagate annual & perennial species by seeds sown 1-16 in. deep in shallow boxes of light mould in temp. 55° to 65° in April, transplanting seedlings outdoors in June; perennials & annuals by cuttings of shoots issuing from roots, inserted in sandy soil under hand-light or in cold frame, Aug. to Oct., perennials by division of plants Oct. or March.

**ANNUAL SPECIES:** *G. amblyodon*, red, autumn, 2 to 3 ft., Texas; pulchella, crimson and yellow, 2 to 3 ft., summer, N. America; pulchella picta lorenziana, orange, red and yellow, double, 1 ft.

**PERENNIAL SPECIES:** *G. aristata*, yellow, autumn, 18 in., N. America. Grandiflora and maxima are superior forms of the latter species.

**Galanthus** (Snowdrop; Fair Maids of February).—Ord. Amaryllidaceæ. Hardy bulbous flowering plants.

**OUTDOOR CULTURE:** Soil, ordinary rich. Position, margins of beds; groups in open or shady borders; banks, rockeries, or in turf. Plant bulbs 2 in. deep & 1 in. apart, Sept. to Dec. Bulbs must not be lifted annually, only when they show signs of deterioration.

**POT CULTURE:** Compost, two parts ordinary soil, one part leaf-mould & sand. Position, cold or warm greenhouse, frame, or window. Pot, Sept. to Nov., placing bulbs 1 in. deep & 1 in. apart in 4 or 5 in. pots or shallow pans. Place pots, etc., in cold frame or outdoors & cover with cinder ashes until growth begins. Water moderately till after flowering, then gradually cease. Plant bulbs outdoors following autumn. Propagate by seeds sown as soon as ripe  $\frac{1}{4}$  in. deep & 2 in. apart in shallow boxes filled with light sandy soil & placed at base of north wall outdoors; by offsets treated as bulbs. Seedlings flower when 3 years old.

**SPECIES CULTIVATED:** *G. Alleni*, white, Feb. and March, 6 to 9 in., Asia Minor; caucasicus, white and green, March, 6 in., Caucasus; Elwesii, white, Feb., 8 in., Asia Minor, and its varieties robustus, unguiculatus and Whittallii; Fosterii, white, Feb., 6 in., Asia Minor; Ikarise, white, Feb., 8 in., Nikaria; latifolius, white and green, Feb. and March, 6 in., Caucasus; nivalis (Common Snowdrop), white, Jan. to March, 6 in., Europe; and its varieties Imperati, Atkinsii and Melvillei; plicatus (Crimean Snowdrop), white, Jan. to Feb., 10 to 12 in.

**Galax** (Wand-plant; Carpenter's Leaf).—Ord. Diapensiaceæ. Hardy herbaceous perennial. First introduced 1756.

**CULTURE:** Compost, equal parts peat, leaf-mould & silver sand. Position, ledges of moist rockery or margin of rhododendron beds. Plant, Oct. to March. Propagate by division of plants Oct. to March; seeds sown in peaty soil in cold frame in spring.

**SPECIES CULTIVATED:** *G. aphylla*, white, July, 3 to 6 in., N. America.

**Galaxia**.—Ord. Iridaceæ. Greenhouse bulbous plants. Deciduous. Nat. Cape of Good Hope. First introduced 1795.

**CULTURE:** Compost, two parts sandy peat, one part light loam. Position, well-drained pots in cold frame or greenhouse. Pot, Aug. to Nov., placing bulbs with apex just below surface, one in a 5-in., or three in a 6-in. pot. Cover pots with ashes till growth begins. Water moderately when growth commences, freely afterwards, cease after flowering. Repot annually. Propagate by seeds sown  $\frac{1}{4}$  in. deep in well-drained pans or shallow boxes of sandy peat in cool greenhouse or frame Aug. or Sept.; by offsets treated as bulbs Aug. to Nov.

**SPECIES CULTIVATED:** *G. graminea*, yellow, July, 6 in.; *ovata*, yellow, autumn, 6 in.

**Gale** (*Myrica Gale*).—See *Myrica*.

**Galeandra** (Casque-wort).—Ord. Orchidaceæ. Stove terrestrial orchids. Deciduous. First introduced 1840.

**CULTURE:** Compost, fibrous peat & charcoal. Position, well-drained pots, pans, or baskets in light part of stove. Pot, Feb. to March. Water freely March to Sept., moderately afterwards. Syringe plants daily March to Aug. Growing period, March to Sept. Resting period, Sept. to March. Temp., March to June, 65° to 75°; June to Aug. 70° to 80°; Aug. to Nov. 60° to 70°; Nov. to March 55° to 65°. Propagate by division of plants at potting time.

**SPECIES CULTIVATED:** *G. Baueri*, brown, purple and white, June to Aug., 1 ft., Guiana; *devoniana*, purple, green, and white, June, 18 in., Trop. America; *nivalis*, white and violet, March, 18 in., Trop. America.

**Galega** (Goat's Rue).—Ord. Leguminosæ. Hardy perennial herbs. First introduced 1568. Flowers useful for cutting.

**CULTURE:** Soil, ordinary. Position, open borders or shrubberies. Plant, Oct. to March. Cut down flower stems in Oct. Replant every two or three years. Propagate by seeds sown  $\frac{1}{4}$  in. deep in April in ordinary soil in sunny position; division of roots in Oct. to March.

**SPECIES CULTIVATED:** *G. officinalis*, blue, summer, 3 to 5 ft., S. Europe, and its varieties, *albiflora* (white), *carnea plena* (rose double) and *Hartlandii* (blue); *orientalis*, blue, summer, 2 to 3 ft., Caucasus.

**Galingale** (*Cyperus longus*).—See *Cyperus*.

**Galligaskins** (*Primula veris*).—See *Primula*.

**Galtonia** (Spire Lily).—Ord. Liliaceæ. Hardy bulbous flowering plants. Deciduous. Nat. S. Africa.

**OUTDOOR CULTURE:** Soil, ordinary rich, well drained. Position, open sunny borders. Plant, Oct. to March, placing bulbs 6 in. deep & 6 in. apart. Lift & replant only when the bulbs show signs of deterioration.

**POT CULTURE:** Compost, two parts loam, one part decayed manure & silver sand. Position, cold or warm greenhouse. Pot, Oct. to Dec. to flower in spring; Feb. to April to flower in autumn. Place one bulb with apex just showing through surface of soil in a well-drained 6-in. pot. Cover with ashes in cold frame until growth begins. Water moderately when leaves appear; freely when in full growth; keep nearly dry after flowering. Apply weak liquid manure occasionally to plants in flower. Bulbs not adapted for flowering second time in pots. Propagate by seeds sown  $\frac{1}{8}$  in. deep in shallow boxes of sandy soil in cold frame Oct. or March; offsets treated as bulbs in autumn. Seedlings flower when four or five years old.

**SPECIES CULTIVATED:** *G. candicans*, white, fragrant, summer, 2 to 3 ft.

**Garcinia** (Mangosteen-tree; Gamboge-tree).—Ord. Guttiferæ. Stove evergreen fruit-bearing tree. Orn. foliage. First introduced 1789. Fruit, size of an orange; chestnut-brown colour; edible.

**CULTURE:** Compost, two parts peat, one part loam & sand. Posi-

tion, pots or boxes in light part of plant stove. Pot & prune, Feb. to March. Temp., March to Oct. 65° to 85°; Oct. to March 55° to 65°. Water moderately Sept. to April, freely other times. Propagate by cuttings of firm shoots 2 to 3 in. long inserted in silver sand under bell-glass in temp. 75° to 85° in spring or summer.

SPECIES CULTIVATED: *G. Mangostana*, red, June, 6 to 10 ft., Molucca Islands.

**Gardener's Garters** (*Phalaris arundinacea variegata*).—See Phalaris.

**Gardenia** (Cape Jasmine).—Ord. Rubiaceæ. Stove evergreen flowering shrubs. First introduced 1754.

CULTURE: Compost, one part loam, one part peat, one part well-decayed manure & charcoal. Position, well-drained pots, or beds in plant stove. Pot or plant, Feb. or March. Prune into shape, Feb. or March. Temp., March to Sept. 65° to 85°; Sept. to March 55° to 65°. Water moderately Oct. to Feb., freely afterwards. Syringe daily (except when in bloom) March to Sept. Apply liquid manure occasionally to healthy plants in flower. Plants one to two years old produce the best blooms. Propagate by cuttings of firm young side shoots 2 to 3 in. long, inserted in well-drained pots of sandy peat under bell-glass in temp. 75° to 85°, Jan. to April.

SPECIES CULTIVATED: *G. florida* (Cape Jasmine), white, fragrant, summer, China and Japan; *florida flore-pleno*, double white; *florida radians*, white, fragrant.

**Garland Flower** (*Daphne cneorum*).—See Daphne.

**Garlic**.—See Allium.

**Garrya**.—Ord. Cornaceæ. Hardy evergreen shrubs. Orn. foliage & flowering. First introduced 1818. Flowers (pendulous catkins), male & female borne on separate trees. Berries, black.

CULTURE: Soil, ordinary, well drained. Position, against south or west walls outdoors; sheltered shrubberies S. of England. Plant, Oct. to Nov. or March to May. Male plant only cultivated; female plant very rare in gardens. Propagate by seeds sown  $\frac{1}{2}$  in. deep in well-drained pans of sandy soil in cold frame Sept. or Oct.; cuttings of firm shoots 3 to 4 in. long inserted in sandy soil under hand-light or cold frame Aug. to Sept.; layering shoots in Sept. & Oct.

SPECIES CULTIVATED: *G. elliptica*, greenish white, March to June, 5 to 10 ft., California.

**Gas Plant** (*Dictamnus albus*).—See Dictamnus.

**Gasteria**.—Ord. Liliaceæ. Greenhouse evergreen succulent plants. Orn. foliage. Nat. Cape of Good Hope. First introduced 1731. Leaves, thick, fleshy, prickly; green, spotted with white, or purple.

CULTURE: Compost, two parts loam, one part peat, old mortar & river sand. Position, well-drained pots in sunny greenhouse or window. Pot, March or April. Water moderately April to Sept. Temp. March to Sept. 55° to 65°; Sept. to March 50° to 55°. Propagate by seeds sown 1-16 in. deep in well-drained pots or pans of sandy soil temp. of 65° March to Aug.

SPECIES CULTIVATED: *G. brevifolia*, red, July; Croucheri, rose, Aug.; *disticha*, scarlet, July; *verrucosa*, red, July, 3 to 4 in.

**Gaultheria** (Canada Tea; Creeping Winter-green; Partridge Berry; Shallon).—Ord. Ericaceæ. Hardy evergreen shrubs. First introduced 1762. Berries, red or purple; edible.

CULTURE: Soil, peaty. Position, moist rockeries or margins of open or shady shrubberies & beds. Plant, Sept. to Nov. or March to

May. Propagate by seeds sown  $\frac{1}{4}$  in. deep in bed of peaty soil outdoors in autumn.

SPECIES CULTIVATED: *G. nummularioides*, white and pink, summer, trailing, Himalayas; *procumbens* (Canada Tea or Partridge Berry), white, July, creeping, N. America; *shallon* (Shallon), white and red, May, 4 ft., N.W. America.

**Gaura**.—Ord. Onagraceæ. Hardy perennial, but usually grown as an annual. First introduced 1850.

CULTURE: Position, sunny well-drained beds or borders. Plant, March or April. Propagate by seeds sown 1-10 in. deep in light soil outdoors April; transplanting seedlings when 1 in. high to flowering position.

SPECIES CULTIVATED: *G. Lindheimeri*, white and rose, July to Oct., 3 to 4 ft., Texas.

**Gazania** (Treasure-flower).—Ord. Compositæ. Half-hardy perennials. Nat. Cape of Good Hope. First introduced 1755.

INDOOR CULTURE: Compost, two parts loam & one of peat & sand. Position, well-drained pots in sunny part of greenhouse. Pot, March or April. Water very little Oct. to March, moderately other times. Prune into shape, March. Temp., March to Sept. 55° to 75°; Sept. to March, 45° to 55°.

OUTDOOR CULTURE: Soil, ordinary. Position, sunny; edgings to beds, or trailing over ledges of rockery. Plant, June. Lift in Oct. & place in pots in heated greenhouse for the winter. Propagate by cuttings of side shoots removed from base of plant & inserted in boxes of sandy soil or in a bed in cold frame July to Sept.; cuttings may remain in cold frame if protected from frost.

SPECIES CULTIVATED: *G. Pavonia*, yellow, brown and white, summer, 12 in., *rigens*, yellow and black, June, 1 ft.; *splendens*, orange, black and white, summer, 1 ft., hybrid.

**Geissorhiza** (Tile-root).—Ord. Iridaceæ. Half-hardy bulbous-rooted plants. Nat. Cape of Good Hope. First introduced 1789.

CULTURE: Compost, two parts sandy peat & one of light loam. Position, well-drained pots in cold frame or greenhouse. Pot, Aug. to Nov., placing bulbs with apex just below surface, one in a 5-in., or three in a 6-in. pot. Cover pots with ashes till growth begins. Water moderately when leaves appear, freely afterwards, withholding completely after flowering. Repot annually. Propagate by seeds sown  $\frac{1}{2}$  in. deep in well-drained pans or shallow boxes of sandy peat placed in cool greenhouse or frame Aug. or Sept.; offsets treated as bulbs, Aug. to Nov.

SPECIES CULTIVATED: *G. excisa*, white, May, 6 in.; *hirta*, white, May, 8 in.; *humilis*, rose and yellow, May, 6 in.; *rochensis*, violet-purple, May, 6 in.

**Gelasine**.—Ord. Iridaceæ. Half-hardy bulbous plant.

OUTDOOR CULTURE: Soil, sandy loam. Position, sunny; sheltered nook of rockery. Plant, Aug. to Nov. 4 in. deep and 4 in. apart. Protect from rain in winter by a hand-light.

GREENHOUSE CULTURE: Compost, two parts sandy loam and one part leaf-mould and silver sand. Position, cold, sunny greenhouse. Pot in Aug., placing 3 to 4 bulbs in a 4 $\frac{1}{2}$ -in. pot; bury bulbs just below surface. Cover with ashes in cold frame till growth begins, then remove to greenhouse. Water moderately when in growth; keep dry after growth ceases. Propagate by seeds sown in sandy loam in heat; by offsets at potting time.

SPECIES CULTIVATED: *G. azurea*, blue, May, 1 ft., S. America.

**Genetyllis**.—See *Darwinia*.



**Genista** (Needle Furze; Petty Whin).—Ord. Leguminosæ. Hardy deciduous flowering shrubs.

**CULTURE:** Soil, ordinary. Position, shrubbery for tall species; rockery for dwarf kinds. Plant, Oct. to March. Prune after flowering. Propagate by seeds sown  $\frac{1}{4}$  in. deep outdoors in March or April; by layering in Oct. or Nov.; grafting on laburnum in March; budding on similar stocks in July. See also the genus *Cytisus*.

**SPECIES CULTIVATED:** *G. æthensis*, yellow, June to Aug., 6 to 12 ft., Sicily; *anglica* (Petty Whin), yellow, May and June, 1 to 2 ft., Britain; *hispanica* (Spanish Gorse), yellow, May to July, fragrant, 6 to 12 ins., N.W. Europe; *hispanica flore-pleno*, double; *radiata*, yellow, summer, 2 to 4 ft., S. Europe; *tinctoria* (Dyer's Greenweed), yellow, July to Sept., 1 to 2 ft., Britain; *tinctoria flore-pleno*, double.

**Gentian** (*Gentiana acaulis*).—See *Gentiana*.

**Gentiana** (*Gentian*; *Gentianella*).—Ord. Gentianaceæ. Hardy perennial herbs.

**CULTURE:** Compost, two parts good loam, one part peat & one part grit or broken limestone & coarse sand. Position, sunny borders for *G. acaulis* & tall kinds, sunny rockeries for *G. verna*; both to be fairly dry in winter & moist in summer. Plant, Sept., Oct., March, or April. Top-dress in March with little decayed cow manure. Water freely on dry soils in summer. Propagate by seeds sown 1-16 in. deep in well-drained pots or pans of sandy loam in cold frame, March; division of plants March. Seeds take one to two years to germinate, & soil must be kept moderately moist.

**SPECIES CULTIVATED:** *G. acaulis* (*Gentianella*), blue, March to May, 3 in., Europe; *Andrewsii*, blue, Aug., 1 to 2 ft., N. America; *asclepiadea* (Swallow-wort), purple blue, July, 6 to 18 in., S. Europe, and its variety *alba* (white); *cruciata* (Cross-wort), blue, June, 1 ft., Europe; *lutea* (Bitter-wort), yellow, July, 2 to 3 ft., Europe; *Pneumonanthe* (Windflower), blue, August and Sept., 1 to 2 ft., Britain; *septemida*, blue, July, 1 ft., Caucasus; *verna*, blue, April and May, 3 in., Europe (Britain and Ireland).

**Gentianella** (*Gentiana acaulis*).—See *Gentiana*.

**Gentian Gromwell** (*Lithospermum prostratum*).—See *Lithospermum*.

**Gentian Speedwell** (*Veronica gentianoides*).—See *Veronica*.

**Geonoma**.—Ord. Palmaceæ. Stove palm. Orn. foliage. First introduced 1820. Leaves, feather-shaped; pale green.

**CULTURE:** Compost, two parts peat, one part loam, sand & charcoal. Position, pots in moist shady part of plant stove. Pot, February or March. Water freely Oct. to Feb., abundantly other times. Syringe daily. Temp., Sept. to March 55° to 65°; March to Sept. 65° to 70°. Propagate by seeds sown 1 in. deep in above compost in pots in temp. 85° March; offshoots from base of plants in small pots in temp. 80° to 85°, any time.

**SPECIES CULTIVATED:** *G. gracilis*, 6 ft., Costa Rica.

**Georgian Fleabane** (*Inula glandulosa*).—See *Inula*.

**Geranium** (Crane's-bill).—Ord. Geraniaceæ. Hardy herbaceous perennials.

**CULTURE:** Soil, ordinary rich. Position, tall kinds in sunny well-drained borders, dwarf kinds on sunny rockeries. Plant, Oct., Nov., March, or April. Apply weak liquid manure occasionally to established plants in flower. Propagate by seeds sown  $\frac{1}{2}$  in. deep in ordinary soil in sunny position outdoors, March or April, or in shallow boxes of sandy soil in cold frame or greenhouse March; division of roots, Oct., Nov., March, or April. For greenhouse "Geraniums" see the genus *Pelargonium*.

**SPECIES CULTIVATED:** *G. argenteum*, rose, summer, 1 ft., Alps; *armenum*, purple, June and July, 2 ft., Orient; *cinereum*, red, summer, 6 in., Pyrenees; *cinereum album*, white; *dahuricum*, purple, June, 1 ft., Dahuria; *Endressi*, rose, summer, 1 ft., Pyrenees; *ibericum*, blue, summer, 1 ft., Caucasus; *macrohizon*, red or purple, May to July, 1 ft., E. Europe; *pratense*, blue, summer, 2 to 3 ft., Britain; and its double blue and double white varieties; *sanguineum*, crimson, summer, 2 ft., and its varieties *lancastrisense* (flesh), *album* (white), Britain; *sylvaticum*, blue, summer, 2 to 3 ft., Britain; *tuberosum*, purple, June, 9 in., S. Europe.

**Gerbera** (Barborton or Transvaal Daisy). — Ord. Compositæ. Greenhouse perennial herbs. First introduced 1888.

**CULTURE:** Grow in a compost of sandy loam and peat in a temperature of 45 to 50° from Nov. to May; without artificial heat afterwards. Water sparingly from Nov. to April; freely afterwards. Repot annually in spring. No shade required. Propagate by seeds sown in sandy peat in March in temperature 55°; by cuttings of side shoots in spring. *G. Jamesoni* may be grown outdoors in warm nooks in mild districts.

**SPECIES CULTIVATED:** *G. asplenifolia*, purple, summer, 1 ft.; *Jamesoni* (Barborton Daisy), orange-scarlet, June to Oct., 18 in.

**German Catchfly** (*Lychnis viscaria*).—See *Lychnis*.

**Germaner** (*Teucrium scorodonia*).—See *Teucrium*.

**German Iris** (*Iris germanica*).—See *Iris*.

**German Ivy** (*Mikania scandens*).—See *Mikania*.

**German Lilac** (*Centranthus ruber*).—See *Centranthus*.

**German Spleenwort** (*Asplenium germanicum*).—See *Asplenium*.

**German Tamarisk** (*Myricaria germanica*).—See *Myricaria*.

**Gesnera**.—Ord. Gesneriaceæ. Stove tuberous-rooted & herbaceous perennials. Flowering & orn. foliage. First introduced 1752.

**CULTURE:** Compost, two parts fibrous peat, one part loam, one part leaf-mould, with a little decayed manure & silver sand. Position, well-drained pots or pans in shady part of plant stove. Pot, March to flower in summer; May to flower in autumn; June to flower in winter. Place tubers 1 in. deep singly in 5-in. pots, or 1 to 2 in. apart in larger sizes. Water moderately from time growth begins until plants are 3 or 4 in. high, then freely. After flowering gradually withhold water till foliage dies down, then keep dry till potting time. Apply weak liquid manure once or twice a week when flower buds show. Syringing not required. Temp., March to Sept. 65° to 85°; Sept. to March 55° to 75°. Store when foliage has died down on their sides under stage till potting time in temp. of 50° to 55°. Propagate by seeds sown on surface of well-drained pots of sandy peat, in temp. 75°, March or April; cuttings of young shoots inserted in pots of sandy peat in temp. 75° to 85° in spring; fully matured leaves pegged on surface of pots in sandy peat in temp. 75° to 85°; stalk ends of leaves inserted vertically in pans of sandy peat in temp. 75° to 85°.

**SPECIES CULTIVATED:** *G. cardinalis*, crimson and white, autumn, 12 to 18 in.; *Donkharrii*, red and yellow, 2 ft., summer, Colombia; *Douglasii*, red and yellow, autumn, 18 in., Brazil; *exoniensis*, orange, scarlet, and yellow, winter, 1 ft., hybrid; *Leopoldii*, scarlet, summer, 1 ft., Brazil; *Lindleyi*, yellow and scarlet, July, 1 ft., Brazil; *narglioides* rosy pink, autumn, 18 in.; *refulgens*, violet and white, summer, 18 in., hybrid.

**Gethyllis** (Cape Crocus). — Ord. Amaryllidaceæ. Greenhouse bulbous plants. Deciduous. First introduced 1780.

**CULTURE:** Compost, equal parts peat, loam & sand. Position, well-drained pots in cold greenhouse or frame. Pot, Aug. to Nov., placing

bulbs singly in 5-in. pots, with points just below surface. Cover with ashes in cold frame or greenhouse till growth begins. Water moderately from time growth begins till flowers fade; keep quite dry after foliage has died down until potting time. Repot annually. Propagate by seeds sown  $\frac{1}{2}$  in. deep in well-drained pots of sandy soil in cold frame or greenhouse, March or April; offsets treated as bulbs at potting time.

**SPECIES CULTIVATED:** *G. afra*, red and white, summer, 6 ft., S. Africa; *ciliaris*, white, summer, 6 in., S. Africa; *spiralis*, white, autumn, 9 ft., S. Africa.

**Geum** (Avens).—Ord. Rosaceæ. Hardy perennial flowering herbs.

**CULTURE:** Soil, ordinary rich. Position, tall species in sunny borders, dwarf species on sunny rockeries. Plant, Oct. to April. Cut down flower stems in Sept. Propagate by seeds sown 1-16 in. deep in shallow boxes or well-drained pots of light soil in cold frame, April or July, or in sunny positions (similar depth & soil) outdoors, April or Aug.; division of plants, Oct. to April.

**SPECIES CULTIVATED:** *G. chilense*, scarlet, summer, 2 ft., Chili; and its varieties, *grandiflorum plenum* (double-flowered) and *miniatum* (orange); *coccineum*, scarlet, summer, 1 ft., Asia Minor; *Heldreichii*, orange-red, July, 1 ft.; *montanum*, yellow, May, 2 ft., Europe; reptans, yellow, summer, trailing, Europe.

**Ghent Azalea** (*Rhododendron pontica*).—See *Rhododendron*.

**Gherkin**.—See *Cucumis*.

**Giant Cow-parsnip** (*Heracleum giganteum*).—See *Heracleum*.

**Giant Fennel**.—See *Ferula*.

**Giant Fern Palm** (*Macrozamia peroffskeyana*).—See *Macrozamia*.

**Giant Ivy** (*Hedera Helix rægneriana*).—See *Hedera*.

**Giant Knot-weed** (*Polygonium Sieboldi*).—See *Polygonium*.

**Giant Lily** (*Lilium giganteum*).—See *Lilium*.

**Giant White Californian Poppy** (*Romneya Coulteri*).—See *Romneya*.

**Gibraltar Mint** (*Mentha pulegium gibraltarica*).—See *Mentha*.

**Gilia**.—Ord. Polemoniaceæ. Hardy annuals. First introduced 1826.

**CULTURE:** Soil, ordinary. Position, sunny; dwarf kinds as edgings to beds or borders, tall kinds in groups in borders or beds. Propagate by seeds sown 1-16 in. deep in April, where plants are to flower, thinning seedlings out in May 1 to 3 in. apart.

**SPECIES CULTIVATED:** *G. achillesefolia*, purplish blue, Aug., 1 ft., California; *androsacea* (Syn. *Leptosiphon parviflorus*), lilac, pink, and white, Aug., 1 ft., California; *coronopifolia*, scarlet, summer, 9 to 18 in., California; *densiflora* (Syn. *Leptosiphon densiflorus*), lilac, June, 6 in.; *densiflora alba*, white; *dianthoides* (Syn. *Fenzlia dianthiflora*), lilac and yellow, July, 4 in., California; *micantha* (Syn. *Leptosiphon roseus*), rose, summer, 9 in., California; *liniflora*, white, summer, 1 ft., California; *tricolor*, orange and purple, June, 1 ft., California, and its varieties *alba*, *atroviolacea*, *rosea*, and *splendens*.

**Gillenia** (Indian Physic).—Ord. Rosaceæ. Hardy perennials. First introduced 1713.

**CULTURE:** Soil, peaty. Position, moist shady bed or border. Plant, Oct. to Dec., or March. Cut down flowering stems in Sept. Propagate by division of roots in March or April.

**SPECIES CULTIVATED:** *G. stipulacea*, white, June, 1 to 2 ft., N. America; *trifoliata*, red or white, July, 1 to 2 ft., N. America.

**Gillyflower** (*Dianthus caryophyllus* & *Cheiranthus Cheiri*).—See *Dianthus* & *Cheiranthus*.

**Ginger-plant** (*Zingiber officinale*).—See *Zingiber*.

**Ginkgo** (Ginkgo-tree; Maidenhair-tree).—Ord. Coniferæ. Hardy

deciduous coniferous tree. Orn. foliage. First introduced 1754. Flowers, male & female borne on separate trees; spring. Fruit, small, globular; edible. Leaves, fan-shaped; green & variegated.

**CULTURE:** Soil, ordinary well drained. Position, sheltered shrubberies or lawns S. of England, against south or west walls other parts. Plant, Oct. to Feb. Propagate by seeds sown 1 in. deep in pans of light sandy soil in cold frame, Oct. or March.

**SPECIES CULTIVATED:** *G. biloba* (Syn. *Salisburia adiantifolia*), 60 to 80 ft., China and Japan.

**Glacier Pink** (*Dianthus glacialis*).—See *Dianthus*.

**Gladiolus** (Corn Flag; Sword Lily).—Ord. Iridaceæ. Hardy bulbous flowering plants. Deciduous. First introduced 1596.

**TYPES.**—Childsii group: Habit tall, 4 to 5 ft.; spikes, long, 2 ft., branching; flowers, 6 to 8 in. across. Gandavensis group: Habit, medium, 2 to 3 ft.; spikes, medium, 12 to 18 in.; flowers, large, evenly formed, beautiful & varied in colour. Lemoinei group: Habit, vigorous, 4 to 5 ft.; spikes, large; flowers, medium, golden-yellow centres, margined with other colours. Nanceanus group: Habit, tall; spikes long and branching; flowers, large, 4 to 5 in. across, brilliant colours. For names of varieties in each group see trade lists.

**OUTDOOR CULTURE:** Soil, deep rich, liberally manured. Position, sunny, sheltered, well-drained beds or borders. Plant early-flowering kinds Nov., Feb., or March, late kinds March, April, or May. Place corms of early kinds 4 in. deep & 6 in. apart in groups of three, six, or twelve; late kinds 3 in. deep & 12 in. apart in similar sized groups; put a little silver sand under each corm. Protect early kinds in winter with layer of manure. Apply liquid manure when flower buds form. Fix sticks to spikes when 2 or 3 in. high. Lift corms of early kinds in Sept., late kinds in Oct. or Nov., & store in cool place till planting time.

**POT CULTURE:** Compost, two parts loam, one part well-decayed manure & river sand. Position, pots in cold frame, cool greenhouse or window. Pot early kinds Oct. to March, placing five corms 1 in. deep in a 6-in. pot; late kinds March or April, one 1 in. deep in a 6-in. pot, or three 1 in. deep in an 8-in. pot. Place pots in cold frame till flower spikes show, then remove to greenhouse or window. Water moderately at first, freely afterwards. Apply liquid manure when flower spikes show. After flowering, gradually withhold water till foliage dies, then keep quite dry till repotted. Forcing: Pot early kinds Oct. to Dec. Temp., 55° to 65°. Propagate by seeds sown  $\frac{1}{2}$  in. deep in pans of light rich soil in Feb., in temp. 55° to 65°; by bulbils (spawn) growing at base of corms, planted 2 in. deep & 6 in. apart in sunny border outdoors, March. Seedlings flower when three years old; bulbils when two years old.

**CULTURE OF G. PRIMULINUS:** Compost, equal parts loam and leaf-mould with plenty of sand. Position, moist stove spring and summer. Pot in autumn. Keep dry till growth begins, then water freely. Moist atmosphere most essential during spring and summer. Withhold water gradually after flowering. Temp. Oct. to March, 55°; March to Oct. 60° to 70°. Increased by removing small corms, and growing these on as advised for old ones.

**SPECIES CULTIVATED:** *G. blandus*, white, red, and yellow, June, 18 in., S. Africa; *byzantinas*, red and purple, June, 2 ft., Asia Minor; *cardinalis*, scarlet, July and Aug., 3 to 4 ft., S. Africa; *communis*, rose, June to Aug., 1 to 2 ft., S. Europe; *cruentus*, scarlet and white, Sept., 12 to 18 in., Natal; *foribundus*,

white, flesh, and red, 1 ft., June and July, S. Africa, also numerous varieties and hybrids; nanus, various colours, summer, 1 ft., many varieties; psittacinus, scarlet and yellow, summer, 3 ft., S. Africa; purpureo-auratus, yellow and purple, Aug., 3 to 4 ft., S. Africa; ramosus, various colours, July to Oct., 3 ft., S. Africa, many varieties; Sandersii, crimson, pink and white, autumn, 2 to 3 ft., S. Africa; tristis, red and yellow, July, 1 ft., Natal. Colvillei, crimson and white, summer, 2 ft., and its variety The Bride (white) are pretty hybrids, the latter being valuable for pot culture and forcing; primulinus (Maid of the Mist), golden yellow, fragrant, Aug., 3 to 4 ft., Trop. Africa.

**Gladwyn** (*Iris foetidissima*).—See Iris.

**Gland Bellflower**.—See Adenophora.

**Glastonbury Thorn** (*Cratægus oxycantha præcox*). — See *Cratægus*.

**Glaucium** (Horn Poppy; Sea Poppy).—Ord. Papaveraceæ. Hardy biennial herbs.

**CULTURE**: Soil, ordinary rich. Position, sunny well-drained beds or borders. Propagate by seeds sown 1-16 in. deep in beds of light soil outdoors in May, transplanting seedlings into flowering position in July or Aug.

**SPECIES CULTIVATED**: *G. corniculatum*, crimson and black, summer, 9 in., Mediterranean Region, and its red variety *rubrum*; *flavum* (Syn. *G. luteum*), yellow, summer, 1 to 2 ft., Europe (Britain), etc.

**Gleditschia** (Honey Locust; Water Locust).—Ord. Leguminosæ. Hardy ornamental deciduous trees. First introduced 1700. Leaves, feather-shaped, green. Shoots, spiny.

**CULTURE**: Soil, ordinary. Position, sheltered borders or shrubberies. Plant, Oct. to Feb. Propagate by seeds sown 1 in. deep in light soil outdoors, March, transplanting seedlings when two years old.

**SPECIES CULTIVATED**: *G. macrantha*, green, July, 20 ft., China; *aquatica* (Syn. *G. monosperma* and *inermis*), the Water Locust, green, July, 20 to 30 ft., United States; *triacanthos* (Honey Locust), green, summer, 30 to 50 ft., United States.

**Gleichenia** (Umbrella Fern; Net Fern).—Ord. Filices. Orn. evergreen stove & greenhouse ferns. First introduced 1823. Species cultivated, 13; varieties, several. Fronds, feather-shaped. Stems, creeping.

**CULTURE**: Compost, two parts fibrous peat, one part fibrous loam, charcoal & sand. Position, well-drained pans in shady stove or greenhouse. Pot, February or March. Water moderately in winter, freely at other times. Syringing unnecessary. Temp., stove species, Sept. to March 55° to 65°, March to Sept. 65° to 75°; greenhouse species, Sept. to March 45° to 50°, March to Sept. 55° to 65°. Propagate by spores sown on surface of sandy peat in well-drained pots under bell-glass at any time of year; division of creeping stems with roots attached, Feb. or March.

**STOVE SPECIES**: *G. dichotoma*, 6 ft., Tropics.

**GREENHOUSE SPECIES**: *G. circinata*, 6 ft., Australia, New Zealand, and Malaya, and its varieties *Mendelii* and *semi-vestita*; *dicarpa*, 6 ft., Australia and New Zealand, and its varieties, *alpina*, *glauca* and *longipinnata*; *fiabellata*, 5 ft., Australia and New Zealand, *rupestris*, 5 ft., Australia.

**Globe Amaranth** (*Gomphrena globosa*).—See *Gomphrena*.

**Globe Daisy**.—See *Globularia*.

**Globe Flower** (*Trollius europæus*).—See *Trollius*.

**Globe Thistle** (*Echinops Ritro*).—See *Echinops*.

**Globularia** (Globe Daisy).—Ord. Selaginaceæ. Hardy shrubs and perennial herbs. First introduced 1629.

**CULTURE**: Soil, ordinary moist. Position, sunny rockeries or margins of borders. Plant, Oct., Nov., March, or April. *G. Alypum*

may be grown in a greenhouse. Propagate by seeds sown on surface in boxes of light sandy soil in cold frame in March or April; division of plants, Oct. or April.

**SPECIES CULTIVATED:** *G. Alypum*, blue, August, 2 ft., shrub, S. Europe; *cordifolia*, blue, June, 6 in., shrub, S. Europe; *nudicaulis*, blue, summer, 6 in., herbaceous, Europe; *trichosantha*, blue, summer, 6 to 8 in., herbaceous, Asia Minor; *vulgaris*, blue, summer, 6 to 12 in., herbaceous, S. Europe.

**Gloriosa** (Malabar Glory Lily; Mozambique Lily).—Ord. Liliaceæ. Stove flowering climbers. Deciduous & tuberous-rooted. First introduced 1690.

**CULTURE:** Compost, equal parts loam, peat, leaf-mould, decayed manure & silver sand. Position, well-drained pots, with shoots trained to roof or trellis. Pot, Feb., placing tubers 2 in. deep, one in a 6-in. pot, or several in an 8 or 12-in. pot. Water moderately till growth is well advanced, then freely. After flowering, gradually withhold water & keep soil quite dry till potting time. Temp., Feb. to Sept. 70° to 85°; Sept. to Feb. 55° to 65°. Propagate by seeds inserted singly ¼ in. deep in 3-in. pots filled with light soil in temp. 75° in Feb. or March; offsets removed from large tubers at potting time.

**SPECIES CULTIVATED:** *G. superba*, orange and red, summer, 6 to 10 ft., Tropics; *virescens* Plantii, yellow and red, summer, 5 ft., Trop. Africa.

**Glory Flower** (*Eccremocarpus scaber*).—See *Eccremocarpus*.

**Glory Lily** (*Gloriosa superba*).—See *Gloriosa*.

**Glory-of-the-Snow** (*Chionodoxa luciliæ*).—See *Chionodoxa*.

**Glory Pea of New Zealand** (*Clianthus Dampieri*).—See *Clianthus*.

**Glory Tree** (*Clerodendron fragrans*).—See *Clerodendron*.

**Gloxinia**.—See *Sinningia*.

**Glycyrrhiza** (Liquorice-plant).—Ord. Leguminosæ. Hardy herbaceous perennials. Orn. foliage & flowering. Edible rooted. Nat. Europe. First introduced 1562. Ht. 3 to 5 ft.

**CULTURE IN GARDENS:** Soil, deep rich sandy. Position, open sunny. Plant, Feb. or March, 18 in. apart & 3 in. deep in rows 3 ft. asunder. Cut down foliage & remove creeping stems close to root in Nov. Roots ready for use third year after planting. Propagate by division of creeping stems, Feb. or March.

**FIELD CULTURE:** Soil, deep, rich sandy loam, trenched 3 ft. deep & dressed with farmyard manure at rate of 40 tons per acre in autumn. Plant root cuttings furnished with two eyes each, 3 in. deep, 18 in. apart in rows 3 ft. asunder in March. Following November cut off all creeping roots close to main root, & do same again following Nov. Third year after planting dig trench 4 to 5 ft. deep by side of rows & pull out roots with a strong rope. Average yield per acre 4 to 5 tons. Average value per cwt., 45s.

**SPECIES CULTIVATED:** *G. glabra* (Spanish Liquorice), blue, May to Sept., Mediterranean Region.

**Gnaphalium**.—See *Anaphalis* & *Leontopodium*.

**Gnidia**.—Ord. Thymelacææ. Greenhouse evergreen flowering shrubs. Nat. Cape of Good Hope. First introduced 1768.

**CULTURE:** Compost, two parts fibrous peat, one part loam & silver sand. Position, well-drained pots near glass in airy greenhouse during autumn, winter & spring, cold frame June to Sept. Pot, March. Press compost firmly in pots. Prune straggling shoots into shape directly after flowering. Water carefully always, giving sufficient to keep soil uniformly moist; rain, not spring water, essential. Temp.,

Oct. to March 40° to 45°; March to July, 45° to 55°. Propagate by cuttings of young shoots 2 in. long inserted in sandy peat in well-drained pots under bell-glass in temp. 45° to 55° in March, April, or May.

**SPECIES CULTIVATED:** *G. denudata*, yellow, summer, 18 in.; *pinifolia*, white, fragrant, spring, 2 ft.

**Goat-root** (*Ononis Natrix*).—See *Ononis*.

**Goat's Beard** (*Spiræa Aruncus*).—See *Spiræa*.

**Goat's Rue** (*Galega officinalis*).—See *Galega*.

**Goat Willow** (*Salix caprea*).—See *Salix*.

**Godetia**.—See *Oenothera*.

**Gold Basket** (*Alyssum saxatile*).—See *Alyssum*.

**Gold Dust-plant** (*Alyssum saxatile*).—See *Alyssum*.

**Golden Amaranth** (*Amaranthus salicifolius*).—See *Amaranthus*.

**Golden Ash** (*Fraxinus excelsior aurea*).—See *Fraxinus*.

**Golden Bell-tree** (*Forsythia suspensa*).—See *Forsythia*.

**Golden Bush** (*Cassinia fulvida*).—See *Cassinia*.

**Golden Chain** (*Laburnum vulgare*).—See *Laburnum*.

**Golden Chestnut** (*Castanopsis chrysophylla*).—See *Castanopsis*.

**Golden Club** (*Orontium aquaticum*).—See *Orontium*.

**Golden Creeping Jenny** (*Lysimachia nummularia aurea*).—See *Lysimachia*.

**Golden Cretan Spikenhard** (*Valeriana Phu aurea*).—See *Valeriana*.

**Golden Dead Nettle** (*Lamium aureum*).—See *Lamium*.

**Golden Drop** (*Onosma echioides*).—See *Onosma*.

**Golden Elm** (*Ulmus campestris foliis aureis*).—See *Ulmus*.

**Golden Elm** (*Ulmus fastigiata aurea*).—See *Ulmus*.

**Golden Feather** (*Chrysanthemum Parthenium aureum*).—See *Chrysanthemum*.

**Golden-flowered Currant** (*Ribes aureum*).—See *Ribes*.

**Golden-flowered Garlic** (*Allium Moly*).—See *Allium*.

**Golden Hair** (*Chrysocoma Coma-aurea*).—See *Chrysocoma*.

**Golden Knee** (*Chrysogonum virginianum*).—See *Chrysogonum*.

**Golden-leaved Chestnut** (*Castanea chrysophylla*).—See *Castanea*.

**Golden-leaved Spindle-tree** (*Euonymus japonicus aureo-variegatus*).—See *Euonymus*.

**Golden Lily** (*Lycoris aurea*).—See *Lycoris*.

**Golden Lime-tree** (*Tilia europæa aurea*).—See *Tilia*.

**Golden Maiden-hair Fern** (*Nothochlæna flavens*).—See *Nothochlæna*.

**Golden Oak** (*Quercus pedunculata Concordia*).—See *Quercus*.

**Golden Osier** (*Salix vitellina*).—See *Salix*.

**Golden Polypody** (*Polypodium aureum*).—See *Polypodium*.

**Golden Privet** (*Ligustrum ovalifolium aureum*).—See *Ligustrum*.

**Golden Rain** (*Laburnum vulgare*).—See *Laburnum*.

**Golden Rod** (*Solidago virgaurea*).—See *Solidago*.

**Golden Saxifrage** (*Chrysosplenium alternifolium*).—See *Chrysosplenium*.

**Golden Thistle** (*Scolymus hispanicus*).—See *Scolymus*.

**Golden Urn-flower** (*Urceolina aurea*).—See *Urceolina*.

**Golden Vine** (*Stigmaphyllon ciliatum*).—See *Stigmaphyllon*.

**Golden Wand** (*Bulbinella Hookeri*).—See *Bulbinella*.

**Gold Fern** (*Gymnogramma chrysophylla*).—See *Gymnogramma*.

**Goldfussia**.—See *Strobilanthes*.

**Goldilocks** (*Aster Linosyris*).—See *Aster*.

**Gold-netted Honeysuckle** (*Lonicera brachypoda aureo reticulata*).—See *Lonicera*.

**Gold Thread** (*Coptis trifoliata*).—See *Coptis*.

**Gombo** (*Hibiscus esculentus*).—See *Hibiscus*.

**Gomphia** (South American Button-flower.—Ord. *Ochnaceæ*. Stove evergreen shrubs. Orn. foliage & flowering.

**CULTURE:** Compost, two parts fibrous loam, one part peat, little silver sand. Position, pots in light part of plant stove. Pot, Feb. or March. Press compost down firmly in pot. Prune into shape Feb. or March. Water moderately Oct. to March, freely afterwards. Syringe daily in summer. Temp., March to Oct. 65° to 75°; Oct. to March 50° to 60°. Propagate by cuttings of firm young shoots, 2 to 3 in. long, inserted in pots of silver sand under bell-glass in temp. 75° in spring.

**SPECIES CULTIVATED:** *G. decora*, yellow, spring, 10 to 15 ft., Brazil.

**Gompholobium**.—Ord. *Leguminosæ*. Greenhouse evergreen flowering shrubs. Trailing & erect. Nat. Australia. First introduced 1803.

**CULTURE:** Compost, two parts rough peat, one part rough loam, charcoal & sand. Position, well-drained pots in light part of greenhouse. Pot, Feb. or March. Prune into shape after flowering. Water carefully at all times. Temp., Sept. to April 45° to 50°; April to Sept. 50° to 60°. Ventilate greenhouse freely in summer. Propagate by cuttings of young shoots 2 in. long inserted in well-drained pots of sandy peat under bell-glass in temp. 45° to 55° in March or April.

**SPECIES CULTIVATED:** *G. grandiflorum*, yellow, June, 2 ft.; polymorphum, yellow, scarlet and purple, spring, 2 ft.; venustum, purple, spring, 3 ft.

**Gomphrena** (*Globe Amaranth*; *Globe Everlasting*).—Ord. *Amaranthaceæ*. Greenhouse flowering annual. Nat. India. First introduced 1714.

**CULTURE:** Compost, two parts fibrous loam, one part leaf-mould, well-decayed cow manure & sand. Position, warm greenhouse, exposed to light. Sow seeds 1-16 in. deep in well-drained pots of light soil in temp. 75° in March. Transplant seedlings 1 in. apart when 1 in. high in light soil in well-drained pots & keep in temp. of 60° to 75°. When seedlings have formed four leaves place singly in 4-in. pots. Transfer them in June to 5-in. pots & keep near the glass. Water moderately. Syringe foliage twice daily. Apply liquid manure when flowers appear. Summer temp., 55° to 65°. Cut flowers immediately they are fully developed for drying for winter decoration.

**SPECIES CULTIVATED:** *G. globosa*, and its varieties, *aurea superba* (yellow), *carnea* (flesh), *purpurea* (purple), and *nana* (dwarf), summer, 12 to 18 in.

**Gongora**.—Ord. *Orchidaceæ*. Stove evergreen epiphytal orchids. First introduced 1824.

**CULTURE:** Compost, equal parts rough peat, sphagnum moss & lumps of charcoal. Position, hanging baskets in sunny part of stove. Re-basket, Feb. or March. Water abundantly March to Sept., very little other times. Growing period, March to Aug. Resting period, Aug. to March. Propagate by division of pseudo-bulbs in Feb.



**SPECIES CULTIVATED:** *G. armeniaca*, orange yellow, summer, 1 ft., Nicaragua; *galeata*, brown, summer, fragrant, 1 ft., Mexico; *gratulabunda*, yellow and red, summer, 1 ft., Colombia; *maculata*, yellow and red, summer, 1 ft., Trop. America.

**Goniophlebium.**—See *Polypodium*.

**Good King Henry** (*Chenopodium Bonus-Henricus*).—See *Chenopodium*.

**Goodyera** (Rattlesnake Plantain; Adder's Violet).—Ord. Orchidaceæ. Stove, greenhouse, & hardy terrestrial orchids. Flowering & orn. foliage. Leaves, bronze, chocolate, olive-green, purplish-green, reddish-crimson, variegated with white or yellow.

**CULTURE OF STOVE & GREENHOUSE SPECIES:** Compost, two parts fibrous peat, one part loam & sand. Position, well-drained pots or shallow pans in shady part of stove or greenhouse. Pot, Feb. or March. Water freely March to Sept., moderately other times. Temp., stove species, 65° to 75° March to Sept., Sept. to March 55° to 65°; greenhouse species, March to Sept. 55° to 65°, 45° to 55° Sept. to March.

**CULTURE OF HARDY SPECIES:** Compost, two parts peat, leaf-mould & sand. Position, rockery or border, well drained. Plant, March or April. Water freely in dry weather. Propagate by cuttings of shoots removed with roots attached, inserted singly in small pots of peaty compost under bell-glass in temp. 45° to 55° in spring.

**STOVE SPECIES:** *G. cordata*, yellow and brown, Sept., India; *Veitchii*, leaves red, brown, and white, hybrid.

**GREENHOUSE SPECIES:** *G. macrantha*, rosy pink and white, June, Japan; *Menziesii*, white, summer, N. America.

**HARDY SPECIES:** *G. pubescens*, white, July, N. America; *repens*, white, summer, Europe.

**Gooseberry** (*Ribes grossularia*).—See *Ribes*.

**Gorse** (*Ulex europæus*).—See *Ulex*.

**Gossypium** (Cotton-plant).—Ord. Malvaceæ. Stove perennial herbs. First introduced 1594. Fruit (capsule) furnishes cotton of commerce.

**CULTURE:** Compost, equal parts loam, leaf-mould & little sand. Position, well-drained pots in sunny part of stove. Pot, March or April. Water moderately Sept. to April, freely afterwards. Temp., March to Oct. 65° to 75°; Oct. to March 50° to 65°. Propagate by seeds sown 1-16 in. deep in light soil in temp. 65° to 75°, March or April. Transplant seedlings when 1 in. high singly into 2-in. pots, & thence into 5 or 6-in. pots.

**SPECIES CULTIVATED:** *G. barbadense*, yellow and purple, Sept., 5 ft., Barbados; *herbaceum*, yellow and purple, summer, 3 to 4 ft., East Indies; *Bahma* (Egyptian Cotton), a hybrid.

**Gourd** (*Cucurbita melopepo*).—See *Cucurbita*.

**Grammanthes.**—Ord. Crassulaceæ. Half-hardy annual. First introduced 1774.

**CULTURE:** Soil, light sandy. Position, sunny rockeries. Propagate by seeds sown on surface of sandy soil in well-drained pans in temp. 60° to 65° in March. Transplant seedlings outdoors in May.

**SPECIES CULTIVATED:** *G. chloræfolia*, orange-yellow and red, summer, 3 to 4 in., S. Africa.

**Grammatocarpus** (Cup Flower).—Ord. Loasaceæ. Half-hardy annual climber.

**CULTURE:** Sow seeds in gentle heat in March, harden seedlings off later on, & plant in June. Ordinary soil. Suitable for low sunny trellises, vases, etc.

**SPECIES CULTIVATED:** *G. volubilis* (Syn. *Scyphanthus elegans*), yellow and red, summer, 3 ft., Chili.

**Grammatophyllum** (Queen of the Orchids).—Ord. Orchidaceæ. Stove epiphytal orchids. First introduced 1837.

**CULTURE:** Compost, fibrous peat & charcoal. Position, large well-drained pots in light part of stove. Pot, Feb. or March. Water freely Feb. to Oct., very little Oct. to Feb. Temp., Feb. to Nov. 65° to 75°; Nov. to Feb. 60° to 65°. Growing period, Feb. to Nov. Resting period, Nov. to Feb. Propagate by division of pseudo-bulbs at potting time.

**SPECIES CULTIVATED:** *G. fenzlianum*, yellow and brown, summer, 4 ft., Amboyna; *speciosum*, yellow and purple, winter, 5 to 8 ft., Malaga.

**Granadilla** (*Passiflora quadrangularis*).—See *Passiflora*.

**Grape Fern** (*Botrychium lunaria*).—See *Botrychium*.

**Grape Hyacinth**.—See *Muscari*.

**Grape Pear** (*Amelanchies vulgaris*).—See *Amelanchies*.

**Grape Vine** (*Vitis vinifera*).—See *Vitis*.

**Grass of Parnassus** (*Parnassia palustris*).—See *Parnassia*.

**Gray Birch** (*Betula populifolia*).—See *Betula*.

**Greek Valerian** (*Polemonium cæruleum*).—See *Polemonium*.

**Green Hellebore** (*Helleborus viridis*).—See *Helleborus*.

**Green Man Orchis** (*Aceras anthropophora*).—See *Aceras*.

**Green Spleen-wort** (*Asplenium viride*).—See *Asplenium*.

**Green-winged Orchis** (*Orchis morio*).—See *Orchis*.

**Greig's Tulip** (*Tulipa Greigi*).—See *Tulipa*.

**Grevillea** (*Silk-bark Oak*).—Ord. *Proteaceæ*. Greenhouse hardy evergreen shrubs. Flowering & orn. foliage. First introduced 1790.

**CULTURE OF GREENHOUSE SPECIES:** Compost, equal parts fibrous peat & turfy loam, one part silver sand. Position, well-drained pots in airy greenhouse, window, or dwelling-room. Pot, March or April. Water moderately Sept. to April, freely afterwards. Prune off points of shoots occasionally to induce bushy growth. Temp., March to Oct. 55° to 65°; Oct. to March 45° to 55°.

**CULTURE OF HARDY SPECIES:** Soil, peaty. Position, sheltered shrubberies S. of England; against south walls other parts. Plant, Oct. or April. Prune, April. Protect in severe weather.

**PROPAGATE** greenhouse species by seeds sown  $\frac{1}{4}$  in. deep in well-drained pots of light soil in temp. 65° to 70° in March; cuttings of young shoots 3 in. long, with small portions of branches attached inserted in sandy soil in well-drained pots under bell-glass in temp. 75° to 80° in March, April, or May; hardy species by seeds sown  $\frac{1}{4}$  in. deep outdoors in March or April; layers in Oct. or Nov.; grafting in March or April.

**GREENHOUSE SPECIES:** *G. robusta*, orange, summer, 10 to 20 ft., Australia; *rosmarinifolia*, red, summer, 6 ft., Australia.

**HARDY SPECIES:** *G. juniperiana sulphurea*, yellow, summer, 10 ft., Australia.

**Grey Poplar** (*Populus alba canescens*).—See *Populus*.

**Griffinia** (*Blue Amaryllis*).—Ord. *Amaryllidaceæ*. Stove bulbous flowering plants. Evergreen. First introduced 1815.

**CULTURE:** Compost, two parts fibrous loam, one part peat, decomposed sheep manure & sand. Position, well-drained pots on a bed or stage heated beneath to temp., 85° in plant stove. Pot, June or July. Press compost down firmly. Repotting not needful oftener than once every three or four years. Water moderately Oct. to April, freely afterwards. Syringe freely in summer. Topdress established plants annually in March with rich compost. Temp., March to Sept. 70° to 80°; Sept. to Dec. 55° to 65°; December to March 65° to 75°. Pro-

pagate by seeds sown  $\frac{1}{2}$  in. deep in sandy soil in temp. 85° in Feb. or March; offsets removed from old bulbs and placed singly in 3-in. pots at potting time.

**SPECIES CULTIVATED:** *G. Blumenavia*, pink, summer, 1 ft., Brazil; *hyacinthina* (Blue Amaryllis), blue, summer, 18 in., Brazil.

**Grim-the-Collier** (*Hieracium aurantiacum*).—See *Hieracium*.

**Griselinia** (New Zealand Broad-leaf).—Ord. Cornaceæ. Hardy evergreen shrubs. Orn. foliage. Nat. New Zealand. First introduced 1872. Leaves, egg-shaped; dark green.

**CULTURE:** Soil, rich loam. Position, shady, sheltered borders. Plant, Oct., Nov., March & April. Prune into shape, April. Propagate by cuttings inserted in sandy soil in sheltered border or cold frame Sept., Oct., or Nov.; layering shoots in Oct. or Nov.

**SPECIES CULTIVATED:** *G. littoralis*, green, spring, 20 to 30 ft.; *lucida macrophylla*, green, spring, 10 to 12 ft.

**Gromwell** (*Lithospermum prostratum*).—See *Lithospermum*.

**Ground Cistus** (*Rhodothamnus chamæcistus*).—See *Rhodothamnus*.

**Ground Holly**.—See *Chimaphila*.

**Ground Ivy** (*Nepeta Glechoma*).—See *Nepeta*.

**Ground Nut** (*Apios tuberosa* and *Arachis hypogæa*).—See *Apios* and *Arachis*.

**Grove Fern**.—See *Alsophila*.

**Guava-tree** (*Psidium Guava pyriferum*).—See *Psidium*.

**Guelder Rose** (*Viburnum Opulus*).—See *Virburnum*.

**Guernsey Lily** (*Nerine sarniensis*).—See *Nerine*.

**Guernsey Orchis** (*Orchis laxiflora*).—See *Orchis*.

**Guinea Pepper** (*Capsicum annum*).—See *Capsicum*.

**Gum Box** (*Escallonia macrantha*).—See *Escallonia*.

**Gum Cistus** (*Cistus ladaniferus*).—See *Cistus*.

**Gunnera** (Prickly Rhubarb).—Ord. Haloraginaceæ. Hardy herbaceous perennials. Orn. foliage. First introduced 1849. Leaves, large, 4 to 6 ft. in diameter; dark green.

**CULTURE:** Soil, ordinary rich. Position, damp, sunny sheltered margins of ponds or bogs. Plant, March or April. Protect with leaves in winter. Water abundantly in dry weather. Propagate by seeds sown 1-16 in. deep in pans of light soil in temp. 55° to 65° in March, transplanting seedlings outdoors in June; division of plants in March or April.

**SPECIES CULTIVATED:** *G. manicata*, leaves 4 to 6 ft., in diameter, 4 to 6 ft., Brazil; *chilensis* (Syn. *G. scabra*), leaves 4 to 6 ft. in diameter, 6 to 10 ft., Chili.

**Guzmania**.—Ord. Bromeliaceæ. Stove herbaceous perennials. Flowering & orn. foliage. First introduced 1820. Bracts, yellow, green, purple, scarlet. Leaves, sword-shaped; bright green.

**CULTURE:** Compost, equal parts fibrous loam, rough peat & leaf-mould. Pot, March. Water freely always. Good drainage essential. Temp., Sept. to March 60° to 70°; March to Sept. 70° to 80°. Propagate by offshoots inserted in small pots at any time.

**SPECIES CULTIVATED:** *G. tricolor*, white, summer, 1 ft., bracts purplish red, W. Indies.

**Gymnocladus** (Kentucky Coffee Tree; Soap Tree).—Ord. Leguminosæ. Hardy deciduous tree. Orn. foliage & flowering. First introduced 1748. Leaves, feather-shaped, bluish green, 3 ft. long & 2 ft. wide.

**CULTURE:** Soil, ordinary, well drained. Position, shady shrubberies or lawns. Plant, Oct. to Feb. Prune young trees, Jan. Pro-

pagate by seeds sown 1 in. deep in light soil in shady position outdoors in Oct., Nov., April or March.; cuttings of roots inserted 2 in. deep in similar position in Oct. or March.

**SPECIES CULTIVATED:** *G. canadensis* (Kentucky Coffee Tree), white, May to July, 30 to 60 ft., N. America; *chinensis* (Soap Tree), white, June, 20 ft., China.

**Gymnogramme** (Gold Fern; Silver Fern).—Ord. Filices. Stove & greenhouse evergreen ferns. First introduced 1790. Fronds finely divided, upper sides green, under sides covered with white or yellow powder.

**CULTURE:** Compost, one part fibrous peat, one part leaf-mould & loam, one part silver sand, charcoal, & coarsely ground bones. Position, erect species in well-drained pots; drooping species in hanging baskets. Pot, Feb. or March. Water moderately Oct. to Feb., freely afterwards. Syringing or shading not necessary. Temp., stove species, Sept. to March 55° to 65°, March to Sept. 65° to 75°; greenhouse species, Sept. to March 45° to 50°, March to Sept. 55° to 65°. Propagate by spores sown on surface of fine sandy peat under bell-glass in temp. 75° to 85° any time; division of plants at potting time; fronds furnished with plantlets pegged on to surface of sandy peat under bell-glass in temp. 70° to 80° at all times.

**STOVE SPECIES:** *G. calomelanos*, fronds dull green above, creamy white below, W. Indies, and the following varieties, *chrysophylla* (Gold Fern), fronds golden yellow, and *peruviana argyrophylla* (Silver Fern), fronds silvery; *decomposita*, fronds yellow, hybrid; *schizophylla*, fronds silvery, pretty for baskets, Jamaica; *sulphurea*, fronds golden, West Indies; *tartarea* (Syn. *G. dealbata*), fronds silvery, Trop. America.

**GREENHOUSE SPECIES:** *G. japonica*, fronds not powdered, Japan.

**Gymnolomia.**—Ord. Compositæ. Hardy annual. Useful plant for cutting.

**CULTURE:** Soil, ordinary. Position, sunny borders. Sow seeds in patches outdoors during April. Thin out seedlings later on to a few inches apart.

**SPECIES CULTIVATED:** *G. multiflora*, yellow, Aug., 18 in., Mexico.

**Gymnothrix.**—See Pennisetum.

**Gynerium.**—See Cortaderia.

**Gynura.**—Ord. Compositæ. Stove perennials with ornamental foliage. Leaves purple-tinted.

**CULTURE:** Compost, equal parts peat, loam, leaf-mould, & sand. Position, pots in partial shade. Pot in March. Water freely March to Oct., moderately afterwards. Temp., March to Oct., 70° to 80°; Oct. to March, 55° to 65°. Propagate by cuttings in spring.

**SPECIES CULTIVATED:** *G. aurantiaca*, 2 ft., Java; *bicolor*, 3 ft., Moluccas, *sarmentosa*, 6 to 8 ft.

**Gypsophila** (Chalk-plant).—Ord. Caryophyllaceæ. Hardy perennial & annual herbs. First introduced 1759. Flowers valuable for cutting for floral decoration.

**CULTURE:** Soil, ordinary, freely mixed with old mortar or brick rubbish. Position, dryish well-drained borders for erect species; sunny rockeries & margins of borders for dwarf species. Plant, Oct., Nov., March or April. Cut down flower stems in Oct. Propagate annual species by seeds sown in April on surface of soil where plants are to flower, thinning seedlings out 3 to 6 in. apart when 1 in. high; perennial species by seeds sown in sunny position outdoors in April, transplanting seedlings to permanent position in June, July, or Aug.; division of plants in Oct. or April.

**ANNUAL SPECIES:** *G. elegans*, white, June to Oct., 12 to 18 in., Caucasus; *viscosa*, rose, fragrant, summer, 12 to 18 in., Asia Minor.

PERENNIAL SPECIES: *G. glauca*, white, summer, 18 in., Caucasus; *paniculata*, white, summer, 2 to 3 ft., Europe; *paniculata flore-pleno*, double white; *repens*, white, summer, 6 in., Alps; *Stevenii*, white, summer, 2 ft., Caucasus.

**Habenaria** (Butterfly Orchis; Rein Orchis).—Ord. Orchidaceæ. Hardy and stove terrestrial orchids. Deciduous. Flowers fragrant.

CULTURE OF HARDY SPECIES. Compost, equal parts leaf-mould, peat & sand. Position, moist, partially shaded borders. Plant, Oct. or April. Mulch surface of bed in June with leaf-mould, cocconut-fibre refuse, or short grass. Water freely in summer in dryish positions. Replanting necessary only when plants show signs of deterioration.

CULTURE OF STOVE SPECIES: Compost, one-half of equal proportions of fibrous peat, loam & fresh-chopped sphagnum moss, & another half of fine crocks & coarse silver sand. Pot when growth commences. Position, shady. Water moderately till growth is well advanced, then freely; very little when at rest. Resting period, directly after flowering. Propagate by division at potting time.

HARDY SPECIES: *H. bifolia* (Butterfly Orchid), white, June, 1 ft., Britain; *blepharoglossis*, white, summer, 1 ft., N. America; *ciliaris*, orange, Aug., 18 in., N. America; *conopsea*, red or white, summer, 18 in., Europe (Britain); *fimbriata*, purple, June, 1 ft., N. America.

STOVE SPECIES: *H. carnea*, pink and white, summer, Penang; *pusilla*, green and scarlet, summer, 1 ft., Cochin China; *Suzanna*, white, summer, India.

**Haberlea**.—Ord. Gesneraceæ. Hardy herbaceous perennial. First introduced 1880.

CULTURE: Soil, fibrous sandy peat. Position, moist fissures of rockery in shade. Plant, Oct., March or April. Water freely in dry weather. Propagate by seeds sown 1-16 in. deep in well-drained pots or pans of sandy peat in cold frame in March or April; by division of plants in March or April.

SPECIES CULTIVATED: *H. rhodopensis*, lilac, May, 6 in., Greece.

**Habitia**.—Ord. Chenopodiaceæ. Hardy herbaceous climber. First introduced 1828.

CULTURE: Soil, ordinary. Position, base of naked trunks of trees, south or west trellises, arbours, walls, or fences. Plant, Oct. or March. Cut down stems to the ground in Oct. Propagate by seeds sown 1-16 in. deep in sunny place outdoors in March or April, or similar depth in boxes of light soil in greenhouse or cold frame in March, transplanting seedlings outdoors in May or June; by division of roots Oct. or April.

SPECIES CULTIVATED: *H. tamnoides*, green, summer, 8 to 10 ft., Caucasus.

**Habranthus**.—See *Zephyranthes* & *Hippeastrum*.

**Habrothamnus**.—See *Cestrum*.

**Hackberry** (*Celtis occidentalis*).—See *Celtis*.

**Hacquetia**.—Ord. Umbelliferæ. Hardy herbaceous perennial.

CULTURE: Soil, ordinary. Position, sunny rockery or margin of border. Plant in March. Propagate by division of the roots in March.

SPECIES CULTIVATED: *H. epipactis* (Syn. *Dondia epipactis*), yellow, spring, 3 to 6 in., Europe.

**Hæmanthus**. (Blood-flower; Blood Lily; Red Cape Tulip).—Ord. Amaryllidaceæ. Stove & greenhouse bulbous plants. Deciduous. Nat. S. Africa. First introduced 1722.

CULTURE: Compost, two parts sandy loam, one part peat, well-decayed manure & sand. Position, well-drained pots exposed to full sun in stove or greenhouse whilst growing; under staging whilst at rest. Pot early-flowering species Aug. to Nov.; late-flowering species, March or April. Place bulbs half their depth in compost. Water very little till growth begins, then moderately; gradually withhold it when

flowers fade, & keep soil quite dry from time foliage turns yellow till repotting time. Apply weak liquid manure once or twice weekly to plants in flower. Temp., greenhouse species, Sept. to March 45° to 55°, March to Sept. 55° to 65°; Sept. to March 55° to 65°, March to Sept. 65° to 75° for stove species. Bulbs flower best when only repotted every three or four years. Propagate by offsets removed at potting time & placed in small pots in similar soil as for old bulbs.

STOVE SPECIES: *H. cinnabarium*, red, April, 1 ft.; *coccineus*, scarlet, autumn, 1 ft.; *multiflorus* (Syn. *Kalbreyeri*), scarlet, April, 1 ft.

GREENHOUSE SPECIES: *H. Katharina*, red, spring, 1 ft.; *natalensis*, green, purple and yellow, Feb., 1 ft.; *punicus*, orange-scarlet, summer, 1 ft.

**Halesia** (Silver-bell; Snowdrop-tree).—Ord. *Styracaceæ*. Hardy flowering trees. Deciduous. First introduced 1756.

CULTURE: Soil, deep sandy loam. Position, sheltered borders, shrubberies, or lawns. Plant, Oct. to Feb. Prune into shape after flowering. Propagate by cuttings of roots inserted in sandy soil outdoors in March or Oct.; by layering shoots in Oct. or Nov.

SPECIES CULTIVATED: *H. tetraptera* (Snowdrop Tree), white, May, 15 to 20 ft., N. America.

**Halimodendron** (Salt-tree). — Ord. *Leguminosæ*. Hardy flowering & orn. foliage shrub. Deciduous. First introduced 1779. Leaves, feather-shaped, whitish & downy.

CULTURE: Soil, deep sandy. Position, shrubberies & open borders. Plant, Oct. to Feb. Prune into shape, Nov. Propagate by seeds sown  $\frac{1}{2}$  in. deep in sandy soil outdoors in March or April, cuttings of firm shoots 4 to 6 in. long inserted in sandy soil outdoors in Oct. & Nov.; layering in Oct., & by grafting on common laburnum in March to form standards.

SPECIES CULTIVATED: *H. argenteum*, purplish, May to July, 4 to 6 ft., Russia.

**Hamamelis** (Witch Hazel). — Ord. *Hamamelidaceæ*. Hardy flowering shrubs. Deciduous. First introduced 1736.

CULTURE: Soil, deep rich loam. Position, damp borders or shrubberies & margins of lakes. Plant, Oct. to Feb. Prune into shape Feb. Propagate by layering branches in Oct. or Nov.; grafting rare species on common kind in March.

SPECIES CULTIVATED: *H. arborea*, primrose yellow, Dec. to Feb., 15 ft., Japan; *japonica*, lemon yellow, Dec. to Feb., 12 ft., Japan; *japonica zuccariniana*, pale yellow; *mollis*, yellow, Jan. and Feb., 10 ft., China; *virginica*, yellow, Dec. to Feb., N. America.

**Hamburgh Parsley** (*Carum Petroselinum*).—See *Carum*.

**Haplocarpha**. — Ord. *Compositæ*. Half-hardy perennial. First introduced 1883.

CULTURE: Soil, sandy loam. Position, sunny, dry, and well-drained border. Plant, April. Propagate by seeds sown in temp. 55° in spring; also by cuttings inserted in temp. 55° in spring; or in cold frame during summer.

SPECIES CULTIVATED: *H. Leitohlinii*, yellow and purple, summer, 1 ft., S. Africa.

**Hardenbergia** (Australian Sarsaparilla-tree; Australian Lilac).—Ord. *Leguminosæ*. Greenhouse flowering twining plants. Evergreen. Nat. S. Australia. First introduced 1790.

CULTURE: Compost, equal parts loam & peat, little silver sand. Position, pots, with shoots trained to trellis, or planted out in beds, & shoots trained up rafters. Pot or plant, Feb. or May. Water freely March to Sept., moderately at other times. Prune straggling plants into shape in Feb. Apply weak stimulants occasionally to

healthy plants in flower. Temp., March to Sept. 55° to 65°; Sept. to March 40° to 50°. Propagate by seeds sown  $\frac{1}{8}$  in. deep in well-drained pots of light sandy soil in temp. of 55° to 65° in March or April; cuttings of firm young shoots, 2 to 3 in. long, inserted in well-drained pots of sandy peat under bell-glass in temp. 55° to 65°, March to July.

**SPECIES CULTIVATED:** *H. comptoniana*, purple, March, 10 ft.; *monophylla*, purple, April, 8 to 10 ft.

**Hard Fern** (*Lomaria Spicant*).—See *Lomaria*.

**Hare-bell** (*Campanula rotundifolia*).—See *Campanula*.

**Hare's-ear**.—See *Bupleurium*.

**Hare's-foot Fern** (*Davallia canariensis*).—See *Davallia*.

**Hare's-tail Grass** (*Lagurus ovatus*).—See *Lagurus*.

**Haricot Bean** (*Phaseolus vulgaris*).—See *Phaseolus*.

**Harlequin Flower** (*Sparaxis grandiflora*).—See *Sparaxis*.

**Harpalium**.—See *Helianthus*.

**Harrison's Musk** (*Mimulus moschatus Harrisoni*).—See *Mimulus*.

**Hart's-tongue Fern** (*Scolopendrium vulgare*).—See *Scolopendrium*.

**Hatchet Cactus** (*Pelecypora asseliformis*).—See *Pelecypora*.

**Hautbois Strawberry** (*Fragaria elatior*).—See *Fragaria*.

**Hawk's Beard** (*Crepis aurea*).—See *Crepis*.

**Hawk Weed** (*Hieracium aurantiacum*).—See *Hieracium*.

**Haworthia**.—Ord. Liliaceæ. Greenhouse succulent-leaved plants. Orn. foliage. Nat. S. Africa. First introduced 1720. Flowers, greenish. Leaves, fleshy, transparent, warty & variegated.

**CULTURE:** Compost, equal parts light loam, broken bricks, mortar rubbish & river sand. Position, well-drained pots in light greenhouse shaded from sun. Pot, March or April. Water moderately April to Sept., occasionally other times. Repotting necessary only when plants show signs of ill-health. Temp., March to Sept. 60° to 65°; Sept. to March 50° to 55°. Propagate by seeds sown 1-16 in. deep in well-drained pots or pans in above compost in temp. 65°, March to Aug.; by suckers placed in small pots & treated as advised for plants.

**SPECIES CULTIVATED:** *H. albicans*, 3 to 4 in.; *arachnoides*, 3 in.; *atrovirens*, 1 in.; *attenuata*, 3 in.; *margaritifera*, 3 in.; *Reinwardtii*, 2 in.; *tortuosa*, 2 in.; *viscosa*, 2 in.

**Hawthorn** (*Cratægus oxyacantha*).—See *Cratægus*.

**Hay-scented Fern** (*Nephrodium æmulum*).—See *Nephrodium*.

**Hazel** (*Corylus Avellana*).—See *Corylus*.

**Heath**.—See *Erica*.

**Heather** (*Calluna vulgaris*).—See *Calluna*.

**Heath-leaved St. John's-wort** (*Hypericum coris*).—See *Hypericum*.

**Heath-leaved Starwort** (*Aster ericoides*).—See *Aster*.

**Heavenly Bamboo** (*Nandina domestica*).—See *Nandina*.

**Hebenstretia**.—Ord. Selaginaceæ. Half-hardy annual.

**CULTURE:** Soil, good ordinary. Position, sunny borders. Sow seeds in heat in March, harden seedlings off early in May, & plant out late in May 12 to 18 in. apart in groups. Seeds may also be sown thinly where required to flower about the middle of April.

**SPECIES CULTIVATED:** *H. comosa*, white and scarlet, summer, 18 in., S. Africa.

**Hedera** (Ivy).—Ord. Araliaceæ. Hardy evergreen climbing shrubs. Orn. foliage. Flowers, green; Oct. to Nov. Leaves, green,

purplish, or variegated with yellow & white. Berries, purplish black, reddish orange, golden; winter.

**OUTDOOR CULTURE:** Soil, ordinary rich. Position, green-leaved kinds against walls of all aspects, railings, tree stumps, arbours, trellises, on banks & under shade of trees; variegated kinds against south or west walls or fences. Plant, Sept., Oct., Nov., Feb., March, or April. Peg shoots to surface of soil when first planted in any position. Prune April, cutting off old leaves & straggling shoots. Water freely in dry weather. Apply stimulants if vigorous growth is desired.

**POT CULTURE:** Compost, two parts loam, one part leaf-mould or decayed manure & sand. Position, well-drained pots in unheated greenhouse, balconies or windows. Pot, Oct. or March. Water moderately Oct. to March, freely afterwards. Prune into shape, April. Apply stimulants to established plants in summer only.

**HANGING BASKETS:** Compost, same as above. Plant, Oct. or March. Position, unheated greenhouses, balconies or windows. Water moderately Sept. to April, freely afterwards.

**SCREENS IN ROOMS:** Compost as above. Position, boxes, well-drained, with shoots trained to wire or wood trellis. Plant, Oct. or March. Water moderately March to Oct., occasionally other times. Propagate by cuttings of firm shoots 6 to 8 in. long inserted in ordinary soil at base of north wall or fence, Sept. to Nov., in well-drained pots in cold frame in Oct., or in temp. 55° to 65°, Sept. to Nov.; tree & variegated kinds by cleft grafting on common species in temp. 55° in Feb.

**SPECIES CULTIVATED:** *H. Helix* (ivy), green, Europe, N. Africa and N. Asia.

**VARIETIES CULTIVATED:** *H. Helix algeriensis*, green; *arborescens* (Tree Ivy), green and variegated forms; *canariensis* (Irish Ivy), green *chrysoarpa*, green; *conglomerata*, green; *cuspidata* minor, purplish green; *deltoides*, purple bronze; *digitata*, dark green; *donerailensis*, purplish brown; *gracilis*, purplish bronze; *lobata* major, deep green; *lucida*, green and yellow; *marginata*, white and reddish pink; *marginata rubra*, green and rosy red; *marmorata*, creamy white; *palmata*, green; *purpurea*, purplish; *regneriana* (Giant Ivy), deep green, large; *rhombea*, green and white; *saggittæfolia*, green and bronze; *variegata*, green and white; *maderensis variegata*, silvery.

**Hedge-hog Cactus.**—See *Echinocactus*.

**Hedgehog Holly** (*Ilex aquifolium ferox*).—See *Ilex*.

**Hedge Pink** (*Saponaria officinalis*).—See *Saponaria*.

**Hedychium** (Fragrant Garland-flower). — Ord. Scitaminaceæ. Stove & greenhouse herbaceous perennials. First introduced 1791. Flowers fragrant.

**CULTURE:** Compost, two parts peat, one of loam & one of sand. Position, well-drained pots, tubs or boxes, or planted in beds in stove or warm greenhouse. Pot plants may be stood outdoors July to Aug. Pot, March or April. Water freely April to Nov., occasionally other times. Apply liquid manure twice a week to plants in flower. Temp., stove species, March to Nov. 60° to 70°, Nov. to March 50° to 55°; greenhouse species, March to Nov. 65° to 75°, Nov. to March 45° to 50°. Cut down flower stems immediately after flowering. *H. gardnerianum* adapted for outdoor culture in summer. Plant, May, in rich soil. Water freely in dry weather. Apply liquid manure when in flower. Lift roots in Oct. & store in frost-proof place till planting time. Propagate by division of rhizomes (creeping stems) in March or April.

**STOVE SPECIES:** *H. coronarium*, white, summer, 5 ft., India; *coronarium flavum*, yellow, summer, 3 ft.



**GREENHOUSE SPECIES:** *H. gardnerianum*, lemon-yellow, summer, 4 ft., Himalayas.

**Hedysarum** (French Honeysuckle).—Ord. Leguminosæ. Hardy perennial herbs and shrubs. First introduced 1596.

**CULTURE:** Soil ordinary. Position, sunny rockeries, banks, or slopes for dwarf species; sunny well-drained borders for tall species. Plant, Oct., March, or April. Cut down flower stems in Oct. Propagate by seeds sown  $\frac{1}{2}$  in. deep outdoors in April, transplanting seedlings in June to final position; division of roots, Oct. or April.

**PERENNIAL SPECIES:** *H. coronarium* (French Honeysuckle), red, summer, 3 to 4 ft., S. Europe; *coronarium album*, white; *Mackenzi*, rosy purple, June, 2 to 3 ft., N. America.

**SHRUBBY SPECIES:** *H. micro-calyx*, purple, June, 3 ft., Himalayas; *multi-jugum*, red, June, 4 ft., Mongolia.

**Hedyscepe** (Umbrella Palm).—Ord. Palmaceæ. Stove palm. Orn. foliage. A good room plant. Leaves, feather-shaped, green.

**CULTURE:** Compost, equal parts loam & peat, little silver sand. Position, well-drained pots in shady plant stove. Pot, Feb., March, or April. Water freely March to Oct., moderately afterwards. Syringe twice daily March or Sept. Temp., March to Sept. 70° to 85°; Sept. to March 60° to 65°. Propagate by seeds sown 1 in. deep in light soil, in temp. 70° to 80°, in Feb. or March.

**SPECIES CULTIVATED:** *H. canterburyana* (Syn. *Kentia canterburyana*), Lord Howe's Island.

**Helen-flower** (*Helenium autumnale*).—See *Helenium*.

**Helenium** (Helen flower; Sneeze-wort; Sneeze-weed).—Ord. Compositæ. Hardy herbaceous perennials and annuals. First introduced 1729.

**CULTURE OF PERENNIAL SPECIES:** Soil, ordinary rich. Position, sunny well-drained borders. Plant, Oct., Nov., March, or April. Cut down flower stems in Oct. Flowers exceedingly useful for cutting. Propagate by seeds sown  $\frac{1}{2}$  in. deep outdoors in April, transplanting seedlings in June or July; division of roots in Oct. or March.

**CULTURE OF ANNUAL SPECIES:** Soil, ordinary. Position, sunny borders. Sow seeds in patches in borders in March or April.

**PERENNIAL SPECIES:** *H. autumnale*, yellow, July to Oct., 3 to 5 ft., N. America; *autumnale pumilum*, 1 ft., *autumnale striatum* (Syn. *Grandicephalum striatum*), yellow and brown, 4 ft.; *Bigelovii*, yellow and brown, Aug. to Oct., 4 ft., California; *Bolanderi*, yellow and brown, summer, 18 in., California; *Hoopesii*, yellow, summer, 2 ft., N. America.

**ANNUAL SPECIES:** *H. setigerum* (Syn. *Amybolepis setigera*), yellow, summer, 1 ft., Texas.

**Helianthemum** (Sun Rose; Rock Rose).—Ord. Cistinaceæ. Hardy flowering shrubs. Evergreen.

**CULTURE:** Soil, light sandy. Position, sunny banks or rockeries. Plant, Oct., March, or April. Prune into shape, March. Propagate by seeds sown 1-16 in. deep in bed of light soil outdoors in April; cuttings of shoots, 1 to 2 in. long, inserted in well-drained pots of sandy soil in cold frame in Aug. or Sept.; division of plants in Oct. or April.

**SPECIES CULTIVATED:** *H. formosum*, yellow, June 3 to 4 ft., Portugal; *ocymoides*, yellow, June, 2 ft., S. Europe; *vulgare*, yellow, June, trailing, and its numerous double and single varieties.

**Helianthus** (Sunflower; Jerusalem Artichoke).—Ord. Compositæ. Hardy annual or perennial herbs; tubers of Jerusalem Artichoke edible.

**CULTURE OF ANNUAL SPECIES:** Soil, ordinary. Position, sunny borders. Sow seeds  $\frac{1}{4}$  in. deep in April where plants are to flower, or

in pots in temp. 55° to 65° in April, transplanting seedlings outdoors in June. Apply stimulants occasionally when flower buds form.

**CULTURE OF PERENNIAL SPECIES:** Soil, ordinary rich. Position, sunny well-drained borders. Plant, Oct., Nov., or April. Cut down flower stems in Oct. Water in dry weather. Apply stimulants occasionally when plants show flower buds. Replant every third year.

**CULTURE OF JERUSALEM ARTICHOKE:** Soil, ordinary rich. Position, open or shady. Plant, Feb. or March, placing tubers 6 in. deep & 12 in. apart in rows 3 ft. asunder. Earth-up when stems are 6 in. high. Lift tubers in Nov. & store in sand or dry soil in outhouse, or leave in ground & dig as required.

**PROPAGATE** annual & perennial species by seeds sown  $\frac{1}{4}$  in. deep in sunny place outdoors in March or April; perennials by division of roots, Oct., March, or April; Jerusalem artichoke, by tubers treated as above.

**ANNUAL SPECIES:** *H. annuus* (Common Sunflower), yellow, summer, 6 to 10 ft., N. America; *argophyllus*, yellow, 6 ft., N. America; *debilis cucumerifolius*, yellow, 3 to 4 ft.

**PERENNIAL SPECIES:** *H. decapetalus*, sulphur yellow, summer, 4 to 6 ft., Canada; *multiflorus*, yellow, July, 4 ft., N. America; *multiflorus maximus*, large-flowered; *multiflorus flore-pleno*, double-flowered; *orgyalis*, yellow, Aug., 6 ft., N. America; *rigidus* (Syn. *Harpalium rigidum*), yellow, Aug., 5 ft., N. America; *tuberosus* (Jerusalem Artichoke), yellow, 6 ft., N. America.

**Helichrysum** (Everlasting-flower; Immortelle-flower).—Ord. Compositæ. Half-hardy annuals, hardy perennials, and greenhouse shrubs.

**CULTURE OF ANNUAL SPECIES:** Soil, ordinary. Position, sunny Sow seeds in gentle heat in March, & plant out in May; or sow outdoors in April. Gather flowers for winter decoration directly they are fully expanded.

**CULTURE OF PERENNIAL SPECIES:** Soil, rich loam. Position, sunny well-drained borders. Plant, March or April. Cut down flower stems in Oct. Gather flowers for winter decoration when fully developed.

**CULTURE OF HARDY SHRUBBY SPECIES:** Soil, rich loam. Position, sunny well-drained borders on summit of rockery. Plant, Sept. or Oct. Protect in very severe weather.

**CULTURE OF GREENHOUSE SPECIES:** Compost, two parts peat, & one part of equal proportions of leaf-mould, charcoal, & sand. Position, sunny greenhouse. Pot firmly in Feb. or March. Water freely in summer, moderately other seasons. Temp., 45° to 50° in winter; 55° to 60° other seasons. Propagate hardy species by seeds sown outdoors in April or cuttings in cold frame in spring; greenhouse species by cuttings in fine sand under bell-glass in spring.

**ANNUAL SPECIES:** *H. bracteatum* (Everlasting Flower), colours various, summer, 3 to 4 ft., Australia.

**PERENNIAL SPECIES:** *H. arenarium* (Yellow Everlasting), yellow, summer, 6 to 12 in., Europe.

**HARDY SHRUBBY SPECIES:** *H. Stœchas*, yellow, 1 ft., summer, Europe.

**GREENHOUSE SHRUBBY SPECIES:** *H. humile* (Syn. *Aphelxis humilis*), pink, summer, 3 ft., S. Africa.

**Heliconia** (False Plantain).—Ord. Scitaminaceæ. Stove herbaceous perennials. Orn. foliage. First introduced 1786. Leaves, green; stem striped with black, green, & yellow.

**CULTURE:** Compost, two parts fibrous loam, one part leaf-mould, peat, & sand. Position, pots in shady part of plant stove. Pot, Feb. or March. Water freely March to Sept., moderately Sept. to

Nov., none Nov. to March. Syringe daily March to Sept. Temp., Feb. to Sept. 65° to 75°; Sept. to Nov. 60° to 70°; Nov. to Feb. 55° to 65°. Propagate by division of roots in Feb. or March.

SPECIES CULTIVATED: *H. aureo-striata*, green and yellow leaves, 3 ft., New Britain; *illustris*, green and red leaves, 3 ft.; *Sanderi*, variegated, 2 ft.

**Heliphila** (Cape Stock; Sun Cress).—Ord. Cruciferæ. Hardy annuals. Nat. S. Africa. First introduced 1774.

CULTURE: Soil, ordinary. Position, sunny well-drained borders. Water in dry weather. Propagate by seeds sown 1-16 in. deep in pans or boxes of light soil in temp. of 55° in March, transplanting seedlings outdoors end of May, or similar depth in April where plants are to flower.

SPECIES CULTIVATED: *H. amplexicaulis*, white and purple, summer, 9 in.; *coronopifolia*, bluish white, summer, 2 ft.; *pilosa*, blue, summer, 6 to 12 in.

**Heliopsis** (North American Ox-eye).—Ord. Compositæ. Hardy herbaceous perennials and annuals. First introduced 1714.

CULTURE: Soil, ordinary rich. Position, sunny well-drained borders. Plant, Oct., Nov., March or April. Cut down flower stems in Oct. Water in dry weather. Apply stimulants occasionally when plants show flower buds. Propagate annual species by seeds sown in heat in spring & planted out in sunny place outdoors in May; perennial species by division of plants, Oct., March, or April.

SPECIES CULTIVATED: *H. canescens* (Syn. *Helianthus cordatus*), yellow, summer, 3 ft., Peru, annual; *lævis*, yellow, autumn, 5 ft., N. America, perennial.

**Heliotrope** (*Heliotropium peruvianum*).—See *Heliotropium*.

**Heliotropium** (*Heliotrope*; Cherry Pie; Turnsole).—Ord. Boraginacæ. Greenhouse flowering shrub. First introduced 1757. Flowers, fragrant.

CULTURE: Compost, equal parts light loam, leaf-mould & sand. Position, pots or beds, with shoots growing loosely or trained to trellis, walls, pillars or rafters in greenhouse; in sunny beds outdoors June to Sept., or in pots in windows. Pot, Feb. to May. Plant outdoors, June. Lift & repot, Sept. Water freely March to Oct., moderately afterwards. Apply liquid or artificial manure to healthy plants in flower. Prune old plants in closely in Feb. Training: Nip off points of main, also lateral shoots when 3 in. long to form dwarf plants; points of main shoots when 12 in. long, & side shoots when 3 to 6 in. long, to form pyramids; points of main shoots when 2 ft. long, & of lateral shoots at apex when 3 to 6 in. long—all side shoots to within 4 in. of apex to be removed altogether—to form standards. Temp., Feb. to Oct. 60° to 70°; Oct. to Feb. 50° to 55°. Pot plants do best in cold frame or sunny position outdoors July & Aug. Propagate by seeds sown 1-16 in. deep in well-drained pots or pans of light soil in temp. 65° to 75° in March; by cuttings of shoots 2 to 3 in. long inserted in pots of sandy soil under bell-glass, or in propagator in temp. 65° to 75° in March, April, Aug., or Sept.

SPECIES CULTIVATED: *H. peruvianum*, blue and white, spring to winter, 1 to 6 ft., Peru; numerous varieties.

**Helipterum** (Australian Everlasting; Immortelle-flower).—Ord. Compositæ. Hardy annuals. Nat. W. Australia. First introduced 1863.

CULTURE OF *H. HUMBOLDTIANUM*: Soil, light rich. Position, sunny well-drained borders. Propagate by seeds sown ½ in. deep in well-drained pots of light soil, in temp. 55° in March, transplanting seedlings outdoors end of May or early in June.

**CULTURE OF H. MANGLESII AND ROSEUM:** Soil, ordinary. Position, sunny beds or borders. Sow seeds  $\frac{1}{2}$  in. deep in light sandy soil in temp.  $55^{\circ}$  to  $65^{\circ}$  in March or April, harden off in May, & plant out in June. Gather blooms when fully grown, & dry thoroughly in summer for winter decorations.

**POT CULTURE:** Compost, equal parts sandy peat, leaf-mould, loam, & decayed cow-manure. Sow seeds thinly in shallow pan or box in temp.  $55^{\circ}$  to  $65^{\circ}$  in Sept. for spring flowering, & in March for summer blooming. Transplant when three leaves have formed, several 1 in. apart in a 5-in. pot. Grow on shelf near glass. Water moderately at first; freely later on. Apply weak stimulants once a week when seedlings are 6 in. high. Support with neat stakes when 3 to 6 in. high. No shade required. Winter temp.,  $45^{\circ}$  to  $55^{\circ}$ .

**SPECIES CULTIVATED:** *H. humboldtianum* (Syn. *H. Sandfordii*), yellow, summer, 1 ft., Australia; *Manglesii* (Syn. *Rhodanthe Manglesii*), rosy pink and yellow, summer, 12 to 18 in., Australia; *roseum* (Syn. *Acroclineum roseum*), rose, summer, 2 ft., Australia; *roseum album*, white.

**Hellebore** (*Helleborus niger*).—See *Helleborus*.

**Helleborine** (*Cephalanthera grandiflora* and *Epipactus latifolia*).—See *Cephalanthera* and *Epipactus*.

**Helleborus** (*Hellebore*; *Christmas Rose*; *Lenten Rose*).—Ord. Ranunculaceæ. Hardy perennials. Evergreen & deciduous. Nat. Europe (Britain), Asia.

**OUTDOOR CULTURE:** Soil, rich loamy. Position, shady well-drained east border. Plant, Oct., Nov., & March, 12 in. apart. Mulch with well-decayed manure in April. Water freely in dry weather. Apply liquid manure occasionally May to Sept. Lift & replant every five or six years. Protect with hand-lights, cloches, or frames, or cover surface of bed with moss when in bloom. Manure soil freely prior to planting.

**POT CULTURE:** Compost, two parts fibry loam, one part decayed manure. Position, cold frame, or greenhouse heated to temp.  $40^{\circ}$  to  $50^{\circ}$ . Pot, Oct. Lift fresh plants annually for pot culture, replanting old ones outdoors in April or May. Water moderately. Size of pot for single plants, 6 to 8 in. Propagate by seeds sown  $\frac{1}{2}$  in. deep in shallow boxes of sandy soil in cold frame Oct. or March, transplanting seedlings outdoors when a year old; by division of roots in July.

**SPECIES CULTIVATED:** *H. abschasicus*, purplish green, Jan. to March, 1 ft., Caucasus; *atrorubens*, purple, March and April, 18 in., S. Europe, Caucasus; *caucasicus punctatus*, reddish purple; *colchicus*, deep purple, Jan. to March, 18 in., Asia Minor; *fœtidus* (*Stinking Hellebore*), green and purple, Feb., 2 to 3 ft., Britain; *lividus*, green, March, 18 in., Corsica; *niger* (*Christmas Rose*), white winter, 6 to 15 in., Europe, and its varieties *altifolius* or *maximus* (white and purple), *angustifolius* (white), and *major* (white); *odorus* (*Fragrant Hellebore*), green, March, 18 in., Hungary; *olympicus*, purple, Feb. to April, 1 to 2 ft., Greece; *orientalis* (*Lenten Rose*), rose, Feb. to May, 1 to 2 ft., Greece; and its varieties, *guttatus* (white), and *sub-punctatus* (white and green), *viridis* (*Green Hellebore*), green, March, 18 in., Europe. Many varieties will be found in trade lists.

**Helmet-flower.**—See *Aconitum* and *Scutellaria*.

**Helmet Orchid.**—See *Coryanthes*.

**Helonias** (*Stud-flower*). — Ord. Liliaceæ. Hardy herbaceous perennial. Nat. N. America. First introduced 1758.

**CULTURE:** Soil, sandy loam & peat. Position, moist, shady borders or margins of lakes or ponds. Plant, Oct., March, or April. Propagate by seeds sown 1-16 in. deep in a well-drained pan of sandy peat in cold shady frame in March or April; division of roots, Oct. or March.

SPECIES CULTIVATED: *H. bullata*, purplish rose, summer, 18 in.

**Hemerocallis** (Day Lily).—Ord. Liliaceæ. Hardy herbaceous perennials. First introduced 1596

**CULTURE:** Soil, ordinary deep rich. Position, moist borders, open or slightly shady. Plant, Oct., Nov., March, or April; singly or in groups. Lift & replant only when they become unhealthy. Mulch established clumps with decayed manure in April or May. Propagate by division of roots, Oct., Nov., or March.

SPECIES CULTIVATED: *H. aurantiaca major* (Japanese Day Lily), apricot, summer, 3 ft., Japan; *Dumortierii*, orange-yellow, July, 2 ft., Japan; *flava*, orange-yellow, fragrant, July, 2 to 3 ft., S. Europe; *fulva*, yellow, June, 2 to 3 ft., Europe and Japan; *fulva angustifolia*, narrow-leaved; *fulva crocea*, yellow; *fulva disticha*, yellow and red; *fulva kwanso fl. pl.*, double flowered; *Middendorffia*, golden yellow, summer, 2 ft., Siberia and Japan; *minor* (Syn. *H. graminea*), yellow, fragrant, 8 in., Siberia and Japan; *Thunbergii*, yellow, July, fragrant, 2 ft., Japan.

**Hemionites** (Ivy-leaved Fern).—Ord. Filices. Greenhouse evergreen ferns. First introduced 1793. Fronds, heart or hand shaped.

**CULTURE:** Compost, two parts peat & one of sand. Position, small well-drained pots in shade. Pot, Feb. or March. Water moderately March to Sept., occasionally other times. Syringing not required. Temp., March to Sept. 60° to 70°; Sept. to March 55° to 60°. Propagate by spores sown on surface of pans of sandy peat under bell-glass in temp. 65° to 75° at any time.

SPECIES CULTIVATED: *H. cordata*, 6 in., Ceylon, etc.; *palmata*, 8 in., West Indies.

**Hemitelia** (Smith's Tree Fern).—Ord. Filices. Stove & greenhouse evergreen tree ferns. First introduced 1824. Fronds, feather-shaped, 1 to 10 ft. long.

**CULTURE:** Compost, equal parts peat, loam, & sand. Position, well-drained pots or tubs in shade. Pot, March. Water freely March to Sept., moderately afterwards. Syringe trunks daily March to Sept. Temp., Sept. to March 55° to 65°, March to Sept. 65° to 75° for stove species; Sept. to March 45° to 55°, March to Sept. 55° to 65° for greenhouse species. Propagate by spores sown at any time on surface of finely sifted loam & peat in shallow well-drained pans under bell-glass in moist, shady position in temp. 75° to 85°.

STOVE SPECIES: *H. horrida*, 6 to 10 ft., W. Indies; *Walkeræ*; 4 to 6 ft.

GREENHOUSE SPECIES: *H. capensis*, 6 to 10 ft., S. Africa; *Smithii*, 10 to 12 ft., New Zealand.

**Hemlock Spruce Fir** (*Picea alba*).—See *Picea*.

**Hemp Agrimony**.—See *Eupatorium*.

**Hemp-seed** (*Cannabis sativa*).—See *Cannabis*.

**Hen and Chickens Daisy** (*Bellis perennis prolifera*).—See *Bellis*.

**Hen-and-Chickens House-leek** (*Sempervivum globiferum*).—See *Sempervivum*.

**Hepatica**.—See *Anemone*.

**Heracleum** (Giant Cow Parsnip; Cartwheel Flower).—Ord. Umbelliferae. Hardy perennial herbs. Orn. foliage. Leaves, large, feather-shaped, green.

**CULTURE:** Soil, ordinary. Position, open or sheltered shrubberies, borders, margins of ponds, lakes, etc. Plant, Oct. or Nov. Remove flower stems immediately they appear early in June if fine, healthy foliage is desired. Propagate by seeds sown  $\frac{1}{2}$  in. deep in ordinary soil outdoors, March or April; division of roots, Oct. or March.

SPECIES CULTIVATED: *H. villosum* (Syn. *H. giganteum*), white and yellow, summer, 6 to 10 ft., Caucasus.

**Herb-Christopher** (*Actæa spicata*).—See *Actæa*.

**Herb-Lily** (*Alstromeria aurea*).—See *Alstromeria*.

**Herb-Louisa** (*Lippia citriodora*).—See *Lippia*.

**Herb-of-Grace** (*Ruta graveolens*).—See *Ruta*.

**Herb-of-Repentance** (*Ruta graveolens*).—See *Ruta*.

**Herb Paris** (*Paris quadrifolia*).—See *Paris*.

**Herb Patience** (*Rumex patientia*).—See *Rumex*.

**Herb-Twopence** (*Lysimachia nummularia*).—See *Lysimachia*.

**Herminium** (*Musk Orchis*).—Ord. *Orchidaceæ*. Hardy terrestrial orchid with musk-scented flowers.

**CULTURE**: Soil, light turfy loam with plenty of chalk or old mortar and leaf-mould added. Position, sunny rockeries; or in pots in cold frame. Plant wild roots directly flowers have faded; pot roots in early spring. Propagate by division in spring.

**SPECIES CULTIVATED**: *H. monerchis*, green and yellow, July, 6 in., Britain.

**Herniaria** (*Rupture-wort*).—Ord. *Illicebracææ*. Hardy perennial trailing herb. Ornamental-leaved.

**CULTURE**: Soil, ordinary. Position, sunny or shady rockeries, or as edgings to carpet-beds, or for carpeting surface of beds containing choice bulbs. Plant, Oct., Nov., March to June. Propagate by seeds sown 1-16 in. deep in light sandy soil outdoors, March or April; division of plants, Oct., Nov., March, April or May.

**SPECIES CULTIVATED**: *H. glabra*, leaves dark green, 1 in., Europe (Britain); *glabra aurea*, leaves golden.

**Heron's-bill** (*Erodium petraeum*).—See *Erodium*.

**Herring-bone Fern** (*Lomaria Spicata*).—See *Lomaria*.

**Herring-bone Thistle** (*Cnicus Casabonæ*).—See *Cnicus*.

**Hesperantha** (*Evening-flower*).—Ord. *Iridacææ*. Greenhouse bulbous flowering plants. Deciduous. Nat. S. Africa. First introduced 1787. Flowers fragrant, opening in the evening.

**CULTURE**: Compost, two parts sandy soil, one part leaf-mould or decayed cow manure, & little sand. Position, well-drained pots in cold frame, cool greenhouse or window till growth begins, then remove to temp. 45° to 55°. Pot, Nov., placing five bulbs 3 in. deep in a 5-in. pot. Cover pots with cocoanut-fibre refuse or cinder ashes till growth begins. Water moderately from time growth commences till flowers fade, then gradually withhold, keeping bulbs quite dry from Sept. to Jan. Repot annually. Propagate by offsets treated as advised for bulbs.

**SPECIES CULTIVATED**: *H. cinnamomea*, white, April and May, 6 in.; *falcata*, brown and white, May, 10 in.; *pilosa*, white and red, April, 6 in.; *radiata*, white and red, May, 6 in.

**Hesperis** (*Sweet Rocket*; *Dame's Violet*; *Dame's Rocket*; *Double Rocket*).—Ord. *Cruciferææ*. Hardy perennial herbs. First introduced 1597. Flowers, fragrant.

**CULTURE OF PERENNIAL SPECIES**: Soil, ordinary rich moist. Position, sunny beds or borders. Plant, Oct., Nov., March or April. Mulch with decayed manure in May. Apply liquid manure occasionally in summer to double varieties. Cut down flower stems in Oct. Lift & replant double kinds every second year. Propagate single kinds by seeds sown ¼ in. deep in sunny position outdoors in April, transplanting seedlings in June or July; double kinds by cuttings of young shoots 3 in. long inserted in sandy soil in shady position outdoors, July to Sept., or under hand-light or in cold frame, Sept. or Oct., transplanting in March; also by division of roots, Oct. or March.

**PERENNIAL SPECIES:** *H. matronalis* (Sweet Rocket), white or lilac, May to July, 2 to 3 ft., S. Europe, and its double white and purple-flowered varieties; violacea, purple, April to June, 2 ft., Asia Minor. Latter best grown as a biennial.

**Hessea.**—Ord. Amaryllidaceæ. Greenhouse bulbous flowering plants. Deciduous. Nat. Cape of Good Hope. First introduced 1774.

**CULTURE:** Compost, two parts sandy soil, one part leaf-mould or decayed cow manure, & little sand. Position, well-drained pots in cold frame, cool greenhouse, or window till growth begins, then remove to temp. 45° to 55°. Pot, Nov., placing five bulbs 3 in. deep in a 5-in. pot. Cover pots with cocoanut-fibre refuse or cinder ashes till growth begins. Water moderately from time growth commences till flowers fade, then gradually withhold, keeping bulbs quite dry from Sept. to Jan. Repot annually. Propagate by offsets treated as bulbs.

**SPECIES CULTIVATED:** *H. crispa*, pink, summer, 3 in.; *gemma*, yellow, Aug., 10 in.

**Heuchera** (Alum-root; American Sanicle).—Ord. Saxifragaceæ. Hardy perennial herbs. Flowering & orn. foliage. First introduced 1656.

**CULTURE:** Soil, ordinary light rich or peaty; not suited for clay soils. Position, open sunny well-drained borders. Plant, Oct., Nov., March, or April. Propagate by division of roots or crowns, March to May; also by seeds sown in light soil in cold frames in spring, transplanting seedlings into small pots, and planting out following spring.

**SPECIES CULTIVATED:** *H. americana*, red, summer, 18 in., N. America; *brizoides*, pink, summer, 1 ft., hybrid; *micrantha*, yellow, summer, 2 ft., N. America; *sanguinea*, red, summer, 12 to 18 in., Mexico. There are several pretty varieties of this species.

**Hexacentris.**—See *Thunbergia*.

**Hibbertia.**—Ord. Dilleniaceæ. Greenhouse evergreen flowering climbers. Nat. Australia. First introduced 1816.

**CULTURE:** Compost, equal parts loam & peat & little sand. Position, pots, tubs, or beds; shoots trained up rafters. Pot or plant, Feb. or March. Prune straggling shoots, Feb. Water abundantly March to Sept., moderately afterwards. Temp. March to Oct., 55° to 75°; Oct. to March 45° to 55°. Propagate by cuttings of moderately firm shoots to 3 in. long inserted in well-drained pots of sandy peat under bell-glass in temp. 55° to 65°, April to Aug.

**SPECIES CULTIVATED:** *H. dentata*, yellow, summer, 10 ft.; *fasciculata*, yellow, summer, 3 ft.; *Readii*, yellow, summer, 1 ft.; *volubilis*, yellow, summer, 10 ft.

**Hibiscus** (Hemp Mallow; Musk Mallow; Rose Mallow; Malabar Rose; Blacking Plant; Rose of Sharon; *Althæa frutex*).—Ord. Malvaceæ. Stove evergreen & hardy deciduous shrubs, hardy annuals & perennials. Flowering & orn. foliage. First introduced 1596.

**CULTURE OF STOVE SPECIES:** Compost, equal parts fibry peat & loam, with charcoal & sand. Position, well-drained pots or beds, with shoots trained to wall. Pot or plant, Feb. or March. Prune into shape, Feb. Water abundantly March to Oct., moderately afterwards. Temp., March to Oct. 65° to 75°; Oct. to March 55° to 65°.

**CULTURE OF PERENNIAL SPECIES:** Soil, ordinary. Position, well-drained sunny border. Plant, Oct. or March. Cut down stems in Oct.

**CULTURE OF ANNUAL SPECIES:** Soil, ordinary. Position, sunny beds or borders. Sow seeds  $\frac{1}{8}$  in. deep in April where plants are to flower.

**CULTURE OF HARDY SHRUBBY SPECIES:** Soil, rich, light loam. Position, sheltered, sunny, well-drained border. Plant, Oct. Prune after flowering, thinning out weak and dead wood only.

PROPAGATE stove species by seeds sown 1-16 in. deep in well-drained pots of sandy peat under bell-glass in temp. 75° in March, by cuttings of firm shoots inserted in sandy peat under bell-glass in temp. 75° in spring or summer, by grafting in March; perennial species by seeds sown outdoors in April, or division of root in March; annual species by seeds sown as directed above; shrubby species by cuttings inserted in sandy peat in cold frame in summer, or grafting in March.

STOVE SPECIES: *H. Cameroni*, rose, July, 4 to 5 ft., Madagascar; *coccineus*, scarlet, summer, 6 ft., America; *esculentus* (Okra or Gombo), yellow, summer, 4 ft., annual, Tropics; *marmoratus*, white and rose, spring, 3 ft., Mexico; *rosasinensis* (Blacking Plant), crimson, summer, 10 ft., Tropics.

ANNUAL SPECIES (Hardy): *H. Trionum*, yellow and purple, summer, 2 ft., Africa.

PERENNIAL SPECIES (Hardy): *H. militaris*, rose, summer, 3 to 4 ft., U. States; *Moecheutos*, white and rose, summer, 3 to 5 ft., N. America; *rosea*, rose and purple, summer, 4 to 6 ft., N. America.

HARDY SHRUBBY SPECIES: *H. syriacus* (Rose of Sharon or *Althæa frutex*), various colours, late summer, 6 to 8 ft., deciduous, Syria. There are several varieties of this species.

HALF-HARDY SPECIES: *H. Manihot*, yellow and purple, summer, 6 to 8 ft., Tropics. Rear from seed in heat in spring and plant out in June in sunny borders.

**Hickory** (*Carya alba*).—See *Carya*.

**Hidalgoa** (Climbing Dahlia).—Ord. Compositæ. Half-hardy climbing perennial. First introduced 1898.

OUTDOOR CULTURE: Raise plants from seed or cuttings in heat in spring, and plant out against a sunny trellis or arch late in May. Water freely, and feed with liquid manure when plants begin to bloom. Cut down shoots in Sept., lift roots, and place them in pots in a heated house to furnish cuttings in spring.

GREENHOUSE CULTURE: Grow in equal parts loam and leaf-mould, with plenty of sand. Water freely in spring and summer; little at other seasons. Train shoots up roof. Propagate by cuttings of young shoots in spring.

SPECIES CULTIVATED: *H. Wercklei*, scarlet and yellow, summer, 12 to 15 ft., Costa Rica.

**Hieracium** (Golden Mouse-ear; Hawk-weed).—Ord. Compositæ. Hardy perennial herbs.

CULTURE: Soil, ordinary. Position, sunny banks or elevated borders. Plant, Oct. or March. Propagate by seeds sown 1-16 in. deep outdoors in March or April; division of roots any time in spring.

SPECIES CULTIVATED: *H. aurantiaca*, orange red, summer, 12 to 18 in., N. Europe.

**Hierochloë** (Holy Grass).—Ord. Gramineæ. Hardy orn. perennial grasses. Inflorescence, chestnut-coloured, fragrant, borne in panicles; May to July.

CULTURE: Soil, ordinary. Position, damp, shady borders, or margins of ponds. Plant, March or April. Propagate by seeds sown in damp position outdoors in spring; division of plants in March.

SPECIES CULTIVATED: *H. borealis*, 1 to 2 ft., Europe (Britain).

**Himalayan Honeysuckle** (*Leycesteria formosa*).—See *Leycesteria*.

**Himalayan Hound's-tongue** (*Lindelofia spectabilis*).—See *Lindelofia*.

**Himalayan Lung-wort** (*Lindelofia spectabilis*).—See *Lindelofia*.

**Himalayan May Apple** (*Podophyllum Emodi*).—See *Podophyllum*.

**Himalayan Poppy** (*Meconopsis Wallichii*).—See *Meconopsis*.



**Himalayan Primrose** (*Primula sikkimensis*).—See *Primula*.

**Hindsia**.—Ord. Rubiaceæ. Stove evergreen flowering shrubs. First introduced 1844.

**CULTURE**: Compost, equal parts rough fibrous peat, light loam, silver sand & charcoal. Position, well-drained pots in light stove. Pot, Feb. or March. Water freely April to Sept., moderately afterwards. Prune into shape, Feb. Temp., Feb. to Aug. 65° to 75°; Aug. to Nov. 60° to 70°; Nov. to Feb. 55° to 65°. Propagate by cuttings of firm shoots inserted in well-drained pots of pure silver sand under bell-glass in temp. 65° to 75° in March or June.

**SPECIES CULTIVATED**: *H. longiflora*, blue, summer, 2 to 3 ft., Brazil; and its varieties *alba* (white); *violacea*, violet blue, May, 3 ft., Brazil.

**Hippeastrum** (Barbados Lily; Knight's Star Lily; Mexican Lily).—Ord. Amaryllidaceæ. Stove bulbous plants, popularly known as *Amaryllises*. Deciduous. First introduced 1677.

**CULTURE**: Compost, two parts turfy loam, one part river sand & a few crushed bones. Position, well-drained pots in light part of stove. Pot, Jan., burying bulb about two-thirds of its depth. Water freely from time growth begins (about Feb.) until July, when keep quite dry. Apply liquid manure when flower spike shows. Top-dress large bulbs annually & repot every three or four years only. Temp., Feb. to Sept. 65° to 75°; Sept. to Feb. 50° to 55°. Propagate by seeds sown 1-16 in. deep in well-drained pots of sandy loam in temp. 65° to 70° in March, placing seedlings singly in 2-in. pots & keeping them moderately moist all the year round for three years; by offsets treated as old bulbs. Seedlings are three years or so before they flower.

**SPECIES CULTIVATED**: *H. aulicum*, crimson and orange, winter, 2 ft., Brazil; *equestre*, red, summer, 18 in., Trop. America; *Leopoldii*, crimson and white, spring, 1 ft., Peru; *pardinum*, green, yellow and scarlet, spring, 2 ft., Peru; *pittacium*, orange and scarlet, summer, 2 ft., Brazil; *Reginæ*, red and white, spring, 2 ft., S. America; *reticulatum*, rose or scarlet, spring, 1 ft., Brazil; *vittatum*, crimson and white, spring, 2 ft., Peru. Numerous hybrids, more beautiful than the species, will be found in trade lists.

**Hippocrepis** (Horse-shoe Vetch).—Ord. Leguminosæ. Hardy evergreen trailing herb.

**CULTURE**: Soil, ordinary. Position, sunny rockeries or elevated borders. Plant, March or April. Propagate by seeds-sown 1-16 in. deep in fine soil in sunny position outdoors in March or April; division of roots in March.

**SPECIES CULTIVATED**: *H. comosa*, yellow, May to Aug., Europe, Africa, etc.

**Hippophae** (Sea Buckthorn; Sallow-thorn).—Ord. Elæagnaceæ. Hardy deciduous berry-bearing shrub. Male & female flowers borne on separate plants. Both must be grown to ensure a crop of berries. Berries, orange; autumn & winter.

**CULTURE**: Soil, ordinary. Position, open or shady shrubberies & inland or seaside gardens. Plant, Oct. to Feb. Propagate by seeds sown ½ in. deep outdoors in Nov. or Dec.; by cuttings of roots inserted in Feb. or March in ordinary soil outdoors; layering shoots in autumn.

**SPECIES CULTIVATED**: *H. rhamnoides*, yellow, May, 8 to 12 ft., Europe.

**Hippuris** (Mare's-tail).—Ord. Haloragaceæ. Hardy aquatic perennial. Orn. foliage. Leaves, narrow, strap-shaped; in circles round the stem.

**CULTURE**: Soil, mud. Position, bogs, ponds, or damp places. Plant, March to June. Propagate by division of roots, March.

**SPECIES CULTIVATED**: *H. vulgaris*, 8 to 12 in., Europe (Britain).

**Hodgin's Holly** (*Ilex Hodginsii*).—See *Ilex*.

**Holboellia.** — Ord. Berberidaceæ. Cool greenhouse flowering climber. Evergreen. First introduced 1846.

**CULTURE:** Compost, two parts loam, one part of equal proportions of leaf-mould & silver sand. Position, large pots or tubs, shoots trained up roof. Prune away weak shoots in autumn. Water freely during spring & summer, moderately in winter. Syringe freely when not in flower. Propagate by cuttings inserted in sandy soil in gentle heat in spring.

**SPECIES CULTIVATED:** *H. latifolia* (Syn. *Stauntonia latifolia*), white, fragrant, spring, 10 to 20 ft., Himalayas.

**Holcus** (Variegated Soft Grass).—Ord. Graminaceæ. Hardy orn. perennial grass. Leaves, soft, woolly, green, variegated with silvery white.

**CULTURE:** Soil, ordinary. Position, edgings to beds or borders, or in clumps in borders. Plant, Oct., March, or April. Propagate by division of plants in Oct., March, or April. Variegated kind only grown in gardens.

**SPECIES CULTIVATED:** *H. lanatus albo-variegatus*, 6 to 12 in., Britain.

**Holly** (*Ilex aquifolium*).—See *Ilex*.

**Holly Fern** (*Aspidium Lonchitis*).—See *Aspidium*.

**Hollyhock** (*Althæa rosea*).—See *Althæa*.

**Holly-leaved Barberry** (*Berberis aquifolium*).—See *Berberis*.

**Holly-leaved Olive** (*Osmanthus aquifolium illicifolius*).—See *Osmanthus*.

**Holly Oak** (*Quercus ilex*).—See *Quercus*.

**Holm Oak** (*Quercus ilex*).—See *Quercus*.

**Holy Ghost-flower** (*Peristeria elata*).—See *Peristeria*.

**Holy Grass** (*Hierochloë borealis*).—See *Hierochloë*.

**Holy Rose** (*Andromeda polifolia*).—See *Andromeda*.

**Holy Thistle.**—See *Carbenia* & *Silybum*.

**Homeria.**—Ord. Irideæ. Handsome greenhouse bulb. First introduced 1793.

**POT CULTURE:** Compost, loam, leaf-mould, & sand in equal parts. Place bulbs 1 in. apart, & 1 in. deep in 5 in. pots during Sept. & Oct. Stand in a cold frame, & cover with a few inches of cocoanut-fibre refuse till growth begins, then remove to greenhouse. Plant in pots near the glass. Water freely during active growth. Keep nearly dry after flowers fade to facilitate ripening of bulbs. Repot annually in autumn.

**OUTDOOR CULTURE:** Plant bulbs 3 to 4 in. deep in light, rich, well-drained soil in a south border between Oct. and Jan. Protect with bracken litter or leaves to ward off heavy rains. Propagate by offsets removed at planting time.

**SPECIES CULTIVATED:** *H. collina* (Syn. *Moræa collina*), red and yellow, spring, 1 ft., S. Africa; *collina aurantiaca*, orange, red and yellow, spring, 1 ft.; *elegans*, yellow, brown and orange, summer, 1 ft., S. Africa; *lineata*, red and yellow, spring, 1 ft., S. Africa; *miniata*, red, spring, 6 to 8 in., S. Africa.

**Honesty** (*Lunaria biennis*).—See *Lunaria*.

**Honey Locust** (*Gleditschia triacanthos*).—See *Gleditschia*.

**Honey-plant** (*Hoya carnosa*).—See *Hoya*.

**Honeysuckle.**—See *Lonicera*.

**Honey-wort.**—See *Cerinthe*.

**Hoodia.** — Ord. Asclepiadeæ. Greenhouse succulent plants. Flowering & orn. foliage. First introduced 1874. Stems, cylindrical, prickly, leafless.

**CULTURE:** Compost, equal parts sandy loam, old mortar, broken bricks & dry cow manure. Position, well-drained pots, fully exposed to sun in warm greenhouse. Repot every three or four years in Feb. or March. Water moderately March to Oct., keep quite dry Oct. to Mar. Temp., April to Sept. 65 to 75°; Sept. to April 45° to 55°. Propagate by portions of fleshy stems 3 in. long cut clean at base & laid on sunny shelf to dry for several days, then insert in small well-drained pots of sandy soil in temp. of 55° to 65°, April to Aug.

**SPECIES CULTIVATED:** *H. Bainii*, yellow, Aug., 1 ft., S. Africa; *Gordonii*, yellow and purple, July, 18 in., S. Africa.

**Hop** (*Humulus lupulus*).—See *Humulus*.

**Hop Hornbeam** (*Ostrya carpinifolia*).—See *Ostrya*.

**Hop-tree** (*Ptelea trifoliata*).—See *Ptelea*.

**Hordeum** (Squirrel-tail Grass).—Ord. Gramineæ. Hardy annual flowering grass. Nat. N. America. First introduced 1782. Inflorescence, barley-like, borne in spikes; June to Sept.; very useful for cutting.

**CULTURE:** Soil, ordinary. Position, open dryish borders. Propagate by seeds sown  $\frac{1}{2}$  in. deep in March or April in borders where plants are required to flower.

**SPECIES CULTIVATED:** *H. jubatum*, 2 ft.

**Horehound**.—See *Marrubium*.

**Horminum** (Pyrenean Dead-nettle).—Ord. Labiatae. Hardy herbaceous perennial. First introduced 1820.

**CULTURE:** Soil, ordinary. Position, open well-drained borders. Plant, Oct., Nov., March or April. Propagate by seeds sown 1-16 in. deep outdoors in March or April; by division of roots Oct. to March.

**SPECIES CULTIVATED:** *H. pyrenaicum*, blue, summer, 1 ft., Pyrenees.

**Hornbeam** (*Carpinus betulus*).—See *Carpinus*.

**Horned Poppy** (*Glaucium luteum*).—See *Glaucium*.

**Horned Rampion** (*Phyteuma orbiculare*).—See *Phyteuma*.

**Horned Violet** (*Viola cornuta*).—See *Viola*.

**Horn of Plenty** (*Fedia Cornucopiæa*).—See *Fedia*.

**Horse Chestnut** (*Æsculus hippocastanum*).—See *Æsculus*.

**Horse Radish** (*Cochlearia armoracia*).—See *Cochlearia*.

**Horseshoe Vetch** (*Hippocrepis comosa*).—See *Hippocrepis*.

**Horse-tail**.—See *Equisetum*.

**Hose-in-Hose Polyanthus** (*Primula elatior* var.).—See *Primula*.

**Hottentot Fig** (*Mesembryanthemum edule*).—See *Mesembryanthemum*.

**Hottentot's Bread** (*Testudinaria elephantipes*).—See *Testudinaria*.

**Hottonia** (Water Violet).—Ord. Primulaceæ. Hardy aquatic perennial herb.

**CULTURE:** Soil, ordinary. Position, margins of ponds & rivulets or in bogs. Plant, March or April. Propagate by seeds sown in muddy soil in shallow water in March or April; division of plants March or April.

**SPECIES CULTIVATED:** *H. palustris*, lilac and yellow, June, 1 ft., Europe (Britain).

**Houlletia**.—Ord. Orchidaceæ. Stove epiphytal orchids. Evergreen. First introduced 1841. Flowers, fragrant.

**CULTURE:** Compost, two parts fibrous peat, one part sphagnum. Position, baskets suspended from roof of stove. Re-basket, Feb. or

March. Water abundantly March to Sept., moderately Sept. to March. Temp., May to Aug. 65° to 85°; Aug. to Nov. & March to May, 60° to 70°; Nov. to May, 55° to 65° Propagate by division of pseudo-bulbs when growth commences.

**SPECIES CULTIVATED:** *H. brookenhurstiana*, brown and yellow, summer, 2 ft., Brazil; *chrysantha*, yellow, chocolate and crimson, summer, 2 ft., Colombia; *lowiana*, yellow and white, summer, 1 ft., Colombia; *odoratissima*, red, summer, 2 ft., Colombia.

**House Leek** (*Sempervivum tectorum*).—See *Sempervivum*.

**Houstonia** (Bluets).—Ord. Rubiaceæ. Hardy herbaceous perennials. First introduced 1785.

**CULTURE:** Soil, leaf-mould & sand. Position, crevices, nooks, & crannies of moist rockeries. Plant, March or April. Propagate by seeds sown 1-16 in. deep in pans of leaf-mould & sand in cold frame in spring or autumn; division of roots in Sept. or Oct.

**SPECIES CULTIVATED:** *H. cœrulea* (Bluets), blue, May to July, 2 to 4 in., Virginia; *cœrulea alba*, white; *longifolia*, lilac, Aug., 6 in., N. America; *serpyllifolia*, white, summer, 3 in., N. America.

**Howea.**—Ord. Leguminosæ. Greenhouse flowering shrubs. Evergreen. Nat. Australia. First introduced 1818.

**CULTURE:** Compost, three parts peat, one part loam & little silver sand. Position, well-drained pots in light airy greenhouse. Pot, Feb. or March. Nip off points of young shoots in spring to induce bushy growth. Water freely April to Sept., moderately Sept. to April. Temp., March to Sept. 55° to 65°, Sept. to March 45° to 50°. Stand plants outdoors from July to Sept. to mature flowering shoots for following year. Propagate by seeds sown 1-16 in. deep in well-drained pots of sandy peat in temp. of 55° to 65° in March or April; cuttings inserted in sandy soil under bell-glass in temp. 55° April to July.

**SPECIES CULTIVATED:** *H. Celsi*, blue, spring, 3 ft., Australia; *longifolia*, purple, spring, 5 ft., Australia.

**Howea.**—Ord. Palmaceæ. Greenhouse palms. Elegant plant for house decoration. Nat. Lord Howe's Island. Leaves, feather-shaped, graceful.

**CULTURE:** Compost, equal parts loam & peat, little silver sand. Position, well-drained pots in greenhouse, or in dwelling rooms during summer. Pot, Feb. or March. Temp., Sept. to March 45° to 55°; March to Sept. 55° to 65°. Water moderately, Oct. to Feb.; freely afterwards. Apply weak liquid manure to healthy plants once a week, May to Sept. Syringe plants daily. Sponge leaves of those grown in dwelling rooms once weekly. Propagate by seeds sown 1 in. deep in light soil in temp. 80° Feb. or March.

**SPECIES CULTIVATED:** *H. belmoreana* (Syn. *Kentia belmoreana*), 6 to 10 ft., *forsteriana*, 6 to 15 ft.

**Hoya** (Honey-plant, Wax-flower). — Ord. Asclepiadææ. Stove & greenhouse climbing flowering plants. Evergreen. First introduced 1802.

**CULTURE:** Compost, equal parts peat and loam, little charcoal & sand. Position, well-drained pots, beds, or hanging baskets, with shoots trained round trellises, up rafters, or against walls, & fully exposed to the light. Pot or plant Feb. or March. Water freely March to Sept., moderately Sept. to March. Temp., stove species, 65° to 75° March to Oct., 55° to 65° Oct. to March; greenhouse species, 55° to 65° March to Sept., 45° to 55° Sept. to March. Prune into shape, Feb. Foot stalks of flowers should not be removed after blooming, as these will produce a second crop of flowers. Propagate by cuttings of

shoots of preceding year's growth inserted in well-drained pots of sandy peat under bell-glass in temp. of 75° to 85° in March, April, or May; layering shoots in pots of sandy peat in spring or summer; grafting on *H. carnosa* in March or April.

STOVE SPECIES: *H. bella*, white and crimson, summer, 3 ft., Burma.

GREENHOUSE SPECIES: *H. carnosa*, pink and white, summer, 10 to 12 ft., Trop. Asia.

**Huckle-berry** (*Vaccinium myrtillus*).—See *C. Vaccinium*.

**Hudsonia** (American False Heath.—Ord. Cistineæ. Half-hardy evergreen flowering shrubs. First introduced 1805.

CULTURE: Compost, two parts peat & one of sand. Position, well-drained pots in unheated greenhouse, or outdoors June to Sept. Pot, Feb. or March. Prune into shape, Feb. Water freely March to Oct., moderately afterwards. Propagate by cuttings of firm shoots 1 to 2 in. long inserted in well-drained pots of silver sand under bell-glass in greenhouse, April to Aug.; layering in Sept. & Oct.

SPECIES CULTIVATED: *H. ericoides*, yellow, May to July, 1 ft., U. States; *tomentosa*, yellow, June, 1 ft., N. America.

**Humble-plant** (*Mimosa pudica*).—See *Mimosa*.

**Humea** (Amaranth Feathers).—Ord. Compositæ. Half-hardy biennial. Nat. Australia. First introduced 1800. Flowers borne in graceful, feathery panicles.

GREENHOUSE CULTURE: Compost, two parts sandy loam, half a part decayed manure, half a part charcoal & silver sand. Position, well-drained pots in cold frame during summer; airy greenhouse in winter & when in flower. Pot, March. Water freely March to Oct., very little afterwards. Syringing unnecessary. Temp., Oct. to April 45° to 55°; April to Oct. 55° to 65°. Discard plants after flowering.

OUTDOOR CULTURE: Soil, ordinary rich. Position, sunny well-drained beds or borders. Plant, June. Water freely in dry weather. Propagate by seeds sown on surface of fine mould in well-drained pots or pans, covering seeds slightly with fine soil, in July, in cold frame or greenhouse.

SPECIES CULTIVATED: *H. elegans*, red, pink, and crimson, June to Oct., 3 to 10 ft.

**Humulus** (Common Hop; Japanese Hop).—Ord. Urticacæ. Hardy annual & perennial twining climbers. Male blooms borne in axillary panicles, & female blooms in cones in clusters on separate plants; the latter form the hop of commerce, & are the most ornamental.

CULTURE OF ANNUAL SPECIES: Soil, ordinary rich. Position, sunny or shady walls, fences, arbours, trellises, or tree stumps. Plant, May or June. Water freely in dry weather. This species an excellent plant for covering unsightly objects rapidly in summer.

CULTURE OF PERENNIAL SPECIES: Soil, deep rich & well-manured loam. Position, sunny walls, fences, arbours, trellises, tree stumps, or in open ground with shoots trained round poles. Plant singly in groups of three, or 6 or 12 in. apart in rows 4 to 5 ft. asunder, February or March. Top-dress annually with decayed manure in Feb. or March. Mulch with decayed manure in April. Water freely in dry weather. Gather female flowers (hops in Sept. for drying. Cut down plants in Oct. Young shoots 4 to 6 in. long form an excellent substitute for asparagus if gathered in spring. Propagate annual species by seeds sown  $\frac{1}{2}$  in. deep in pots of ordinary soil in cool or heated greenhouse in April, or where plants are required to grow in May; perennial species by seeds sown  $\frac{1}{2}$  in. deep in ordinary soil outdoors in March or

April; division of roots in March. Annual species invariably sows itself after first year.

ANNUAL SPECIES: *H. japonicus* (Japanese Hop), 8 to 10 ft., Japan.

PERENNIAL SPECIES: *H. lupulus* (Hop), 10 to 15 ft., Europe.

**Hungarian Lilac** (*Syringa Josikæa*).—See *Syringa*.

**Hunnemannia**.—Ord. Papaveraceæ. Half-hardy herbaceous perennial. First introduced 1827.

**CULTURE**: Soil, ordinary rich. Position, sunny well-drained border at base of south wall. Plant, March. Protect with cocoanut-fibre refuse, tan, or leaves in winter. Propagate by seeds sown as soon as ripe in a cold frame, planting out seedlings following June.

SPECIES CULTIVATED: *H. fumarifolia*, yellow, Aug., 2 ft., Mexico.

**Huntingdon Elm** (*Ulmus glabra vegeta*).—See *Ulmus*.

**Huntingdon Willow** (*Salix alba*).—See *Salix*.

**Huntsman's Cup** (*Sarracenia purpurea*).—See *Sarracenia*.

**Huntsman's Horn** (*Sarracenia flava*).—See *Sarracenia*.

**Huon Pine-tree** (*Dacrydium Franklii*).—See *Dacrydium*.

**Hutchinsia**.—Ord. Cruciferæ. Hardy annuals & perennials.

**CULTURE**: Soil, sandy. Position, open sunny rockeries or margins of borders. Plant, March or April. Propagate annual species by seeds sown & slightly covered with fine soil where plants are required to grow in March or April; perennial species by seeds sown similarly, or by division of plants in March or April.

ANNUAL SPECIES.—*H. petraea*, white, spring, 3 in., Britain.

PERENNIAL SPECIES: *H. alpina*, white, spring, 1 in., Alps.

**Hyacinth** (*Hyacinthus orientalis*).—See *Hyacinthus*.

**Hyacinth Bean** (*Dolichos vulgaris*).—See *Dolichos*.

**Hyacinthus** (*Hyacinth*).—Ord. Liliaceæ. Hardy bulbous flowering plants. First introduced 1596.

**CULTURE OF COMMON HYACINTHS IN POTS**: Compost, equal parts fibrous loam and well-decayed manure, one-sixth river sand. Position, under cinder ashes in cold frame or outdoors Nov. to Feb., afterwards in window or greenhouse. Pot, Nov. & Dec., placing one bulb half its depth in a 6 in. pot or three in an 8 in. pot. Water only when growth begins, and moderately afterwards. Apply liquid manure occasionally when flower spikes form. After flowering, plant bulbs outdoors.

**CULTURE IN GLASSES**: Place bulbs so that base just touches water. Time, Nov. to Dec. Water, soft or rain, & little charcoal; add fresh as required. Put in dark position until roots form, then remove to light. No stimulant needful. Plant bulbs outdoors after flowering.

**CULTURE IN BEDS**: Soil, ordinary, enriched with manure previous autumn. Position, open sunny. Plant bulbs 3 to 4 in. deep & 8 in. apart, Nov. Protect surface of bed by covering of cocoanut-fibre refuse. Apply liquid manure once or twice when flower spikes appear. Lift & dry bulbs in June, storing them in cool place till planting time.

**CULTURE OF ROMAN HYACINTH**: Compost, as advised above. Position, pots under ashes in cold frame or outdoors till rooted, then in heated greenhouse or window. Pot, Aug., Sept., & Oct., placing one bulb in a 4 in. pot or three in a 5 in. pot. Depth for planting, 1 in. Water only when removed from the ashes, & moderately afterwards. Temp. when in greenhouse or window, 55° to 65°. Bulbs of no use after flowering.

**CULTURE OF SPANISH HYACINTH**: Soil, light rich. Position,

well-drained sunny borders. Plant, Sept. or Oct. Top-dress annually with decayed cow manure in Feb. Lift & replant only when bulbs show signs of deterioration. Propagate by seeds sown  $\frac{1}{2}$  in. deep in light sandy soil in boxes in cold frame or outdoors in Sept.; by offsets removed from old bulbs when lifted & planted 6 in. apart each way outdoors in Oct. Seedling bulbs flower when three years old, and attain full size when seven years old.

SPECIES CULTIVATED: *H. amethystinus* (Spanish Hyacinth), blue, spring, 1 ft., Pyrenees; *amethystinus albus*, white; *orientalis* (Common Hyacinth), various colours, spring, Mediterranean Region; *orientalis albus* (Roman Hyacinth), white.

**Hydrangea.**—Ord. Saxifragaceæ. Greenhouse & hardy flowering shrubby plants. First introduced 1736. Leaves, egg-shaped, green or variegated with yellow or white.

**CULTURE OF *H. HORTENSIA* AND VARIETIES:** Compost, two parts rich loam, one part well-decayed manure & river sand. Position, cool greenhouse, frame, or room, Oct. to March; heated greenhouse or warm window, March to Oct. Pot, Feb. to March. Water abundantly March to Oct., moderately Oct. to March. Prune, Aug. or Sept., cutting out all weak shoots & such as have flowered. Flowers borne on vigorous shoots of previous year's growth. Best blooms obtained on plants propagated by cuttings annually in Aug. Apply liquid or artificial manure frequently to plants showing flower. Temp. for early flowering (Jan. to May), 55° to 65°.

**OUTDOOR CULTURE:** Soil, ordinary rich. Position, shady, well-drained borders. Plant, Oct., Nov., March, or April. Prune straggling or dead shoots in March. Top-dress annually with decayed cow manure. Apply liquid manure when in flower. A good plant for sea-side gardens in S. & W. of England.

**CULTURE OF *H. PANICULATA* IN POTS:** Compost as above. Position, cold frames, unheated greenhouses, or windows. Pot, Feb. or March. Prune previous year's shoots to within 1 in. of base in Jan. or Feb. Water freely March to Oct., keep nearly dry Oct. to March. Apply liquid manure frequently when showing flower. After flowering, place in sunny position outdoors until Nov.

**OUTDOOR CULTURE OF *H. PANICULATA*:** Soil, two parts rich turf loam, one part decayed cow manure & river sand. Position, partially shaded, well-drained bed or border. Plant, Oct., Nov., or March. Top-dress annually with decayed manure in Feb. or March. Water freely in dry weather. Apply liquid manure when flower buds appear. Prune as advised for pot culture in March.

**CULTURE OF OTHER SPECIES:** Plant *H. petiolaris* against a south wall in well-drained border; it will grow like ivy. Other species may be grown in a similar soil and position to *H. Hortensia*. Blue flowers may be obtained by planting in yellow loam, bog peat, or clay, or in a compost of five parts loam & one part iron filings, or by applying one of the following solutions: Dissolve a tablespoonful of alum in a gallon of soft water, and use 12 hours afterwards; one tablespoonful of saltpetre & half a tablespoonful of oxide of iron in three gallons of water, and use 24 hours afterwards. Apply both twice a week. Propagate by cuttings of young shoots inserted singly in 2 in. pots of light sandy soil under bell-glass in temp. 55° to 65° in March or April; cuttings of points of firm shoots 2 to 3 in. long inserted in well-drained pots of sandy soil in cold frame in Aug.; by grafting or rooted cuttings or pieces of the soft thick roots of common

species in a temp. of 65° to 70° in Feb., March, or April; division of old plants in March.

**SPECIES CULTIVATED:** *H. arborescens*, white, fragrant, summer, 4 to 6 ft., U. States; *aspera*, white, summer, 4 ft., China; *sinensis*, white, summer, 2 to 6 ft., China; *Hortensia*, white or blue, spring and summer, 3 to 4 ft., and its varieties, *Lindleyi* (*japonica*), white or blue, otaksa, flesh, stellata, pink, rose, or pale blue, Thomas Hogg, white, and tricolor, leaves variegated; *involucrata*, rosy lilac or pink, summer, 6 to 10 ft., Japan; *paniculata*, white, summer, 4 to 6 ft., Japan; *paniculata hortensis* (*Syn. floribunda* and *grandiflora*), larger-flowered; *petiolaris*, white, June, climbing, Japan; *quercifolia*, white, July, 4 to 6 ft., Florida; *Thunbergii*, rose or blue, summer, 3 ft., Japan.

**Hydrocharis** (Frog-bit).—Ord. Hydrocharidaceæ. Hardy aquatic perennial. Stems floating.

**CULTURE:** Soil, muddy. Position, shallow ponds, lakes, or rivulets. Plant, March or April. Propagate by creeping shoots detached from plant & inserted in mud under water in March or April.

**SPECIES CULTIVATED:** *H. Morsus-Ranæ*, green and white, summer, Europe (Britain).

**Hydrocleis**.—Ord. Alismaceæ. Hardy aquatic perennial. First introduced 1831.

**CULTURE:** Soil, two parts loam and one part leaf-mould. Position, sunny, shallow ponds or tubs sunk in ground. Plant 6 in. below surface of water in March. In cold districts plants best wintered in frost-proof greenhouse. Propagate by seeds in pots of rich soil sunk in water or division of roots in spring.

**SPECIES CULTIVATED:** *H. Commersonii* (*Syn. Limnocharis Humboldtii*), yellow, July to Sept., Buenos Ayres.

**Hymenocallis**.—Ord. Amaryllidaceæ. Stove & greenhouse bulbous plants. Evergreen & deciduous. First introduced 1758. Flowers, fragrant.

**CULTURE:** Compost, two parts sandy loam, one part decayed manure and half a part silver sand. Position, well-drained pots in sunny part of stove & greenhouse. Pot, March. Repotting necessary every three or four years only. Water abundantly April to Sept., moderately Sept. to Dec., keep quite dry Dec. to March. Apply liquid manure once or twice a week May to Sept. Temp. for stove species, 70° to 80° March to Sept., 55° to 65° Sept. to March; greenhouse species, 55° to 65° April to Sept., 45° to 50° Sept. to April. Propagate by offsets removed from old bulbs in March and treated as above.

**STOVE SPECIES:** *H. macrostephana*, white, spring, 2 ft., hybrid; *ovata*, white, autumn, 1 ft., W. Indies; *speciosa*, white, spring, 1 ft., W. Indies.

**GREENHOUSE SPECIES:** *H. calathina*, white, spring, 1 ft., Peru.

**Hymenophyllum** (Tunbridge Fern; Filmy Fern).—Ord. Filices. Stove, greenhouse, half-hardy ferns. Fronds, feathery, delicate, membranaceous.

**CULTURE OF STOVE AND GREENHOUSE SPECIES:** Compost, equal parts peat, loam, leaf-mould, charcoal, sandstone, & silver sand. Position, moist, shady, in damp recesses of rockeries, under bell-glasses or in cases. Plant, March. Water freely March to Oct., moderately Oct. to March. Syringing unsuitable. Shade most essential. Temp. for stove species, 65° to 75° March to Oct., 55° to 65° Oct. to March; greenhouse species, 65° to 75° March to Oct., 55 to 65 Oct. to March; greenhouse species, 55° to 60° March to Sept., 45° to 55° Sept. to March.

**CULTURE OF HARDY SPECIES:** Compost as above. Position, deep, moist, shady frames, pits, caverns, or tubs; away from direct



light & sunshine. Plant, March. Water freely in summer, moderately other times. No syringing required. Protect in severe weather.

**CULTURE IN CASES IN ROOMS:** Compost as above. Position, shady window, not exposed to sun. Plant, March. Top-dress with fresh compost annually in March. Water freely April to Sept., moderately afterwards. Ventilate case few minutes daily. Propagate by spores sown on surface of sandy peat in shallow pan covered with bell-glass in temp. 65° to 75° at any time; by division of plant at potting time.

**STOVE SPECIES:** *H. caudiculatum*, Chili; *chiloensis*, dwarf, Chili and Chiloe; *dichotomum*, Chili; *dilatatum fosterianum*, Brazil.

**GREENHOUSE SPECIES:** *H. demissum*, New Zealand, Malaya; *flabellatum*, Australia; *javanicum*, Java; *pulcherrimum*, New Zealand.

**HARDY SPECIES:** *H. tunbridgensis*, Britain; *tunbridgensis Wilsoni*, Norway, etc.; *unilaterale*, Britain.

**Hypophorbe.**—Ord. Palmaceæ. Stove palm. Orn. foliage. First introduced 1866. Leaves, feather-shaped, deep green.

**CULTURE:** Compost, equal parts peat, loam, leaf-mould, & sand. Position, shady, moist. Pot, Feb. or March. Water abundantly March to Oct., moderately afterwards. Temp., March to Sept. 70° to 85°; Sept. to March 60° to 65°. Propagate by seeds sown 1 in. deep in pots of light soil in temp. 85° in March.

**SPECIES CULTIVATED:** *H. Verschaffeltii*, 5 to 10 ft., Mascarene Islands.

**Hypericum** (Aaron's Beard; Rose of Sharon; St. John's-wort; Tutsan).—Ord. Hypericineæ. Hardy & half-hardy shrubs & herbaceous perennials. Evergreen & deciduous.

**CULTURE OF SHRUBBY SPECIES:** Soil, ordinary. Position (*H. calycinum*) on banks & under shade of trees; others in sunny borders. Plant, Oct., Nov., Feb., March. Prune deciduous species into shape Feb.; evergreens in April.

**CULTURE OF PERENNIAL SPECIES:** Soil, ordinary, sandy. Position, sunny borders or rockeries. Plant, Oct. or April. Cut down stems in Oct. Top-dress with decayed manure in April. Propagate by seeds sown 1-16 in. deep in sandy soil in sunny position outdoors in March; shrubby species by cuttings of firm shoots 3 in. long inserted in sandy soil outdoors, Aug. or Sept.; perennials by division of roots in April or Oct.

**SHRUBBY SPECIES:** *H. ægyptiacum*, yellow, summer, 6 to 18 in., Levant; *Androsæmum* (Sweet Amber or Tutsan), yellow, summer, 2 ft., Europe; *Ascyron*, yellow, summer, 3 ft., Siberia; *calycinum* (St. John's Wort, or Rose of Sharon), yellow, summer, 1 ft., Orient and Britain; *Coris*, yellow, summer, 6 to 18 in., S. Europe; *elatum*, yellow, July, 5 ft., N. America; *empetrifolium*, yellow, summer, 6 to 12 in., Greece; *hircinum* (Goat-scented St. John's Wort), yellow, summer, 4 ft., Europe; *hookerianum*, yellow, summer, 2 ft., Nepal; *moserianum*, yellow, summer, 18 to 30 in., hybrid; *moserianum tricolor*, leaves white and rosy carmine; *patulum*, yellow, summer, 6 ft., Japan; *uralum*, yellow, summer, 2 ft., Nepal.

**PERENNIAL SPECIES:** *H. elodes*, yellow, creeping, Britain; *nummularium*, yellow, summer, 3 to 6 in., Pyrenees; *orientale*, yellow, summer, 6 to 12 in., Levant.

**Hypolepis.**—Ord. Filices. Stove & greenhouse ferns. Evergreen. First introduced 1824. Fronds, feather-shaped.

**CULTURE OF STOVE SPECIES:** Compost, equal parts loam, leaf-mould, & sand. Position, well-drained pots or hanging baskets in shady part of stove. Pot, March. Water freely March to Sept., moderately afterwards. Syringing undesirable. Temp., March to Sept. 65° to 75°; Sept. to March 55° to 65°.

**CULTURE OF GREENHOUSE SPECIES:** Compost as above. Position, well-drained pans or beds in shade. Pot, March. Water freely

March to Sept., moderately afterwards. Temp., March to Sept. 55° to 65°; Sept. to March 45° to 55°. Propagate by spores sown on surface of well-drained pans of sandy peat & leaf-mould under bell-glass in temp. 65° to 75° at any time; division of creeping rhizomes in March.

STOVE SPECIES: *H. repens*, creeping rhizomes, Trop. America.

GREENHOUSE SPECIES: *H. bergiana*, creeping rhizomes, S. Africa.

**Hyppoxis** (American Star Grass).—Ord. Amaryllidaceæ. Greenhouse bulbous-rooted plants. Nat. S. Africa. First introduced 1752.

**CULTURE:** Compost, two parts peat, one of leaf-mould & sand. Position, well-drained pots, or beds in cold frame. Pot, Aug. to Nov., covering pots with cinder ashes in cold frame or greenhouse till growth begins. Water moderately from time bulbs begin to grow until flowers fade, then gradually withhold it, keeping bulbs dry until growth recommences. Temp., Sept. to Feb. 40° to 50°; 50° to 60° afterwards. Propagate by offsets, removed at potting time, & treated as old bulbs.

SPECIES CULTIVATED: *H. elegans*, *elegans*, yellow and black, summer, 6 in.; *hemerocallidea*, yellow, spring, 8 in.; *stellata*, white and black, spring, 6 in.; *villosa*, yellow, spring, 6 in.

**Hyssop** (*Hyssopus officinalis*).—See *Hyssopus*.

**Hyssopus** (*Hyssop*).—Ord. Labiata. Hardy evergreen shrub. First introduced 1548. Leaves, narrow, aromatic. Shoots & flowers, infused in water, are largely used as an expectorant; also for distilling for yielding oils for perfumery and flavouring liquors.

**CULTURE:** Soil, ordinary, light. Position, dry, warm borders. Plant, March to May, 12 in. apart each way. Prune into shape April. Gather shoots for medicinal purposes at any season; when flowers open for distilling. Marketed by the dozen bunches. Average price per dozen, 1s. 6d. to 2s.; for distilling, 30s. per cwt. Propagate by seeds sown 1-16 in deep outdoors in April, transplanting seedlings in June or July; cuttings of shoots inserted in ordinary soil & shady position in April or May; division of roots in Feb., March, Sept. or Oct.

SPECIES CULTIVATED: *H. officinalis*, blue, June to Sept., 1 to 2 ft., S. Europe.

**Iberian Crane's-bill** (*Geranium ibericum*).—See *Geranium*.

**Iberian Cyclamen** (*Cyclamen ibericum*).—See *Cyclamen*.

**Iberian Iris** (*Iris iberica*).—See *Iris*.

**Iberis** (*Candytuft*).—Ord. Crucifera. Hardy annuals & evergreen shrubs. Flowers, fragrant.

**CULTURE OF ANNUAL SPECIES:** Soil, ordinary. Position, sunny beds or borders. Sow seeds  $\frac{1}{2}$  in deep in patches or lines in March, April, or May for flowering in summer, Aug. or Sept. for spring flowering. Thin out seedlings to 2 in. apart in June.

**POT CULTURE:** Compost, two parts good soil, one part decayed manure, leaf-mould, & sand. Size of pots, 5 in. in diameter. Sow seeds  $\frac{1}{2}$  in. deep in April or May. Place pots in cold frame till June, then stand outdoors. Thin seedlings to an inch apart in June. Water moderately. Apply weak liquid manure occasionally when flowers show.

**CULTURE OF SHRUBBY SPECIES:** Soil, light sandy loam. Position, fissures or ledges of sunny rockeries or margins of well-drained sunny borders. Plant, Oct., March, or April. Propagate annual species by seeds sown as above; perennial species by seeds sown 1-16 in. deep in shallow boxes of sandy soil in cold frame in April; cuttings of partially formed shoots, from 1 to 2 in. long, inserted in well-drained pots in cold frame or in beds under hand-light outdoors July to Oct.; division of roots Oct. or March.

**ANNUAL SPECIES:** *I. amara* (Bitter Candytuft), white, summer, 6 in., Britain; *amara hesperidifolia*, larger flowered; *coronaria* (Rocket Candytuft), white, summer, 1 ft.; *umbellata* (Common Candytuft), purple, summer, 1 ft., S. Europe; several varieties.

**SHRUBBY SPECIES:** *I. corraefolia*, white, May and June, 1 ft., hybrid; *gibraltarica*, white or pink, May, 1 to 2 ft., Spain; *Pruitii*, white, May, 6 in., Sicily; *saxatilis* (Rock Candytuft), white, spring, 3 to 6 in., S. Europe; *semperflorens*, white, spring, 1 to 2 ft., S. Europe; *sempervirens* (Evergreen Candytuft), white, spring, 9 to 12 in., S. Europe; *sempervirens flore-pleno*, double flowered.

**Iceland Poppy** (*Papaver nudicaule*).—See *Papaver*.

**Ice Plant** (*Mesembryanthemum crystallinum*).—See *Mesembryanthemum*.

**Idesia**.—Ord. Bixineæ. Hardy flowering & orn. foliage tree. Deciduous. Flowers in panicles; male & female borne on separate trees; male flowers orange, female green. Berries, small, purplish black. Leaves, heart-shaped.

**CULTURE:** Soil, ordinary, sandy. Position, well-drained shrubberies. Plant, Oct. to Feb. Prune into shape after flowering. Propagate by seeds sown  $\frac{1}{8}$  in. deep in sandy soil in temp. 65° to 75° in March; cuttings of firm shoots, 3 to 4 in. long, inserted in well-drained pots of sandy soil under bell-glass in temp. 65° to 75° in March or Sept.

**SPECIES CULTIVATED:** *I. polycarpa*, 10 to 15 ft., Japan.

**Ilex** (Holly; Paraguay Tea).—Ord. Aquifoliaceæ. Hardy & greenhouse evergreen shrubs. Orn. foliage. Flowers, greenish; May & June; male & female flowers usually borne on separate trees. Berries, red; autumn & winter. Leaves, dark green or variegated with white or yellow. Timber, white, used for cabinet making and turnery purposes. Value, 1s. to 1s. 6d. per cubic foot. Bark used for making bird lime. Wood sometimes dyed black, and used as a substitute for ebony. Average weight of wood per cubic foot, 47½ lb. One bushel of seeds will yield 17,000 plants.

**CULTURE OF HARDY SPECIES:** Soil, ordinary. Position, well-drained shrubberies, banks, exposed slopes, etc., or near the sea. Plant, May or Sept. Prune, Sept. to April.

**HEDGE CULTURE:** Soil, ordinary, trenched two spits deep & 3 ft. wide. Plant hollies (18 in. high), 18 in. apart, May or Sept. Trim into shape April and Sept. One holly & six thorns; or one *Berberis Darwinii* & two hollies per lineal yard make splendid evergreen hedges. Cost per lineal yard for plants & planting, 1s. 6d. to 2s.

**POT CULTURE:** Soil, ordinary. Position, window boxes, cold corridors, balconies, & greenhouses. Pot, Sept. Water freely March to Oct., moderately afterwards. Heat unnecessary.

**CULTURE OF GREENHOUSE SPECIES:** Soil, two parts loam, one part peat & sand. Position, well-drained pots exposed to full light. Pot, March. Prune, Feb. Water freely in summer, occasionally other times. Temp., March to Oct. 55° to 65°; Oct. to March 45° to 50°. Propagate common species by seed (berries) gathered in Nov., buried in sand until following Oct., then sown 1 in. deep & 1 in. apart in ordinary soil outdoors, transplanting seedlings when two years old; variegated kinds by budding on common species in Aug.; grafting in March.

**GREENHOUSE SPECIES:** *I. cassine*, red berries, S. U. States; *insignis*, 15 to 20 ft., Malaya; *paraguayensis* (Paraguay Tea), 10 to 15 ft., Paraguay.

**HARDY SPECIES:** *Aquifolium* (Common Holly), 10 to 30 ft., berries red, Europe (Britain); *cornuta*, berries red, 20 to 30 ft., China; *crenata*, 10 to 15 ft., Japan; *diphyrena*, brown berries, 15 ft., Himalayas; *glabra* (Ink-berry), 2 to 3 ft., U. States; *latifolia*, large-leaved, 20 ft., Japan; *opaca*, 20 to 40 ft., U. States.

**GOLDEN-LEAVED HOLLIES:** *Aureo-marginata*, *aureo-picta*, *aureo-pumila*, *pendula aureo-marginata*, *Golden Queen*, *tortuosa aureo-picta* and *webbiana*.

**SILVER-LEAVED HOLLIES:** *Argenteo-regina*, *argenteo-marginata*, *argenteo-medio-picta*, *ferox argenteo-marginata*, *handsworthiensis argentea*, *Ingrami*, *lucida*, or *Silver Queen*, and *pendula albo-picta*.

**GREEN-LEAVED HOLLIES:** *Altaclerensis*, *angustifolia*, *balearica*, *crassifolia*, *donningtonensis*, *ferox* (*Hedgehog Holly*), *Foxii*, *handsworthiana*, *Hendersonii*, *heterophylla*, *Hodginsii* (*Hodgin's Holly*), *laurifolia*, *maderensis*, *myrtifolia*, *nobilis* and *Sheperdii*.

**Illicium** (*Aniseed-tree*).—Ord. *Magnoliaceæ*. Half-hardy evergreen shrubs. Flowering & orn. foliage. First introduced 1771. Flowers fragrant. Leaves, oblong; emitting odour of aniseed.

**CULTURE:** Compost, equal parts sandy loam & peat. Position, sheltered shrubberies or against south walls, S. of England in pots in cold greenhouses or conservatories N. of England. Plant outdoors April, Sept., or Oct. Pot, Oct. Water plants in pots freely in summer, moderately in winter. Prune into shape April or May. Propagate by cuttings of firm young shoots 2 to 3 in. long, inserted in well-drained pots of sandy soil under bell-glass in temp. of 55° to 65°, May to Aug.

**SPECIES CULTIVATED:** *I. floridanum*, purple-red, summer, 8 ft., Florida; *religiosum*, yellowish white, summer, 4 ft., China and Japan.

**Imantophyllum.**—See *Clivia*.

**Immortelle-flower.**—See *Helichrysum*, *Xeranthemum*, *Waitzia*, and *Helipterum*.

**Impatiens** (*Balsam*).—Ord. *Geraniaceæ*. Stove, greenhouse, & hardy annuals & perennials.

**CULTURE OF STOVE SPECIES:** Compost, equal parts peat, loam, leaf-mould, & sand. Position, well-drained pots in light part of stove Sept to May, greenhouse June to Sept. Pot, Feb. or March. Water moderately March to Sept., occasionally afterwards. Temp., Oct. to March 55° to 65°; March to June 65° to 75°. Prune into shape, Feb.

**CULTURE OF BALSAM** (*I. Balsamina*): Sow seeds  $\frac{1}{2}$  in. deep in light soil in temp. 65° to 75° in March or April. Transplant seedlings singly into 2 in. pots when 1 in. high. Compost, equal parts loam, leaf-mould, & sand. Position, near glass in greenhouse, not shaded. Transfer from 2 in. into 5 in., & then into 6 & 8 in. pots. Apply liquid manure daily to plants showing flower. Water freely. Temp., March to June, 55° to 65°. May be grown in flower garden during the summer. Plant June. Soil, ordinary. Position, sunny borders.

**CULTURE OF HARDY SPECIES:** Sow seeds  $\frac{1}{2}$  in. deep in April where plants are to grow. Soil, ordinary. Position, sunny borders. Thin seedlings to 6 in. apart when 1 in. high. Propagate stove species by seeds sown 1-16 in. deep in light rich soil in temp. 65° in March; by cuttings of side shoots inserted in small pots of light sandy soil in temp. 75° March to Aug.

**STOVE SPECIES:** *I. auricomma*, yellow, summer, 2 ft., Comoro Isles; *Hawkeri*, carmine, summer, 2 ft.; *Sultani*, scarlet, summer, 1 ft., Zanzibar. All perennials.

**GREENHOUSE SPECIES:** *I. Balsamina* (*Balsam*), rose, scarlet, and white, summer, 2 ft., Trop. Asia. Annual.

**HARDY SPECIES:** *I. amphorata*, purple, Aug., 5 ft., Himalayas; *biflora* (*Syn. fulva*), yellow and brown, summer, 3 ft., N. America; *Roylei* (*Syn. glandulifera*), purple, summer, 6 ft., Himalayas.

**Imperati's Crocus** (*Crocus Imperati*).—See *Crocus*.

**Imperati's Snowdrop** (*Galanthus Imperati*).—See *Galanthus*.

**Incarvillea.**—Ord. *Bignoniaceæ*. Hardy herbaceous perennials. May be grown in pots in cool greenhouses, as well as outdoors.

**OUTDOOR CULTURE:** Soil, light, rich, & well drained. Position,

sunny & sheltered borders. Plant in March or April. Protect crowns of the plant in winter by a covering of ashes or manure; or lift roots in Oct.; store like dahlias, replanting following spring. Apply weak liquid manure occasionally in summer.

**INDOOR CULTURE:** Compost, two parts loam, one part of equal proportions of leaf-mould, decayed manure, & silver sand. Position, fairly large pots, well drained, in cool or cold greenhouse. Pot in Oct. or March. Water freely in spring & summer; keep nearly dry in autumn & winter; give weak liquid manure occasionally in summer. Propagate by seeds sown in a temp. of 55° in March, or in cold frame in April, & transplant seedlings outdoors in June. Sow also in Sept. in cold frame, & plant out seedlings following April. Divide large plants in autumn.

**SPECIES CULTIVATED:** *I. Delavayi*, rose, summer, 2½ ft., China; *I. Delavayi grandiflora*, rose, purple and white; *Olgæ*, purple, summer, 3 to 4 ft., Turkestan.

**Incense Cedar** (*Librocedrus decurrens*).—See *Librocedrus*.

**Incense Juniper** (*Juniperus recurva*).—See *Juniperus*.

**Indian Azalea** (*Rhododendron indicum*).—See *Rhododendron*.

**Indian Bean** (*Catalpa bignonioides*).—See *Catalpa*.

**Indian Corn** (*Zea Mays*).—See *Zea*.

**Indian Cress**.—See *Tropæolum*.

**Indian Crocus** (*Cœlogyne maculata*).—See *Cœlogyne*.

**Indian Cups** (*Sarracenia purpurea*).—See *Sarracenia*.

**Indian Daphne** (*Daphne indica*).—See *Daphne*.

**Indian Date** (*Tamarindus indica*).—See *Tamarindus*.

**Indian Fig Cactus** (*Opuntia vulgaris*).—See *Opuntia*.

**Indian Forget-me-not** (*Ipomœa Quamoclit*).—See *Ipomœa*.

**Indian Grass** (*Molinia cœrulea*).—See *Molinia*.

**Indian Hawthorn** (*Raphiolepis indica*).—See *Raphiolepis*.

**Indian Hemp** (*Cannabis sativa*).—See *Cannabis*.

**Indian Ivy** (*Monstera deliciosa*).—See *Monstera*.

**Indian Lilac** (*Lagerstrœmia indica*).—See *Lagerstrœmia*.

**Indian Mallow**.—See *Abutilon*.

**Indian Physic** (*Gillenia trifoliata*).—See *Gillenia*.

**Indian Pink** (*Dianthus sinensis*).—See *Dianthus*.

**Indian Poke** (*Phytolacca decandra*).—See *Phytolacca*.

**Indian Reed** (*Canna indica*).—See *Canna*.

**Indian Shell-flower** (*Alpinia nutans*).—See *Alpinia*.

**Indian Shot** (*Canna indica*).—See *Canna*.

**Indian Strawberry** (*Fragaria indica*).—See *Fragaria*.

**India-rubber Plant** (*Ficus elastica*).—See *Ficus*.

**Indigo** (*Indigofera tinctoria*).—See *Indigofera*.

**Indigofera** (*Indigo*).—Ord. Leguminosæ. Stove, greenhouse & hardy flowering shrubs. Evergreen & deciduous. First introduced 1731.

**CULTURE OF STOVE SPECIES:** Compost, equal parts turfy loam, leaf-mould, & sand. Position, well-drained pots or beds. Pot or plant, Feb. or March. Prune into shape, Feb. or March. Water freely March to Oct., moderately Oct. to March. Temp., March to Oct. 65° to 75°; Oct. to March 55° to 65°.

**CULTURE OF GREENHOUSE SPECIES:** Compost as above. Position, large well-drained pots or in beds, with shoots trained up pillars or against walls. Pot or plant, March. Prune into shape, March or

April. Water freely March to Oct., moderately afterwards. Temp., March to Oct. 55° to 65°; Oct. to March 45° to 55°. Stand plants in sunny place outdoors June to Sept.

**CULTURE OF HARDY SPECIES:** Compost, equal parts loam, leaf-mould, & peat. Position, well-drained bed or border, with shoots trained against S. wall. Plant, Oct. to Feb. Prune moderately after flowering, removing those shoots only that have flowered. Propagate by seeds sown  $\frac{1}{8}$  in. deep in well-drained pots of sandy soil in temp. 75° to 85° in Feb. or March; cuttings of firm young shoots 2 to 3 in. long inserted in pots of sandy peat under bell-glass in temp. 65° to 75° May to Sept.

**STOVE SPECIES:** *I. tinctoria* (Indigo), red, summer, 4 to 6 ft., Tropics.

**GREENHOUSE SPECIES:** *I. australis*, rose, spring, 4 ft., Australia; *australis alba*, white.

**HARDY SPECIES:** *I. gerardiana*, red, summer, 6 ft., Himalayas.

**Indigo-plant** (*Baptisia tinctoria*).—See *Baptisia*.

**Intermediate Stock** (*Matthiola annua*).—See *Matthiola*.

**Inula** (Flea-bane; Elecampane).—Ord. Compositæ. Hardy herbaceous perennials.

**CULTURE:** Soil, ordinary rich. Position, moist sunny beds or borders. Plant, Oct., Nov., March, or April. Cut down flower stems in Oct. Top-dress with well-decayed manure in April. Propagate by seeds sown 1-16 in. deep in partially shady border outdoors in April; division of roots, Oct. or March.

**SPECIES CULTIVATED:** *I. ensifolia*, yellow, Aug., 10 in., S. Europe; *glandulosa*, yellow, Aug., 2 ft., Caucasus; *grandiflora*, yellow, July to Sept., 2 ft., Himalayas; *Helenium* (Elecampane), yellow, July to Sept., 3 ft., Europe; *Hookeri*, yellow, Aug. and Sept., 2 ft., Himalayas; *Oculus-Christi* (Christ's Eye), yellow, summer, 18 in., Europe.

**Ionopsidium** (Carpet-plant; Violet-flowered Cress).—Ord. Cruciferae. Hardy annual. First introduced 1845.

**OUTDOOR CULTURE:** Soil, ordinary. Position, ledges of rockeries or as edgings to flower beds. Sow seeds where plants are to grow in April, just covering with fine mould.

**POT CULTURE:** Compost, equal parts loam, leaf-mould, & sand. Position, shady window, cold frame, or greenhouse. Sow seeds 1-16 in. deep in 5 in. pot well drained & filled with above compost, in April or Sept. Thin seedlings to 1 in. apart. Water moderately. Apply liquid manure occasionally when flower buds show.

**SPECIES CULTIVATED:** *I. acaule*, lilac, white, and violet, summer, 3 in., Portugal.

**Ionopsis**.—Ord. Orchidaceae. Stove epiphytal orchid. First introduced 1865.

**CULTURE:** Compost, sphagnum moss. Position, attached to blocks of wood suspended from roof; or in shallow pans. Re-block, Feb. or March. Water freely March to Sept., moderately other times. Syringe twice daily Feb. to Oct. Temp., Oct. to Feb. 50° to 55°; Feb. to Oct. 60° to 70°. Propagate by division of plants at re-blocking time.

**SPECIES CULTIVATED:** *I. paniculata*, white, purple, and yellow, winter, 6 in., Brazil.

**Ipomæa** (American Bell-bind; Moon Creeper; Morning Glory).—Ord. Convolvulaceae. Stove, greenhouse & hardy perennial & annual climbers. First introduced 1597.

**CULTURE OF STOVE SPECIES:** Compost, equal parts fibrous loam, leaf-mould, decayed manure, & silver sand. Position, pots, beds, or borders in stove; shoots trained up roof, or on trellises. Pot or plant, Feb., March, or April. Temp., March to Sept. 65° to 75°; Sept. to

March 55° to 65°. Water freely April to Sept., moderately afterwards. Prune straggly growths into shape, Feb. Sow three seeds of the annual species  $\frac{1}{2}$  in. deep in a 2 $\frac{1}{2}$  in. pot in temp. 65° in March. Transfer seedlings when 2 in. high into 5 in. pots. Train shoots to trellis or sticks.

**CULTURE OF HALF-HARDY ANNUALS:** Soil, light rich. Sow seeds  $\frac{1}{2}$  in. deep in pots in temp. 65° in March. Transfer seedlings to cold frame in May. Plant, June. Position, sunny walls or borders, shoots trained to trellis or to stocks.

**CULTURE OF HARDY ANNUAL SPECIES:** Soil, ordinary. Position, sunny borders; shoots trained to trellis or sticks. Sow seed  $\frac{1}{4}$  in. deep where plants are to grow, in April.

**CULTURE OF HARDY PERENNIAL SPECIES:** Soil, ordinary. Position, sunny walls, fences, or arbours. Plant, Oct. or Nov. Propagate annual species by seeds as above; perennials by cuttings of side shoots inserted in sandy peat under bell-glass in temp. 75° to 85°, March to Aug., or grafting in March.

**CULTURE OF SWEET POTATO:** Compost, two parts loam & one part decayed manure. Plant tubers singly in 6 in. pots in Feb. in temp. 65°, or 6 in. deep & 8 in. apart in prepared border in greenhouse. Water moderately Feb. to May; freely May to Sept., then give none, keeping tubers dry. Tubers are edible. Propagate by division of tubers in Feb.; cuttings of young shoots in April.

**STOVE SPECIES:** *I. Bona-Nox*, white, summer, 10 ft., Trop. America; *Horsfalliæ*, rose, winter, 10 to 15 ft., W. Indies; *Learii*, blue, summer, 10 ft., Trop. America; *Quamoclit*, red, summer, 6 ft., Tropics, annual; *ternata* (*Syn. Thomsonii*), white, summer, 10 ft., W. Indies; *rubra cœrulea*, red, Mexico.

**GREENHOUSE SPECIES:** *I. batatus* (*Sweet Potato*), white, summer, tubers edible, 2 to 4 ft., Tropics.

**HARDY AND HALF-HARDY ANNUAL SPECIES:** *I. hederacea* and its varieties *grandiflora* (blue), *superba* (blue and white), *atro-violacea* (violet and white), and *Huberi variegata* (variegated leaved), 5 to 10 ft., Tropics, half-hardy; *purpurea* (*Syn. Convolvulus major*), purple, summer, 8 to 10 ft., Tropical America; and its varieties *atropurpurea* (purple), *Burridgei* (scarlet), *Dioksonii* (blue), *alba* (white), *tricolor* (red, white, and blue), and *flore-pleno* (double); *versicolor* (*Syn. Mina lobata*), rosy crimson and yellow, summer, 6 to 8 ft., Trop. America.

**PERENNIAL SPECIES:** *I. pandurata* (*Syn. Convolvulus pandurata*), white and purple, summer, climber, N. America.

**Ipsæa.**—Ord. Orchidaceæ. Stove terrestrial orchid. Flowers fragrant. First introduced 1840.

**CULTURE:** Compost, equal parts leaf-mould, peat, sphagnum moss, & small crocks. Position, light part of stove. Pot, Feb. or March, in well-drained pots. Water freely March to Aug., moderately Aug. to Oct., very little afterwards. Temp., March to Sept. 60° to 65°; Sept. to March 50° to 55°. Propagate by division of pseudo-bulbs after flowering.

**SPECIES CULTIVATED:** *I. speciosa*, yellow, spring, 1 ft., Ceylon.

**Iresine** (*Blood-leaf*).—Ord. Amarantaceæ. Stove & half-hardy orn. foliaged plants. First introduced 1864. Leaves, heart & lance-shaped; deep blood-red, carmine, green, golden, crimson.

**POT CULTURE:** Compost, equal parts peat, loam, leaf-mould, & sand. Position, sunny part of stove. Pot, Feb. or March. Water freely March to Sept., moderately other times. Temp., March to Oct. 65° to 75°; Oct. to March 55° to 65°.

**OUTDOOR CULTURE:** Soil, ordinary. Position, edgings to sunny beds or borders. Plant, June. Lift, repot, & remove to stove in Sept. Pinch off points of shoots frequently to induce bushy growth. Propa-

gate by cuttings of young shoots inserted in pots or pans of light sandy soil in temp. of 65° to 75°, Feb., March, April, Sept. or Oct.

SPECIES CULTIVATED: *I. Herbstii*, leaves maroon and crimson, 1 ft., Brazil; *Herbstii aureo-reticulata*, leaves, green, gold, and red; *Lindenii*, leaves blood red, 1 ft.

**Iris** (Flag; Orrice Root; Fleur de Luce).—Ord. Iridaceæ. Hardy evergreen rhizomatous and bulbous-rooted perennials. Sections: Tall Bearded, Dwarf Bearded, Beardless, Cushion, Japanese & Bulbous-rooted.

**CULTURE OF TALL BEARDED SECTION:** Ordinary, not over-moist soil. Position, sunny or partially shaded borders, or massed wild or woodland garden, or on the margins of water. Plant in Oct. or March, keeping rhizomes near surface. Top-dress with decayed manure in autumn. Lift & replant every fourth year.

**CULTURE OF DWARF BEARDED SECTION:** Ordinary rich soil. Position, sunny, well-drained borders. Plant and treat as advised for foregoing section.

**CULTURE OF BEARDLESS SECTION:** Moist soil and margins of ponds or streams for *I. versicolor*, and varieties, *pseudo-acorus*. Plant, Oct. or March. Ordinary rich soil and sunny borders or rockeries for *aurea*, *graminea*, *missouriensis*, *monspur*, *orientalis*, *sibirica*, *spuria*, *ungicularis*. Plant in Oct. or March.

**CULTURE OF JAPANESE SECTION:** Rich loamy soil on the margins of ponds, or in a half-cask filled with loam and sunk in garden in sunny spot. Plant in Oct. or March. Apply liquid manure in growing season.

**CULTURE OF CUSHION SECTION:** Grow in sandy soil on elevated bed, rockery, or border. Plant in June. Protect by a cold frame or hand-light in winter.

**CULTURE OF BULBOUS-ROOTED SECTION:** Plant choice kinds in a compost of equal parts sandy loam, leaf-mould, and well-decayed cow manure. Place bulbs 3 in. deep & 3 in. apart. Plant in Aug. or Sept. Spanish & English kinds to be planted in ordinary soil in sunny beds or borders in Sept. or Oct., placing bulbs 3 in. deep and 6 in. apart. Lift and replant every third year.

**POT CULTURE OF BULBOUS SPECIES:** Compost, equal parts loam, leaf-mould, & silver sand. Place in cold frame till growth begins, when remove to cold greenhouse or leave in frame to flower. Pot in Oct., placing five bulbs in a 5 in. pot. Give water only when growth has begun. Withhold water after leaves begin to decay. Must not be placed in artificial heat. Propagate all the species by seeds in sandy soil in cold frame; division of rhizomes in autumn or spring; offsets in autumn.

**TALL BEARDED IRISES:** *I. Bartoni*, creamy white, purple and orange, June, 18 in., Afghanistan; *Biloti*, purple, white and yellow, June, 3 ft., Asia Minor; *bracteata*, purple and white, June, 2 ft., Oregon; *Cengialti*, violet and orange, May, 1 ft., Cengialto; *florentina* (Florentine Iris), white, lavender, and yellow, violet scented, May, 3 ft., S. Europe; *germanica* (Flag Iris), purple and lilac, fragrant, May, 3 ft., S. Europe; *Grant Duffii*, sulphur yellow, May, 2 ft., Holy Land; *neglecta*, lilac, purple, white and yellow, May, 2 ft.; *pallida*, lilac, purple and white, May, fragrant, 3 ft., Mediterranean Region; *squalens*, lilac, purple, and yellow, May, 3 ft., Europe; *variegata*, claret and yellow, May, 18 in., E. Europe. In trade lists a large number of lovely forms will be found described.

**DWARF BEARDED IRISES:** *I. biflora*, violet purple, April, 1 ft., S. Europe; *Chamæiris*, violet, April, 4 to 6 in., S. Europe; *pumila*, lilac purple, April, 4 in., S. Europe; *pumila cœrulea*, sky blue; *pumila*, primrose, brown and yellow; and *albida* (Crimean Iris), greyish white. Many varieties of this section will also be found in trade lists.



**BEARDLESS IRISES:** *I. aurea*, golden yellow, June, 4 ft., Himalayas; *foetidissima* (Gladwin Iris), purple, June, 3 ft., Britain; *fulva*, coppery maroon, June, 3 ft., U. States; *graminea*, blue and purple, June, 1 ft., S. Europe; *japonica*, lavender, June, 18 in., Japan; *longipetala*, blue, lilac, and gold, June, 2 ft., California; *Milesii*, purple blue, June, 2 ft., Himalayas; *missouriensis*, lilac and yellow, May, 2 ft., N. America; *Monneri*, lemon yellow, fragrant, June, 3 ft., Crete; *monspur*, lilac blue, June, 4 ft., hybrid; *orientalis* (*Syn. Ochroleuca*), white and yellow, June, 4 ft., Asia Minor; *pseud-acorus* (Yellow Water Flag), yellow, May and June, 3 ft., Britain; *sibirica*, blue, May and June, 3 ft., S. Europe and Siberia; *spuria*, lilac blue, June, 3 ft., Europe; *unguicularis* (*Syn. stylosa*), blue, Jan. and Feb., 9 ft., Algeria; *verna*, violet blue, fragrant, March, 3 in., N. America; *versicolor*, purple, May, 2 ft., N. America. Here also numerous varieties exist which may be found in trade lists.

**CUSHION IRISES:** *I. bismarckiana*, purple, yellow, blue, and white, June, 9 in., Mt. Lebanon; *Gatesii*, grey, purple, and white, June, 2 ft., Armenia; *iberica*, lilac, white and purple, May, 6 in., Caucasus; *Korolkowii*, white and red, May, 1 ft., Turkestan; *Lortetii*, creamy white and rose, S. Lebanon, 1 ft.; *paradoxa*, white, blue, and crimson, May, Persia; *susiana* (Mourning Iris), brown, black, and lilac, May, 1 ft., Levant.

**JAPANESE IRISES:** *I. levigata* (*Syn. Kämpferi*), white, lilac, magenta, purple, and yellow, June, 2 ft., Japan. Numerous varieties will be found in trade lists.

**BULBOUS-ROOTED IRISES:** *I. alata*, lilac, purple and yellow, Oct., 1 ft., S. Europe; *bakeriana*, white, violet, and blue, fragrant, Jan., 1 ft., Armenia; *Histrio*, lilac, Feb., 1 ft., Palestine; *orchioides*, yellow, April, 9 in., Turkestan; *persica*, yellow, lilac and green, Feb., 3 in., Persia; *reticulata*, violet, purple and yellow, violet scented, Feb., 6 in., Caucasus; and its varieties, *histrioides*, *Krelagei*, and *major*; *tingitana*, lilac-purple, March, 2 ft., Tangier; *xiphioides* (English Iris), various colours, 1 to 2 ft., Pyrenees; and *Xiphium* (Spanish Iris), various colours, June, 1 to 2 ft., S. Europe.

**Irish Furze** (*Ulex europæus strictus*).—See *Ulex*.

**Irish Heath** (*Daboëcia polifolia*).—See *Daboëcia*.

**Irish Ivy** (*Hedera helix canariensis*).—See *Hedera*.

**Irish Juniper** (*Juniperus communis hibernica*).—See *Juniperus*.

**Irish Yew** (*Taxus baccata fastigiata*).—See *Taxus*.

**Iron-weed**.—See *Vernonia*.

**Isle of Bourbon Tea-plant** (*Angræcum fragrans*).—See *Angræcum*.

**Ismene**.—See *Hymenocallis*.

**Isolepis**.—See *Scirpus*.

**Isoloma**.—Ord. Gesneraceæ. Stove flowering herbs. The plants known as *Tydæas* are now merged in this genus.

**CULTURE:** Compost, two parts fibrous peat, one part loam, one part leaf-mould, with a little decayed manure & silver sand. Position, well-drained pots or pans in shady part of plant stove. Pot, March to flower in summer; May to flower in autumn; June to flower in winter. Place tubers 1 in. deep singly in 5 in. pots, or 1 to 2 in. apart in larger sizes. Water moderately from time growth begins until plants are 3 or 4 in. high, then freely. After flowering gradually withhold water till foliage dies down, then keep dry till potting time. Apply weak liquid manure once or twice a week when flower buds show. Syringing not required. Temp., March to Sept. 65° to 85°; Sept. to March 55° to 75°. Store when foliage has died down on their sides under stage till potting time in temp. of 50° to 55°. Propagate by seeds sown on surface of well-drained pots of sandy peat, in temp. 75°, March or April; cuttings of young shoots inserted in pots of sandy peat in temp. 75° to 85° in spring; fully matured leaves pegged on surface of pots of sandy peat in temp. 75° to 85°.

**SPECIES CULTIVATED:** *I. digitaliflorum*, rose, purple, and white, winter, 1 ft.; *hondense* (*Syn. Gesnera hondense*), yellow, red, winter, 1 ft., New Grenada; *Lindenii* (*Syn. Tydæa Lindenii*), white and violet, winter, 1 ft., Ecuador.

**Isopyrum**.—Ord. Ranunculaceæ. Hardy herbaceous perennial.

Orn. foliage. First introduced 1759. Foliage finely divided like that of maidenhair fern.

**CULTURE:** Soil, ordinary. Position, sunny or shady rockery, bed or border. Plant, Oct. or March. Propagate by seeds sown 1-16 in. deep outdoors in April or May; division of roots in Oct. or Nov.

**SPECIES CULTIVATED:** *I. thalictroides*, white, spring, 8 in., Europe.

**Italian Alkanet** (*Anchusa italica*).—See *Anchusa*.

**Italian Cypress** (*Cupressus sempervirens*).—See *Cupressus*.

**Italian Pimpernel** (*Anagallis Monelli*).—See *Anagallis*.

**Italian Starwort** (*Aster Amellus*).—See *Aster*.

**Italian Stone Pine-tree** (*Pinus Laricio palassiana*).—See *Pinus*.

**Italian Yellow Jasmine** (*Jasminum humile*).—See *Jasminum*.

**Itea** (Virginian Willow).—Ord. Saxifragaceæ. Hardy deciduous shrub. Orn. foliage & flowering. First introduced 1744.

**CULTURE:** Soil, peaty. Position, moist sheltered shrubberies. Plant, Oct. to Feb. Prune moderately after flowering. Propagate by seeds sown  $\frac{1}{4}$  in. deep in sandy soil outdoors in April; suckers removed in Oct. or Nov.; layering shoots in July or Aug.

**SPECIES CULTIVATED:** *I. virginica*, white, July, 4 to 6 ft., N. America.

**Ivory Thistle** (*Silybum eburneum*).—See *Silybum*.

**Ivy** (*Hedera helix*).—See *Hedera*.

**Ivy-leaved Campanula** (*Campanula hederacea*).—See *Campanula*.

**Ivy-leaved Cypress-vine** (*Ipomæa hederacea coccinea*).—See *Ipomæa*.

**Ivy-leaved Fern** (*Hemionites cordata*).—See *Hemionites*.

**Ivy-leaved Groundsel** (*Senecio macroglossus*).—See *Senecio*.

**Ivy-leaved Harebell** (*Campanula hederacea*).—See *Campanula*.

**Ivy-leaved Pelargonium** (*P. peltatum*).—See *Pelargonium*.

**Ivy-leaved Toad-flax** (*Linaria cymbalaria*).—See *Linaria*.

**Ivy Saxifrage** (*Saxifraga cymbalaria*).—See *Saxifraga*.

**Ixia** (African Corn Lily).—Ord. Iridaceæ. Half-hardy bulbous plants. Nat. S. Africa. First introduced 1744. Flowers fragrant.

**OUTDOOR CULTURE:** Soil, light rich sandy. Position, sunny well-drained border. Plant, Sept. to Jan., placing bulbs 4 in. deep & 2 in. apart. Lift & replant bulbs annually. Mulch surface of bed in March with cow manure.

**POT CULTURE:** Compost, two parts sandy loam, one part leaf-mould or decayed cow manure. Pots,  $4\frac{1}{2}$  in. in diameter, well drained. Place five bulbs, 3 in. deep, in each pot in Nov., & cover with cocoanut-fibre refuse in cold frame or under cool greenhouse stage until flowers fade, then gradually cease, keeping bulbs dry till Jan. Temp., Sept. to March 40° to 50°; other times 50° to 60°. Propagate by offsets treated as advised for bulbs.

**SPECIES CULTIVATED:** *I. flexuosa*, pink, spring, 1 ft.; *maculata*, brown and white, spring, 1 ft.; *paniculata*, yellow and white, summer, 1 ft.; *patens*, purple, spring, 1 ft.; *speciosa* (Syn. *Cræteriodes*), purple and crimson, summer, 1 ft.; *viridiflora*, green, spring, 1 ft. See trade lists for numerous varieties.

**Ixia Lily** (*Ixiolirion tartaricum*).—See *Ixiolirion*.

**Ixiolirion** (*Ixia Lily*).—Ord. Amaryllidaceæ. Half-hardy bulbous plants. First introduced 1844.

**CULTURE:** Soil, light sandy loam. Position, well-drained sunny

border at foot of S. wall. Plant bulbs 3 in. deep and 4 in. apart in March. Mulch surface of bed with cow manure in April. After flowering, cover with bell-glass or hand-light to ensure thorough ripening of bulbs. Lift bulbs in Sept. & store in dry sand in cool, frost-proof place till planting time. Propagate by offsets removed at any time, planted & treated as advised for normal bulbs. May also be grown in pots as advised for *Ixias*.

**SPECIES CULTIVATED:** *I. montanum*, blue, June, 1 ft., Europe.

**Ixora** (West Indian Jasmine).—Ord. Rubiaceæ. Stove flowering shrubs. Evergreen. First introduced 1690. Flowers fragrant.

**CULTURE:** Compost, two parts good fibrous peat, one part fibrous loam & silver sand. Position, shady part of stove whilst growing, light situation when at rest. Pot, Feb. or March; good drainage indispensable. Prune into shape in Feb. Water freely March to Sept., moderately afterwards. Syringe twice daily March to Aug. Apply liquid manure once or twice a week to healthy plants in flower. Temp., March to Sept. 75° to 85°; Sept. to March 55° to 65°. Propagate by cuttings of firm young shoots 2 to 3 in. long, inserted singly in small pots in sandy peat under bell-glass in temp. 75° to 85°, March to May.

**SPECIES CULTIVATED:** *I. coccinea*, orange-scarlet, summer, 3 to 4 ft., India. Numerous varieties and hybrids will be found in trade lists.

**Jaborosa**.—Ord. Solanaceæ. Hardy herbaceous perennial. First introduced 1831.

**CULTURE:** Soil, rich loamy. Position, well-drained border at base of S. wall. Plant, Oct. to March. Protect in winter with covering of ashes or litter. Propagate by seeds sown 1-16 in. deep in light sandy soil in well-drained pots in temp. 55° to 65° in March or April; cuttings of young shoots inserted in sandy soil under bell-glass, hand-light, or in cold frame, July to Sept.; division of creeping stems in March or April.

**SPECIES CULTIVATED:** *J. integrifolia*, white, summer, 9 in., Buenos Ayres.

**Jacaranda** (Mimosa-leaved Ebony-tree; Green Ebony-tree).—Ord. Bignoniaceæ. Stove evergreen trees. Flowering & orn. foliage. First introduced 1724. Leaves, fern-like, downy, very elegant.

**CULTURE:** Compost, equal parts peat, fibry loam & silver sand. Position, well-drained pots in light part of plant stove Sept. to April, sunny place outdoors July to Sept. Pot, Feb. to March. Prune into shape, Feb. Water freely March to Oct., moderately Oct. to March. Temp. Sept. to March 55° to 65°; March to July 70° to 80°. Plants form decorative specimens when 1 to 3 ft. high; flowering specimens when grown as standards, 10 to 15 ft. high. Propagate by seeds sown ½ in. deep in light sandy peat in well-drained pots under bell-glass in temp. of 75° to 85°, Feb. to June; cuttings of firm shoots inserted in sandy peat under bell-glass in temp. of 75°, June to Sept.

**SPECIES CULTIVATED:** *J. cærulea*, blue, summer, 10 ft., W. Indies; *filicifolia*, blue, summer, 15 ft., Panama.

**Jack-go-to-bed-at-noon** (*Ornithogalum umbellatum*).—See *Ornithogalum*

**Jack-in-prison** (*Nigella damascena*).—See *Nigella*.

**Jack-in-the-green** (*Primula vulgaris* var.).—See *Primula*.

**Jackman's Clematis** (*Clematis Jackmanii*).—See *Clematis*

**Jack-tree** (*Artocarpus integrifolia*).—See *Artocarpus*.

**Jacobæa**.—(*Senecio elegans*).—See *Senecio*.

**Jacobean Lily** (*Sprekelia formosissima*).—See *Sprekelia*.

**Jacobinia**.—Ord. Acanthaceæ. Stove flowering plants. First introduced 1770.

**CULTURE:** Compost, equal parts peat, loam, leaf-mould & sand. Position, well-drained pots in light stove Sept. to June, sunny frame June to Sept. Pot, March to April. Water moderately Sept. to March, freely other times. Temp., Sept. to March 55° to 65°; March to June 65° to 75°. Prune shoots to 1 in. of base after flowering. Nip off points of young shoots occasionally May to Aug., to induce bushy growth. Apply liquid or artificial manure twice a week to plants in flower. Propagate by cuttings of young shoots inserted singly in small pots of sandy soil under bell-glass in temp. 75°, March to July.

**SPECIES CULTIVATED:** *J. chrysostephana*, yellow, winter, 3 ft., Mexico; *ghiesbreghtiana* (Syn. *Sericographis ghiesbreghtiana*), scarlet, Dec., 2 ft., Mexico; *magnifica carnea* (Syn. *Justicia carnea*), rose, summer, 3 to 4 ft., Brazil.

**Jacob's-ladder** (*Polemonium cœruleum*).—See *Polemonium*.

**Jacob's-rod** (*Asphodelus luteus*).—See *Asphodelus*.

**Jalap-plant** (*Mirabilis jalapa*).—See *Mirabilis*.

**Jamaica Allspice** (*Pimenta officinalis*).—*Pimenta*.

**Jamaica Sago-tree** (*Zamia purpuracea*).—See *Zamia*.

**Jamesia**.—Ord Saxifragaceæ. Hardy deciduous flowering shrub. First introduced 1820.

**CULTURE:** Soil, ordinary. Position, sunny rockeries or borders. Plant Oct. to Feb. Prune directly after flowering. Propagate by cuttings inserted under hand-light or in cold frame in autumn.

**SPECIES CULTIVATED:** *J. americana*, white, spring, 6 to 8 ft., Rocky Mountains.

**Japan Allspice** (*Chimonanthus fragrans*).—See *Chimonanthus*.

**Japan Clover** (*Lespedeza bicolor*).—See *Lespedeza*.

**Japanese Aralia** (*Fatsia japonica*).—See *Fatsia*.

**Japanese Barberry** (*Berberis japonica*).—See *Berberis*.

**Japanese Cedar** (*Cryptomeria japonica*).—See *Cryptomeria*.

**Japanese Climbing Fern** (*Lygodium scandens*).—See *Lygodium*.

**Japanese Clover** (*Lespedeza bicolor*).—See *Lespedeza*.

**Japanese Cucumber** (*Cucumis sativus*).—See *Cucumis*.

**Japanese Golden Bell Tree** (*Forsythia suspensa*).—See *Forsythia*.

**Japanese Groundsel** (*Senecio japonicus*).—See *Senecio*.

**Japanese Hare's-foot Fern** (*Davallia Mariesi*).—See *Davallia*.

**Japanese Hop** (*Humulus japonica*).—See *Humulus*.

**Japanese Lady's-slipper** (*Cypripedium japonicum*).—See *Cypripedium*.

**Japanese Larch** (*Larix leptolepis*).—See *Larix*.

**Japanese Lilac** (*Syringa japonica*).—See *Syringa*.

**Japanese Maple** (*Acer palmatum*).—See *Acer*.

**Japanese Monk's-hood** (*Aconitum japonicum*).—See *Aconitum*.

**Japanese Primrose** (*Primula japonica*).—See *Primula*.

**Japanese Privet** (*Ligustrum japonicum*).—See *Ligustrum*.

**Japanese Quince** (*Pyrus japonica*).—See *Pyrus*.

**Japanese Rose** (*Rosa rugosa*).—See *Rosa*.

**Japanese Snow-flower** (*Deutzia gracilis*).—See *Deutzia*.

**Japanese Speedwell** (*Veronica subsessilis*).—See *Veronica*.

**Japanese Spindle-tree** (*Euonymus japonicus*).—See *Euonymus*.

**Japanese Toad Lily** (*Tricyrtis hirta*).—See *Tricyrtis*.

**Japanese Vine** (*Vitis Coignetia*).—See *Vitis*.

**Japanese Wind-flower** (*Anemone japonica*).—See *Anemone*.

**Japanese Wineberry** (*Rubus phœnicolossus*).—See *Rubus*.

**Japanese Yew** (*Taxus cuspidata*).—See *Taxus*.

**Japan Honeysuckle** (*Lonicera japonica*).—See *Lonicera*.

**Japan Laurel** (*Aucuba japonica*).—See *Aucuba*.

**Japan Lily** (*Lilium speciosum*).—See *Lilium*.

**Jasione** (Sheep's-bit Scabious).—Ord. Campanulaceæ. Hardy annuals & herbaceous perennials.

**CULTURE OF ANNUAL SPECIES:** Soil, ordinary. Position, well-drained sunny beds or borders. Sow seeds 1-16 in. deep in April or Sept. where plants are to grow.

**CULTURE OF PERENNIAL SPECIES:** Soil, good light loam. Position, sunny well-drained borders. Plant, Oct. or March. Cut down flower stems Oct. Mulch with decayed manure in April. Propagate by seeds sown 1-16 in. deep in light soil outdoors, April to Sept.; division of roots, Oct. or March.

**ANNUAL SPECIES:** *J. montana*, lilac, blue, summer, 1 ft., Europe (Britain).

**PERENNIAL SPECIES:** *J. perennis*, blue, June, 18 in., W. Europe.

**Jasmine** (*Jasminum officinale*).—See *Jasminum*.

**Jasmine Box** (*Phillyrea angustifolia*).—See *Phillyrea*.

**Jasmine Nightshade** (*Solanum jasminoides*).—See *Solanum*.

**Jasminum** (Jasmine; Jessamine).—Ord. Oleaceæ. Stove, greenhouse & hardy climbing & trailing flowering plants. Evergreen & deciduous. First introduced 1548.

**CULTURE OF STOVE SPECIES:** Compost, equal parts loam, peat & leaf-mould, with little sand. Position, well-drained pots, with shoots trained to trellis or up rafters, or in beds or borders with shoots trained up walls or rafters. Pot or plant, Feb. or March. Prune moderately, Feb. Water freely March to Oct., moderately Oct. to March. Temp., March to Sept. 65° to 75°; Sept. to March. 55° to 65°. Syringe daily from March to Aug.

**CULTURE OF GREENHOUSE SPECIES:** Compost as above. Position, beds or borders, with shoots trained up rafters or walls, or well-drained pots in light part of greenhouse Sept. to June, sunny place outdoors June to Sept. Pot or plant, Feb. to March. Prune slightly, Feb. Water freely March to Sept., moderately afterwards. Temp., Sept. to March 45° to 55°; March to June 55° to 65°.

**CULTURE OF HARDY SPECIES.** Soil, ordinary rich. Position, well-drained borders at base of S. or S.W. walls. Plant, Oct., Nov., Feb. or March. Prune moderately after flowering, removing shoots that have flowered only. Propagate stove & greenhouse species by cuttings of firm shoots, inserted in well-drained pots of sandy peat under bell-glass in temp. of 65° to 75°, March to Sept.; hardy species by cuttings of shoots 3 to 6 in. long inserted in well-drained pots of sandy soil in cold frame or in sheltered borders outdoors Sept. to Dec.; layering shoots near base of plants summer; variegated kinds by budding on common species July or Aug.

**STOVE SPECIES:** *J. gracillimum*, white, winter, 4 ft., Borneo; Sambac, white, autumn, 6 ft., Trop. Asia.

**GREENHOUSE SPECIES:** *J. grandiflorum*, white, autumn, 10 ft., Malaya; *primulinum*, white, winter, 6 ft., China.

**HARDY SPECIES:** *J. humile*, yellow, summer, 3 ft., Trop. Asia; *humile revolutum*, yellow, 15 ft.; *floridum*, yellow, summer, 10 ft., China; *fruticans*, yellow, summer, 10 ft., Orient; *nudiflorum*, yellow, winter, 10 ft., China and Japan; *officinale* (Jasmine), white, summer, 15 to 20 ft., Persia; *officinale foliis-aureis*, variegated.

**Jaundice-berry** (*Berberis vulgaris*).—See *Berberis*.  
**Javanese Rhododendron** (*Rhododendron javanicum*).—See *Rhododendron*.

**Java Primrose** (*Primula imperialis*).—See *Primula*.

**Jeffersonia** (*Twin-leaf*).—Ord. *Berberidaceæ*. Hardy perennial herb. First introduced 1792.

**CULTURE**: Soil, peaty. Position, shady edges of rockery or borders. Plant, Oct., March or April. Propagate by seeds sown 1-16 in. deep in sandy soil in cold frame July to Sept.; division of roots Oct. or March.  
**SPECIES CULTIVATED**: *J. binnata* (*Syn. diphylla*), white, spring, 6 in., N. America.

**Jerusalem Artichoke** (*Helianthus tuberosus*).—See *Helianthus*.

**Jerusalem Cherry** (*Solanum Pseudo-capsicum*).—See *Solanum*.

**Jerusalem Cowslip** (*Pulmonaria officinalis*).—See *Pulmonaria*.

**Jerusalem Cross** (*Lychnis chalcedonica*).—See *Lychnis*.

**Jerusalem Sage** (*Phlomis fruticosus*).—See *Phlomis*.

**Jessamine** (*Jasminum officinalis*).—See *Jasminum*.

**Jesuit's Nut** (*Trapa natans*).—See *Trapa*.

**Jew-bush** (*Pedilanthus tithymaloides*).—See *Pedilanthus*.

**Jew's Mallow** (*Kerria japonica*).—See *Kerria*.

**Job's Tears** (*Coix lachryma*).—See *Coix*.

**Jonquil** (*Narcissus jonquilla*).—See *Narcissus*.

**Judas-tree** (*Cercis siliquastrum*).—See *Cercis*.

**Juglans** (*Walnut-tree; Butter-nut*).—Ord. *Juglandaceæ*. Hardy deciduous nut-bearing & orn. foliage trees. Walnut introduced in 1592.

**CULTURE OF WALNUT**: Soil, sandy & calcareous, or stiff loams on gravelly subsoil. Position, S. or S.W., open, not shaded by trees or buildings. Plant, Oct. or Nov., placing roots 3 to 4 in. below surface of ground previously deeply trenched. Pruning unnecessary. Apply liquid manure to established trees from June to Oct., or  $\frac{1}{4}$  lb. of superphosphate of lime to the square rod in June. Gather nuts for pickling before shell gets too hard. Ripe nuts place in thin layers in dry position till husks fall off, then pack in alternate layers with sand in barrels, casks, or jars sprinkled with salt. Grafted or budded trees bear earlier than seedlings. Culture of other species, same as above.

**USEFUL DATA**: *Juglans regia* & *nigra* good for town gardens. Timber used for making gun stocks, furniture & veneering. Value of timber, 1s. to 2s. 6d. per cubic foot. One bushel of nuts will yield 5,000 seedlings. Average life of a walnut tree, 300 years. Average weight of timber per cubic foot, 47 lb.

Propagate by seed (nuts) sown 2 in. deep in light soil outdoors in Nov., transplanting seedlings following Oct.; budding in Aug.; graft in March.

**SPECIES CULTIVATED**: *J. cinerea* (*Butter-nut*), 30 ft., N. America; *nigra* (*Black Walnut*), 30 ft., N. America; *regia* (*Walnut*), 50 ft., Caucasus to Himalayas.

**June-berry** (*Amelanchier canadensis*).—See *Amelanchier*.

**Juniper** (*Juniperus communis*).—See *Juniperus*.

**Juniperus** (*Juniper; Savin*).—Ord. *Coniferæ*. Hardy evergreen coniferous trees. Habit, pyramidal or bushy. Leaves, needle-shaped, narrow, scale-like, green or variegated.

**CULTURE**: Soil, good ordinary. Position, open, well-drained shrub-

beries or lawns for erect species, rockeries or banks for dwarf species. Plant, Sept., Oct., or Nov.

**HEDGE CULTURE:** Soil, ordinary, trenched two spits deep & 3 ft. wide. Plant, Sept. to Nov., 18 in. apart. Ht. 1 to 3 ft. Junipers form excellent screen trees. Propagate by seeds sown  $\frac{1}{2}$  in. deep in beds of light soil in cold frame in April, transplanting seedlings singly into small pots when 2 in. high & planting outdoors a year afterwards; cuttings of young branches inserted in sandy soil in cold frame or under hand-light in Sept. or Oct.

**SPECIES CULTIVATED:** *J. bermudiana* (Bermuda Cedar), 20 ft., Bermuda; *sinensis*, 12 ft., China and Japan; *sinensis aurea*, leaves golden; *communis* (Common Juniper), 5 ft., Europe; *communis fastigiata* (Irish Juniper), 5 ft.; *excelsa*, 20 to 30 ft., Asia Minor; *excelsa stricta* (upright growing); *occidentalis*, 12 ft., N. America; *macrocarpa*, 12 ft., Orient; *oxycedrus*, 15 ft., S. Europe; *sabina* (Savin), 4 ft., Europe and N. America; *virginiana* (Red Cedar), 30 ft., N. America; and its varieties, *argentea*, *aureo-variegata*, *glauca*, *pendula*, and *viridis*.

**Jupiter's-flower** (*Lychnis Flos-Jovis*).—See *Lychnis*.

**Justicia.**—Ord. Acanthaceæ. Stove flowering & orn. foliage plants.

**CULTURE:** Compost, equal parts peat, loam, leaf-mould & sand. Position, well-drained pots in light stove Sept. to June, sunny frame June to Sept. Pot, March or April. Water moderately Sept. to March, freely other times. Temp., Sept. to March 55° to 65°; March to June, 65° to 75°. Prune shoots to 1 in. of base after flowering. Nip off points of young shoots occasionally May to Aug. to induce bushy growth. Apply liquid or artificial manure twice a week to plants in flower. Propagate by cuttings of young shoots inserted singly in small pots of sandy soil under bell-glass in temp. 75° March to July.

**SPECIES CULTIVATED:** *J. calycotricha* (Syn. *flavicomis*), yellow, winter, 2 ft., Brazil. See also the genus *Jacobinia*.

**Kadsura.**—Ord. Magnoliaceæ. Half-hardy trailing, flowering shrubs. Evergreen. First introduced 1846. Flowers succeeded by scarlet berries.

**CULTURE:** Soil, peaty. Position, well-drained borders against S. or W. walls. Plant, Sept. Oct., or April. Prune straggling shoots moderately in April. Propagate by cuttings of firm shoots 2 to 3 in. long, inserted in silver sand under bell-glass in cold greenhouse or frame, July to Oct.

**SPECIES CULTIVATED:** *K. chinensis*, white, summer, 6 ft., Japan; *chinensis variegata*, leaves variegated.

**Kæmpferia.**—Ord. Scitaminaceæ. Stove herbaceous perennials. Orn. foliage. First introduced 1728. Flowers fragrant. Leaves, egg or lance-shaped, green bordered or flaked with white above and purple beneath.

**CULTURE:** Compost, equal parts fibrous loam & peat with little silver sand and charcoal. Position, well-drained pots in light part of stove during growing period; on their sides under staging in dry part of house during resting period. Pot, Feb. or March. Water freely, March to Sept., keep almost dry afterwards. Temp., March to Sept. 65° to 75°; Sept. to March 55° to 60°. Growing period, Feb. to Oct. Resting period, Oct. to Feb. Propagate by division of root stocks in Feb.

**SPECIES CULTIVATED:** *K. Gilbertii*, leaves variegated white and green, 1 ft., Burma; *Kirkii*, rosy purple, Aug., 6 in., Zanzibar; *rotunda*, white and violet, Aug., 1 ft., India.

**Kæmpfer's Iris** (*Iris lævigata*).—See *Iris*.

**Kalanchoe.**—Ord. Crassulacæ. Greenhouse perennial flowering plants. First introduced 1781. Flowers, fragrant.

**CULTURE:** Compost, equal parts sandy loam, brick rubble, dried cow manure & river sand. Position, well-drained pots in light greenhouse, close to glass. Pot, March. Water freely April to Aug., moderately Aug. to Nov., very little afterwards. Prune old plants after flowering, shortening shoots to 1 in., & repot when new shoots are 1 in. long. Temp., March to Sept. 55° to 65°; Sept. to March 45° to 50°. Propagate by seeds sown in well-drained pots or pans of sandy soil, just covered with fine mould, in temp. 60° to 70° in March or April, seedlings to be kept close to glass & have little water; cuttings of shoots 2 to 3 in. long, exposed to sun for few days, then inserted in June, July, or Aug. in well-drained pots of sandy soil, placed on greenhouse shelf & given very little water.

**SPECIES CULTIVATED:** *K. carnea*, flesh, summer, 18 in., S. Africa; *flammea*, orange-scarlet, summer, 2 ft., Somaliland; *marmorata* (Syn. *grandiflora*), white, summer, 2 ft., Abyssinia.

**Kale** (Borecole).—See Brassica.

**Kalmia** (Calico Bush; American Laurel; Swamp Laurel; Mountain Laurel; Sheep Laurel).—Ord. Ericacæ. Hardy evergreen flowering shrubs. First introduced 1734

**CULTURE:** Soil, sandy peat & leaf-mould free from lime or chalk. Position, moist & cool, partially shaded. Plant Sept., Oct., April, or May. Pruning unnecessary. Foliage of *K. latifolia* poisonous to cattle.

**POT CULTURE:** Compost, two parts sandy peat, one part leaf-mould & sand. Position, well-drained pots in greenhouse (temp. 45° to 55°) from Nov. to May; sunny place outdoors afterwards. Water moderately in winter, freely other times. Propagate by seed sown in April or Oct., 1-16 in. deep, in well-drained shallow pans of sandy peat in cold frame; cuttings of young shoots inserted in pots of sandy peat under bell-glass in shady cold frame April to Aug.

**SPECIES CULTIVATED:** *K. angustifolia* (Sheep Laurel), crimson, June, 3 ft., N. America, and its varieties *glauca*, *lucida*, *rosea* and *rubra*; *glauca*, lilac purple, May, 2 ft., N. America; *latifolia* (Calico Bush), rose, summer, 6 to 10 ft., N. America, and its varieties *myrtifolia* and *polypetal*.

**Kalosanthes.**—See *Crassula* & *Rochea*.

**Kangaroo Vine** (*Vitis antarctica*).—See *Vitis*.

**Karatas.**—Ord. Bromeliacæ.—Stove flowering & orn. foliated plants. Evergreen. First introduced 1739. Bracts, green, red, or crimson. Leaves, strap-shaped, green above, purplish or whitish beneath, spiny.

**CULTURE:** Compost, equal parts fibrous loam, rough peat, leaf-mould, & silver sand. Position, well-drained pots in light, moist part of stove. Pot, Feb. or March. Water moderately in winter, freely at other times. Temp., March to Sept. 70° to 80°; Sept. to March 65° to 75°. Propagate by large-sized off-shoots inserted singly in small pots of sandy peat, in temp. of 85°, Feb. or April.

**SPECIES CULTIVATED:** *K. acanthocrateo*, blue, summer, 1 ft., Brazil; *ampullacea*, blue and white, summer, 1 ft., Brazil; *Carolinæ*, blue and green, summer, 18 in., Brazil; *fulgens*, blue, summer, 1 ft., Brazil; *humilis*, purple, summer, 18 in., Mexico; *Plumieri*, purple, summer, 18 in., Brazil.

**Kenilworth Ivy** (*Linaria cymbalaria*).—See *Linaria*.

**Kennedy** (Coral Creeper; Australian Bean Flower).—Ord. Leguminosæ. Greenhouse flowering & twining plants. Evergreen. Nat. Australia. First introduced 1788.



**CULTURE:** Compost, equal parts peat & loam, little silver sand. Position, pots, with shoots trained to trellis, or planted out in beds, & shoots trained up rafters. Pot or plant, Feb. or May. Water freely March to Sept., moderately at other times. Prune straggling plants into shape in Feb. Apply weak stimulants occasionally to healthy plants in flower. Temp., March to Sept. 55° to 65°; Sept. to March 40° to 50°. Propagate by seeds sown  $\frac{1}{2}$  in. deep in well-drained pots of light sandy soil in temp. of 55° to 65° in March or April; cuttings of firm young shoots, 2 to 3 in. long, inserted in well-drained pots of sandy peat under bell-glass in temp. 55° to 65°, March to July.

**SPECIES CULTIVATED:** *K. coccinea*, scarlet, summer, 10 to 15 ft.; prostrata, scarlet, spring, 3 ft. See also the genus *Hardenbergia*.

**Kentia** (Umbrella Palm).—Ord. Palmaceæ. Stove palms. Leaves, feather-shaped, graceful.

**CULTURE:** Compost, equal parts loam & peat, little silver sand. Position, well-drained pots in stove. Pot, Feb. or March. Temp. 70° to 85° March to Sept.; 60° to 65° Sept. to March. Water moderately Oct. to Feb., freely afterwards. Apply weak liquid manure to healthy plants once a week, May to Sept. Syringe plants daily. Propagate by seeds sown 1 in. deep in light soil in temp. 80°, Feb. or March.

**SPECIES CULTIVATED:** *K. australis*, 6 to 10 ft., Lord Howe's Island. See also the genera *Howea* and *Hedyscepe*.

**Kentucky Coffee-tree** (*Gymnocladus canadensis*). — See *Gymnocladus*.

**Kermes Oak** (*Quercus coccifera*).—See *Quercus*.

**Kerria** (Jew's Mallow).—Ord. Rosaceæ. Hardy deciduous flowering shrub. Nat. Japan. First introduced 1700.

**CULTURE:** Soil, good ordinary. Position, against S. or W. walls or fences, or in mixed shrubberies. Plant, Oct. to March. Prune in May or June, cutting off old or weak shoots only.

**POT CULTURE:** Compost, two parts loam, one part leaf-mould & sand. Pot, Oct. Place in cold greenhouse & water moderately. After flowering, place plants in sunny position outdoors till Oct. Forcing: place plants in temp. 55° to 65° in Jan. Water moderately. Transfer plants to sunny position outdoors after flowering. Propagate by cuttings of young shoots 2 to 3 in. long, inserted in sandy soil under bell-glass or hand-light or in cold frame in summer; layering shoots in Oct.

**SPECIES CULTIVATED:** *K. japonica* (Syn. *Cochorus japonica*), yellow, May, 6 to 10 ft., China, and its varieties *flore-pleno* (double), *foliis argenteis variegatis* (silver-leaved) and *foliis aureis variegatis* (golden-leaved).

**Kidney Bean** (*Phaseolus vulgaris*).—See *Phaseolus*.

**Kidney-bean-tree** (*Wistaria sinensis*).—See *Wistaria*.

**Kidney Fern** (*Trichomanes reniforme*).—See *Trichomanes*.

**Kidney Vetch**.—See *Anthyllis*.

**Killarney Fern** (*Trichomanes radicans*).—See *Trichomanes*.

**Kilmarnock Willow** (*Salix Caprea pendula*).—See *Salix*.

**King Fern** (*Osmunda regalis*).—See *Osmunda*.

**King-plant**.—See *Anæctochilus*.

**King's Flower** (*Eucomis regia*).—See *Eucomis*.

**King's Spear** (*Asphodelus lutea* & *A. ramosa*).—See *Asphodelus*.

**Kitaibelia**.—Ord. Malvaceæ. Hardy perennial herb. Flowering & orn. foliage. First introduced 1801. Foliage, vine-like.

**CULTURE:** Soil, ordinary. Position, open, large border or shrubbery. Plant, Oct. or April. Propagate by division of roots in Oct. or April; seeds sown outdoors in April.

**SPECIES CULTIVATED:** *K. vitifolia*, white and rose, summer, 6 to 8 ft., E. Europe.

**Kleinia** (Candle Plant).—Greenhouse perennials with fleshy cylindrical bluish grey leaves. *K. articulata* (Candle Plant), a curious and interesting plant for culture in windows. *K. repens* used for carpet bedding in summer. Nat. S. Africa. First introduced, 1759.

**CULTURE:** Compost, equal parts loam, peat, leaf-mould, broken crocks, and silver sand. Pot in spring. Position, sunny part of greenhouse or near windows in rooms. Temp. Oct. to March 45° to 50°; March to Oct. 55° to 60°. Water sparingly Oct. to March, freely in summer. For outdoor culture, plant out late in May & lift again in Oct. Propagate by cuttings of shoots dried for a few hours before insertion and then inserted in gritty compost any time during summer.

**SPECIES CULTIVATED.**—*K. articulata* (Syn. *Cacalia articulata*), Candle Plant, yellow, 18 in., summer, S. Africa; *ficoides*, white, summer, creeping, S. Africa; *fulgens*, orange and red, May, 2 ft., S. Africa; *Galpini*, orange, autumn, 1 ft., S. Africa; *nerifolia*, yellow, winter, 4 ft., Canaries; *pendula*, vermilion and orange, autumn, Somaliland; *repens*, white, June, creeping, S. Africa.

**Knee Holly** (*Ruscus aculeatus*).—See *Ruscus*.

**Knight's Star Lily** (*Hippeastrum equestre*).—See *Hippeastrum*.

**Kniphofia** (Red-hot Poker Plant; Torch Lily; Club Lily).—Ord. Liliaceæ. Hardy herbaceous perennials. Plants of noble aspect and with showy flowers borne in spikes on tall stems. Formerly known under the generic name of *Tritoma*.

**CULTURE:** Soil, sandy, well enriched with manure. Position, sunny, well-drained borders. Plant, Nov. or April. Top-dress annually in April with well-decayed manure. Water freely in dry weather during spring & summer. Apply liquid manure once a week to established plants in summer. Protect in severe weather by covering of dry leaves or straw. Propagate by seeds sown  $\frac{1}{2}$  in. deep in sandy soil in shallow boxes in cold frame in March or April; transplanting seedlings outdoors when large enough to handle; division of roots in Nov. or April.

**SPECIES CULTIVATED:** *K. aloides* (Syn. *Tritoma uvaria*), red and yellow, autumn, 4 ft., S. Africa; *Burchellii*, scarlet, yellow and green, autumn, 3 ft., S. Africa; *carnosa*, apricot yellow, Sept., 1 ft., Abyssinia; *caulescens*, reddish salmon, July, 4 to 5 ft., S. Africa; *carposa*, yellow, Aug., 2 ft., Abyssinia; *corallina*, scarlet, autumn, 3 ft., hybrid; *Leitchlinii*, red and yellow, Aug., 4 ft., Abyssinia; *Macowanii*, orange-red, Aug., 1 ft., S. Africa; *Northiæ*, yellow and red, July, 1 ft., S. Africa; *pumila*, orange-red, Aug., 18 in., S. Africa; *Rooperi*, orange-red, summer, 2 ft., Kaffraria; *Tuckii*, yellow and red, June, 4 ft., Cape Colony.

**Knotted Marjoram** (*Origanum Marjoram*).—See *Origanum*.

**Knotweed.**—See *Polygonum*.

**Kochia** (Summer or Mock Cypress).—Ord. Chenopodiaceæ. Hardy orn.-leaved annual. Flowers, uninteresting. Leaves, narrow & green, changing to a brilliant crimson-purple tint in early autumn.

**CULTURE:** Soil, ordinary. Position, sunny borders. Sow seeds in light soil in a temp. of 55° in March; transplant seedlings into pots or boxes, harden off in a cold frame, & plant out 2 ft. apart each way in June.

**SPECIES CULTIVATED:** *K. scoparia*, 2 to 3 ft., Europe

**Kœlreuteria.**—Ord. Sapindaceæ. Hardy deciduous flowering tree. Nat. N. China. First introduced 1763. A graceful tree for lawn or shrubbery.

**CULTURE:** Soil, ordinary. Position, open but sheltered. Plant, Oct. to March. Pruning unnecessary. Propagate by cuttings of young

shoots, inserted in sandy soil under hand-light or in cold frame in April or May; layering branches in Sept. or Oct.

**SPECIES CULTIVATED:** *K. bipinnata*, yellow, summer, 10 ft., China; *paniculata*, yellow, July, 10 to 15 ft., China.

**Kohl-Rabi.**—See *Brassica*.

**Kolpakowsky's Tulip** (*Tulipa kolpakowskyana*).—See *Tulipa*.

**Korolkow's Tulip** (*Tulipa Korolkowi*).—See *Tulipa*.

**Kramer's Lily** (*Lilium Kramerii*).—See *Lilium*.

**Kum-quat** (*Citrus japonica*).—See *Citrus*.

**Lablquat.**—Ord. Leguminosæ. Greenhouse flowering shrub. Nat. Australia. First introduced 1840.

**CULTURE:** Compost, equal parts peat, loam, & sand. Position, well-drained pots in light, sunny greenhouse. Pot, March. Prune into shape, Feb. Water moderately, Oct. to April; freely afterwards. Temp., March to Sept. 55° to 65°; Sept. to March 45° to 55°. Requires plenty of air, April to Oct. Propagate by cuttings of firm shoots inserted in sand, under bell-glass in cool greenhouse, June to Aug.

**SPECIES CULTIVATED:** *L. lanceolata*, yellow, spring, 4 to 6 ft.

**Labrador Tea-plant** (*Ledum latifolium*).—See *Ledum*.

**Laburnum** (Golden Chain).—Ord. Leguminosæ. Hardy deciduous flowering trees. First introduced 1596.

**CULTURE:** Soil, ordinary. Position, sunny shrubberies. Plant, Oct. to March. Prune directly after flowering. May also be trained over pergolas, arches, etc. Propagate by seeds sown  $\frac{1}{4}$  in. deep outdoors in March or April; by layers, Oct. or Nov.; varieties by grafting in March; or budding in July on common species. Seeds are poisonous.

**SPECIES CULTIVATED:** *L. Adami* (Purple Laburnum), yellow or purple, spring, 15 to 20 ft., a graft hybrid between *Cytisus purpureus* and *Laburnum vulgare*, often has its racemes of flowers half-yellow and half-purple; *alpinum* (Scotch Laburnum), yellow, June, 15 to 20 ft., Europe, and its varieties *Parkii* and *Wateri*. *L. vulgare* (Common Laburnum or Golden Chain), yellow, spring, 20 to 30 ft., Europe, and its varieties *foliis-aureis* or *aureum* (golden-leaved), *quercifolium* (Oak-leaved), *Carlieri* (long racemes), *serotinum* (late flowering), *monstrum fastigiatum* (erect growing).

**Lace-bark Pine** (*Pinus burgeana*).—See *Pinus*.

**Lace Fern** (*Cheilanthes myriophylla elegans*).—See *Cheilanthes*.

**Lace-leaf Plant** (*Ouvirandra fenestralis*).—See *Ouvirandra*.

**Lachenalia** (Cape Cowslip; Leopard Lily).—Ord. Liliacæ. Greenhouse bulbous flowering plants. Deciduous. Nat. S. Africa. First introduced 1752.

**CULTURE:** Compost, two parts fibrous sandy loam, half-part leaf-mould, half-part decayed cow manure, & one part fiver or coarse silver sand. Position, well-drained pots, pans, or baskets; light. Pot, Aug., placing six bulbs  $\frac{1}{2}$  in. deep in a 5 in. pot, or 1 to 2 in. apart in pans or baskets. After potting, water & place pots in cold frame until Nov., then remove to airy shelf in greenhouse. Temp., 45° to 55°. Water moderately when growth begins; freely when well advanced. Apply weak stimulants occasionally when flower spikes form; discontinue when in bloom. After flowering gradually withhold water, place pots in sunny position outdoors, & keep quite dry to ripen bulbs. Growing period, Sept. to June; resting period, June to Sept. Forcing (*L. tricolor*): Pot & treat as above until Nov., then remove into temp. of 55° to 65°. Propagate by offsets removed & placed in separate pots at potting time.

**SPECIES CULTIVATED:** *L. aurea*, yellow, spring, 1 ft.; *lilacina*, lilac, spring,

6 in.; pendula, yellow, red, and purple, 6 in.; tricolor, red and yellow, spring, 1 ft.; tricolor, quadricolor, red, green, and yellow; violacea, violet and green, spring, 1 ft.

**Lactuca** (Flowering and Edible Lettuce).—Ord. Compositæ. Hardy border perennials & salad vegetables. Edible lettuce introduced 1562.

**CULTURE OF FLOWERING LETTUCE:** Soil, sandy loam. Position, open, sunny, dryish border. Plant, Oct. or March. Propagate by seeds sown  $\frac{1}{2}$  in. deep outdoors in April; division of roots in March.

**CULTURE OF EDIBLE LETTUCE:** Soil, light, rich, deeply dug, well manured. Position, south borders for spring & winter crops; open, sunny for summer crops. Sow seeds  $\frac{1}{4}$  in. deep in light soil in temp. 65° in Jan., Feb., or March, for planting outdoors in March, April, & May; in bed of rich soil in sunny spot outdoors in March, April, May, & June, for planting out in April, May, June, & July; outdoors in Aug. & Sept., for planting out in Sept. & Oct.; in cold frames in Oct., for planting out in March. Plant, 10 in. apart in rows 12 in. asunder. Blanch cos varieties by tying bast round outside a week before required for use. Surround each newly planted seedling with a cordon of soot or lime. Water freely when first planted, if weather dry. Cabbage varieties best for poor dry soil; cos for heavy & rich soil. Suitable artificial manures: Superphosphate of lime applied before planting at the rate of 1½ lb. per square rod; nitrate of soda when plants begin to grow freely, at rate of 1½ lb. to square rod—apply latter in showery weather. For producing seed, plant in poor soil in April or May. Seed retains vegetative powers for four years; best heart produced by plants grown from two-year-old seed. Winter lettuce ought to be grown in cold frames during winter, & planted out in March. Crop reaches maturity in 10 to 12 weeks. Seeds germinate in 8 days.

**MARKET CULTURE:** Soil, deeply ploughed or dug & well manured previous winter. Manures: 20 tons of stable dung and 3 cwt. superphosphate per acre ploughed in during winter. Apply 1 cwt. of nitrate of soda per acre when crop is well up. Sow seeds under glass in Feb. and plant out 9 in. apart in April. Sow in March and onwards in open, & winter crops in Aug. One pound of seed sufficient for an acre. Blanch cos lettuce by tying with bast 10 days before cutting. Market by dozen or score. Average yield per acre, 1,400 score. One ounce of seed will yield 3,000 plants. Lettuce seeds retain vegetative powers for 5 years, and germinate in 8 days. Average price per doz., 1s. to 3s.

**SPECIES CULTIVATED:** *L. alpina* (Syn. *Mulgedium alpinum*), blue, Aug., 3 ft., N. Europe; *macrohiza* (Syn. *Mulgedium macrohiza*), purple, autumn, 3 ft., Himalayas; *Plumieri* (Syn. *Mulgedium Plumieri*), purple, summer, 8 ft., Pyrenees; *Scariola* (Syn. *Sativa*), parent of the cultivated edible lettuce, Europe (Britain).

**Ladder Fern** (*Nephrolepis exaltata*).—See *Nephrolepis*.

**Lad's-love** (*Artemesia Abrotanum*).—See *Artemesia*.

**Lady Fern** (*Asplenium Filix-foemina*).—See *Asplenium*.

**Lady Grass** (*Phalaris arundinacea variegata*).—See *Phalaris*.

**Lady Orchis** (*Orchis purpurea*).—See *Orchis*.

**Lady-in-the-Bower** (*Nigella damascena*).—See *Nigella*.

**Lady's Bow** (*Clematis vitalba*).—See *Clematis*.

**Lady's Fingers** (*Anthyllis vulneria*).—See *Anthyllis*.

**Lady's Garters** (*Phalaris arundinacea variegata*).—See *Phalaris*.

**Lady's Hair** (*Briza media*).—See *Briza*.

**Lady's Pincushion** (*Armeria maritima*).—See *Armeria*.

**Lady's Seal** (*Polygonatum multiflorum*).—See *Polygonatum*.

**Lady's Slipper** (*Cypripedium calceolus*).—See *Cypripedium*.

**Lælia**.—Ord. Orchidaceæ. Stove orchids. Evergreen. First introduced 1831.

**CULTURE**: Compost, two parts coarse fibrous peat, one part living sphagnum moss, charcoal, & sand. Position, pots, pans, or hanging baskets, or on blocks with moss only. Pot or re-block, Feb. or March. Fill pots two-thirds with broken crocks, & keep plants well above rim. Secure plants and moss to blocks by means of copper wire. Water pot & basket plants three times weekly, March to Aug.; once weekly, Aug. to Nov. & Feb. to March; once a month other times. Plants on blocks daily, March to Aug.; & twice a week, Aug. to Nov. & Feb. & March; once a week other times. Syringe freely in summer. Temp., March to Sept. 75° to 85°; Sept. to March 60° to 70°. Growing period, spring to winter. Resting period, winter. Flowers appear top of new pseudo-bulb. Propagate by division of pseudo-bulbs at potting time.

**SPECIES CULTIVATED**: *L. albidâ*, white and rose, fragrant, winter, Mexico; *anceps*, rose, crimson, purple, and yellow, winter, Mexico, and its varieties *alba* (white), *Amesiana* (white and purple), *peruviana* (rosy pink and mauve purple), and *sanderiana* (white and crimson); *autumnalis*, rose, purple, white and yellow, fragrant, autumn, Mexico; *cinnabarina*, red, spring, Brazil; *crispa*, white and purple, autumn, Brazil; *digbyana*, yellow and white, summer, Honduras; *doromaniana*, brown and purple, spring, Brazil; *purpurea*, purple, autumn, Mexico; *harpophylla*, red, April and May, Brazil; *majalis*, rose and purple, summer, Mexico; *monophylla*, orange-scarlet and purple, autumn, Jamaica; *Perrinii*, rosy purple, magenta, and yellow, autumn, Brazil; *pumila*, rosy purple, Sept. and Oct., Brazil, and its varieties *dayana* (purple), and *præstans* (deep purple); *purpurata*, white, yellow, and rosy purple, spring, Brazil; *superbiens*, rose, lilac, purple, and yellow, winter, Guatemala; *tenebrosa*, coppery bronze and purple, spring, Bahia. Numerous hybrids. See trade lists.

**Lælio-Cattleya**.—A race of orchids obtained by the intercrossing of species of the genus *Cattleya* with those of the genus *Lælia*. This new race of bigeneric hybrids require the same cultural conditions as *Cattleyas*, which see. Upwards of 300 to 400 hybrids have been obtained, and their names will be found in trade lists.

**Lagenaria** (Bottle Gourd; Trumpet Gourd).—Ord. Cucurbitaceæ. Hardy orn. fruiting annual. Nat. Trop. Asia & Africa. First introduced 1597. Fruit, not edible, oblong, bottle-like, 1 to 6 ft. long.

**CULTURE**: Soil, rich ordinary. Position, beds at foot of low sunny walls, fences, or arbours, or on the summit of sunny banks, shoots growing at will. Plant, June. Water freely, & apply stimulants when fruit has formed. No pinching of shoots required. May also be grown in pots in sunny greenhouses, training shoots up roof. Propagate by seeds sown ½ in. deep in light soil in temp. 55° to 65° in April.

**SPECIES CULTIVATED**: *L. vulgaris*, white, summer, 10 ft.

**Lagerstrœmia** (Indian Lilac; Queen's Flower).—Ord. Lythraceæ. Stove & greenhouse evergreen flowering shrubs. First introduced 1792.

**CULTURE**: Compost, equal parts loam & peat, little sand. Position, well-drained pots in light part of greenhouse or stove. Pot. Feb. or March. Prune, slightly in Oct. or Nov. Water freely, March to Oct.; very little Oct. to March. Syringe twice daily, March to Sept. Temp., stove species, 55 to 60°, Oct. to March; 65° to 75°, March to Oct.; greenhouse species, Oct. to March, 45° to 55°; March to Oct., 60° to 70°. Propagate by cuttings of firm side shoots, inserted in sandy peat, under bell-glass in temp. of 70° to 80° in March, April, Aug., or Sept.

**STOVE SPECIES:** *L. Flos-Reginæ* (Queen's Flower), rosy purple, summer, 10 to 20 ft., Trop. Asia.

**GREENHOUSE SPECIES:** *L. indica* (Indian Lilac), pink, summer, 6 to 10 ft., Trop. Asia; *indica alba*, white.

**Lagurus** (Hare's-tail Grass).—Ord. Gramineæ. Hardy orn. annual grass. Inflorescence borne in egg-shaped heads, white, downy; June to Sept. Very useful in dried state for winter decorations.

**CULTURE:** Soil, ordinary. Position, open dryish borders. Gather inflorescence for drying in Aug. Propagate by seeds sown  $\frac{1}{2}$  in. deep outdoors in April, where plants are required to grow, or in well-drained pans of light soil in cold frame in Oct., planting outdoors in April.

**SPECIES CULTIVATED:** *L. ovatus*, 1 ft., S. Europe (Britain).

**Lamarckia.**—Ord. Gramineæ. Hardy orn. annual grass. First introduced 1770. Inflorescence plume-like, silky & golden; June to Sept. Useful in a dried state for winter decorations.

**CULTURE:** Soil, ordinary. Position, patches in open sunny borders. Gather inflorescence for winter use in Aug. Propagate by seeds sown  $\frac{1}{2}$  in. deep outdoors in April where plants are required to grow, or in well-drained pans of light soil in cold frame in Oct., planting outdoors in April.

**SPECIES CULTIVATED:** *L. aurea*, 8 in., S. Europe.

**Lamb Mint** (*Mentha viridis*).—See *Mentha*.

**Lamb's Lettuce** (*Valerianella olitoria*).—See *Valerianella*.

**Lamb's Tongue** (*Stachys lanata*).—See *Stachys*.

**Lamium** (Dead-Nettle).—Ord. Labiatae. Hardy perennial herbs. Flowering & orn. foliage. Leaves, egg or heart-shaped, with serrated margins, golden, bronze, green, & white.

**CULTURE:** Soil, ordinary. Position, dryish, sunny borders. *L. aureum* very effective dwarf edging plant for borders in summer. Plant, Oct. or April. Propagate by division of roots, Oct. or March.

**SPECIES CULTIVATED:** *L. maculatum aureum*, leaves variegated with golden yellow, 1 ft., Europe (Britain).

**Land Cress** (*Barbarea præcox*).—See *Barbarea*.

**Lantana** (Jamaica Mountain Sage; Surinam Tea-plant).—Ord. Verbenaceæ. Greenhouse & half-hardy evergreen flowering shrubs. First introduced 1690.

**POT CULTURE:** Compost, two parts loam, one part peat, leaf-mould, or decayed manure, little sand, & charcoal. Position, well-drained pots in light greenhouse. Pot, firmly, March. Water freely, April to Oct.; moderately, Oct. to April. Prune into shape, Feb. Temp., Oct. to March, 45° to 55°; March to Oct., 55° to 65°. Apply weak stimulants once or twice weekly, May to Sept.

**OUTDOOR CULTURE:** Soil, rich sandy. Position, sunny dryish beds or borders. Plant, June. Lift in Sept.; repot & replace in greenhouse for winter. Propagate by seeds sown 1-16 in. deep in well-drained pots or pans of sandy peat & leaf-mould, in temp. of 70° to 80° in Feb., March, or April; by cuttings of firm shoots 2 to 3 in. long inserted in small pots of sandy peat under bell-glass in temp. of 55° to 65° in Aug. or Sept.; or by cuttings of young side shoots 2 in. long inserted as above in temp. 60° to 70°, March or April.

**SPECIES CULTIVATED:** *L. Camara*, violet, summer, 6 to 8 ft., Trop. America; *nivea*, white, summer, 2 to 3 ft., Trop. America; *trifolia*, red, summer, 3 ft., Trop. America. Numerous varieties superior to species in trade lists.

**Lantern-flower** (*Abutilon Darwinii*).—See *Abutilon*.

**Lapageria.**—Ord. Liliaceæ. Greenhouse & half-hardy flowering climber. Evergreen. Nat. Chili. First introduced 1847.

**INDOOR CULTURE:** Compost, three parts fibrous peat, one part loam, one part equal proportions of sand & charcoal. Position, shady in large well-drained pots, tubs, beds, or borders, with shoots trained to trellises or up walls or rafters of greenhouse. Pot or plant, Feb. or March. Good drainage very essential. Water freely, April to Sept.; moderately afterwards. Syringe daily from March until flowers develop. Prune away dead or sickly shoots only in March. Ventilate freely, April to Oct. Temp., Oct. to March, 40° to 50°; March to Oct., 55° to 65°. Foliage must be kept free from insects.

**OUTDOOR CULTURE:** Soil, equal parts peat & loam. Position, west walls, sheltered, in S. of England only. Plant, Oct. or March, in well-drained bed. Protect in severe weather. Water freely in dry weather. Propagate by seeds sown  $\frac{1}{2}$  in. deep in well-drained pots or pans of sandy peat & leaf-mould in temp. of 55° to 65° in March or April; by layering strong shoots in sandy peat in spring or autumn.

**SPECIES CULTIVATED:** *L. rosea*, rose, summer, 15 to 20 ft.; and its varieties *albiflora* (white), and *superba*, crimson.

**Lapeyrousia.** — Ord. Iridaceæ. Hardy bulbous flowering plants. Nat. Cape of Good Hope. First introduced 1791.

**OUTDOOR CULTURE:** Soil, sandy loam & leaf-mould. Position, sunny well-drained borders or rockeries. Plant, bulbs 4 in. deep & 3 in. apart, Sept. to Oct.

**POT CULTURE:** Compost, equal parts sandy loam, leaf-mould, & sand. Position, cold frame, Sept. to Feb.; cool or cold greenhouse afterwards. Pot, Sept., placing six bulbs in a 6-in. pot, & cover with cinder ashes till growth begins. Water moderately when new growth commences; keep dry after flowering till potting time. Propagate by offshoots removed at planting or potting time, & treated as old bulbs.

**SPECIES CULTIVATED:** *L. cruenta* (Syn. *Anomatheca cruenta*), crimson, summer, 1 ft., hardy; *grandiflora*, red and yellow, summer, 1 ft., tender, best grown in pots.

**Larch** (*Larix europæa*).—See *Larix*.

**Lardizabala.**—Ord. Berberidaceæ. Hardy evergreen flowering climber. Orn. foliage. Nat. Chili. First introduced 1848.

**CULTURE:** Soil, equal parts sandy loam & peat. Position, well-drained border at base of S. or W. walls. Plant, Sept., Oct., March, or April. Prune away dead or straggly shoots only in April. Suitable also for growing against walls in cold greenhouses or conservatories. Propagate by cuttings of firm shoots, 1 to 2 in. long, inserted in sandy loam & peat in well-drained pots under bell-glass, in temp. 45° to 55°, spring or autumn.

**SPECIES CULTIVATED:** *L. biternata*, purple, autumn, 15 to 20 ft.

**Larix** (Larch).—Ord. Coniferæ. Hardy deciduous trees. Grown largely for timber purposes. First introduced 1629.

**CULTURE:** Soil, gravelly, stony, or any except heavy clay. Position, hill slopes or banks, sheltered from north; low, damp situations not suitable. Plant in autumn. Distance for planting, 3 to 4 ft. each way. Best age to plant, two years old. Land best trenched a good spit deep before planting. Number of trees required to plant an imperial acre at 3 ft., 4,840; at 4 ft., 2,722. Average cost of two-year-old trees per 1,000, 12s. 6d. Cost of planting trees per acre, 20s. Thinning should commence at five years old. Each imperial acre should contain about 1,200 trees at tenth year; 900 at fifteenth year; 600, at twentieth year; 450, at twenty-fifth year; and 300 in thirtieth year; latter number to be permanent crop. Trees attain maturity when 30 to 40 to 70

years old. Bears seed when 30 to 40 years old. Number of seeds in a pound, 5,000. Weight of a bushel of seed, 14 lb. Average height, 130 ft. Weight of timber per cubic foot, 38 lb. Number of cubic feet timber to a ton, 58. Average price per cubic foot, 9d. to 1s. Timber used for fencing, pit wood, scaffold poles, and boat building. Quantity of seeds to sow 100 ft. square of bed. Propagate by seeds sown 1 in. deep in beds 4 ft. wide with 1 ft. alleys between, in March. Transplant seedlings when two years old.

**SPECIES CULTIVATED:** *L. davurica*, 10 to 20 ft., Siberia; *europæa* (Common Larch), 60 to 120 ft., Europe; and its varieties *glauca pendula*, *pendula* and *sibirica* (Siberian Larch); *Griffithii* (Sikkim Larch), 30 to 40 ft., Himalayas; *leptolepis* (Japanese Larch), also known as *japonica*, 30 to 40 ft., Japan; *occidentalis* (American Larch), 100 to 150 ft., N. America; *pendula* (Black Larch), 70 to 80 ft., N. America.

**Larkspur.**—See *Delphinium*.

**Lasiandra.**—See *Tibouchina*.

**Lasthenia.**—Ord. *Compositæ*. Hardy annuals. First introduced 1834.

**CULTURE:** Soil, ordinary. Position, warm, sheltered rockeries, beds, or borders. Propagate by seeds sown  $\frac{1}{2}$  in. deep in April, where plants are required to grow for summer flowering; in Sept. or Oct., similarly for spring flowering.

**SPECIES CULTIVATED:** *L. glabrata* (Syn. *californica*), yellow, summer, 1 ft., California; *glabrata glaberrima*, yellow, June, 1 ft.

**Latania** (Bourbon Palm).—Ord. *Palmaceæ*. Stove Palms. Orn. foliage. Leaves, fan-shaped, bright green.

**CULTURE:** Compost, two parts loam, one part peat & a little charcoal & sand. Position, well-drained pots in shady part of stove. Pot, Feb. or March. Water freely, March to Sept.; moderately afterwards. Syringe once daily in winter; twice other times. Temp., March to Sept, 65° to 75°; Sept. to March, 55° to 65°. Propagate by seeds sown  $\frac{1}{2}$  in. deep in rich light soil in temp. of 80° to 90°, Feb., March, or April.

**SPECIES CULTIVATED:** *L. Commersonii*, 7 ft., Mauritius and Bourbon; *Verschaffeltii* (Syn. *L. aurea*), 7 ft., Mauritius.

**Lathyrus** (Everlasting Pea; Sweet Pea).—Ord. *Leguminosæ*. Hardy annuals & herbaceous perennial climbers. Sweet Pea introduced 1700.

**CULTURE OF SWEET PEA:** Soil, rich ordinary, well manured. Position, groups in sunny borders, shoots supported by tree branches; against sunny walls or fences; in sunny window boxes; in rows in open garden. Sow seeds three or four in a 3-in. pot in light soil in temp. 55 to 65° in March., transplanting seedlings outdoors in May; or 2 in. deep, and 3 to 6 in. apart in March or April, where plants are to grow. Water liberally in dry weather. Apply liquid manure once or twice weekly to plants in flower. Remove seed pods as they form, to ensure plenty of flowers. Grow other annual species thus.

**POT CULTURE:** Sow four seeds 1 in. deep in 3-in. pots in temp. 45° to 55° in March. Compost, two parts loam, one part leaf-mould & sand. Transfer four seedlings, when 2 in. high, to a 5 in. pot. Support shoots with small tree branches. Water liberally. Apply liquid manure when flowers show. Grow in cool greenhouse or window when in flower.

**EXHIBITION OR SPECIAL CULTURE:** Grow in circular groups 2 ft. wide and 3 ft. apart, or in trenches 18 in. wide and 2 ft. deep. Dig out soil to depth of 2 ft. Fork into subsoil 2 in. of rotten manure,



then fill up hole or trench to within 2 in. of top. Add a handful each of superphosphate and kaint to each hole, or lineal yard of trench, & fork in. Sow seeds 1 in. deep & 3 in. apart in March in groups or trenches; or five seeds in a three-inch pot of good soil in cold frames in March, & plant out seedlings 4 to 6 in. apart in April. Stake early. Feed with half-ounce of sulphate of ammonia to gallon of water. Give 3 gallons to each group or lineal yard of row once a week. Nip off points of shoots when top of sticks is reached. Remove spent blooms daily.

**CULTURE OF PERENNIAL SPECIES:** Soil, ordinary deep rich. Position, against sunny walls, fences, arbours, or tree stump or banks. Plant, Oct., Nov., March, or April. Apply liquid manure occasionally in summer. Water freely in dry weather. Prune away stems close to ground in Oct. Top-dress with decayed manure in March. Propagate by seeds sown in light soil in temp. 55° to 65° in March, transplanting seedlings outdoors in May; or outdoors in April; by division of roots in March or April.

**ANNUAL SPECIES:** *L. odoratus* (Sweet Pea), various, 6 to 10 ft., Italy; *tingitanus* (Tangier Pea), purple and red, summer, 4 to 6 ft., Tangier.

**PERENNIAL SPECIES:** *L. grandiflorus*, rosy crimson, summer, 5 ft., S. Europe; *latifolius* or *Sylvestris platyphyllus* (Everlasting Pea), red, crimson and violet, 8 to 10 ft., Europe; *latifolius albus*, white; *lætiflorus*, flesh, summer, 10 ft., California; *magellanicus* (Lord Anson's Pea), purple, June to Sept., 6 to 8 ft., Straits of Magellan; *rotundifolius*, rosy pink, summer, 6 ft., Asia Minor; *undulatus* (*Syn. Sibthorpii*), rosy purple, May and June, 2 to 3 ft., Dardanelles; *splendens*, carmine-red, summer, California.

**Lattice-leaf Plant** (*Ouvirandra fenestralis*).—See *Ouvirandra*.

**Laurel** (*Prunus Laurocerasus*).—See *Prunus*.

**Laurus** (Bay Tree; Sweet Bay; Victor's Laurel; Poet's Laurel).—Ord. Laurinææ. Hardy evergreen tree. Orn. foliage. First introduced 1562. Flowers, male & female born on separate trees, yellow, insignificant. Berries, dark purple; ripe, Oct. Leaves, lance-shaped, dark green, aromatic; used for flavouring purposes.

**CULTURE:** Soil, ordinary. Position, open, sunny lawns, sheltered shrubberies or borders. Plant, Sept., March, or April. Prune in April.

**CULTURE IN TUBS:** Compost, two parts loam, one part leaf-mould & sand. Position, well-drained in summer. Plant, Sept., Oct., March, or April. Place outdoors, May to Oct., cool greenhouse or other frost-proof place, Oct. to May. Water very little, Oct. to April; freely afterwards. Propagate by cuttings of shoots, 3 to 4 in. long, inserted in sandy soil under hand-lights in shady place outdoors, Aug., Sept., or Oct.; layering shoots in Sept. or Oct.

**SPECIES CULTIVATED:** *L. nobilis*, 20 to 40 ft., S. Europe.

**Laurustinus** (*Viburnum Tinus*).—See *Viburnum*.

**Lavandula** (Lavender).—Ord. Labiataæ. Hardy flowering shrubs. Evergreen. First introduced 1568. Flowers, highly esteemed for their fragrance in a dried state, and for distilling for perfumery purposes.

**CULTURE:** Soil, ordinary light. Position, warm, dry, & sunny. Plant, March or Sept., a foot apart in rows 2 ft. asunder. Water occasionally in dry weather. Prune straggly plants into shape, March or April. Gather blossoms for drying or distilling when they assume a brown colour. Dry slowly in shade & store in dry place. Leaves of all species fragrant. Propagate by small branches pulled off large

plants & inserted in ordinary soil in sunny position outdoors, April or Sept.; also by seeds sown outdoors in April.

**MARKET CULTURE:** Soil, deep gravelly loam, well manured. Position, southerly, sheltered from north and east. Plant offsets 1 ft. apart each way in Oct. Following transplant 3 ft. apart each way. For first two or three years inter-crop with radishes, lettuces, etc. Top-dress in autumn with 20 loads of decayed dung and 1 cwt. superphosphate per acre. Gather flowers early in Aug. in dry weather only. Average returns per acre, £20 to £40. Average duration of plantation, 10 years.

**SPECIES CULTIVATED:** *L. vera*, lilac or blue, fragrant, July and Aug., 3 ft., S. Europe.

**Lavatera** (Tree Mallow).—Ord. Malvaceæ. Half-hardy biennials & annuals. Flowering & orn. foliage. Leaves, hand-shaped, green, or variegated with white.

**CULTURE OF BIENNIAL SPECIES:** Soil, ordinary. Position, warm, sheltered, dryish borders. Plant, June.

**CULTURE OF ANNUAL SPECIES:** Soil, ordinary light rich. Position, sunny beds or borders. Sow seeds  $\frac{1}{2}$  in. deep where plants are required to grow in Sept. or April. Propagate biennial species by seeds sown in pots or boxes of light soil in temp. of 55° to 60° in March or April; or in sunny position outdoors, April or May.

**BIENNIAL SPECIES:** *L. arborea* (Tree Mallow), purple, autumn, 8 to 10 ft., Europe (Britain).

**ANNUAL SPECIES:** *L. trimestris*, rose, summer, 4 to 6 ft., S. Europe; *trimestris alba*, white.

**Lavender** (*Lavandula vera*).—See *Lavandula*.

**Lavender Cotton** (*Santolina chamæcyparissus*).—See *Santolina*.

**Lavender Grass** (*Molinia cærulea*).—See *Molinia*.

**Lawn Pearl-wort** (*Sagina subulata*).—See *Sagina*.

**Lawn Spurrey**.—See *Sagina*.

**Lawson's Cypress** (*Cupressus lawsoniana*).—See *Cupressus*.

**Layia** (Tidy-tips Flower).—Ord. Compositæ. Hardy annuals. First introduced 1834.

**CULTURE:** Soil, ordinary. Position, sunny bed or borders. Propagate by seeds sown 1-16 in. deep in light mould in temp. 55° to 65° in April, transplanting seedlings outdoors end of May; or outdoors in April, where plants are required to grow.

**SPECIES CULTIVATED:** *L. calliglossa* (Syn. *Oxyura chrysanthemoides*), yellow, summer, 1 ft., N. America; *elegans*, yellow and white, summer, 1 ft., California; *platyglossa* (Syn. *Callichroa platyglossa*), yellow, summer, 1 ft., California.

**Lead Plant** (*Amorpha canescens*).—See *Amorpha*.

**Lead-wort**.—See *Plumbago* and *Ceratostigma*.

**Leaf-flowering Cactus** (*Epiphyllum truncatum*).—See *Epiphyllum*.

**Leather Flower** (*Clematis viorna*).—See *Clematis*.

**Leather-wood** (*Cyrilla racemiflora*).—See *Cyrilla*.

**Lebanon Cedar** (*Cedrus Libani*).—See *Cedrus*.

**Ledum** (Labrador Tea; Marsh Rosemary).—Ord. Ericaceæ. Hardy flowering shrubs. Evergreen. First introduced 1762.

**CULTURE:** Soil, equal parts peat, leaf-mould, & sand. Position, open, well-drained beds or borders in company with azaleas, kalmias, etc. Plant, Oct., Nov., or March, disturbing roots as little as possible. Propagate by seeds sown 1-16 in. deep, in a well-drained pan of sandy

peat in a cold frame in March; by layering in Sept.; division of roots in Sept. or Oct.

**SPECIES CULTIVATED:** *L. glandulosum*, white, spring, 3 to 6 ft., California; *latifolium* (Labrador Tea), white, April, 3 ft., N. America; *palustre* (Marsh Rosemary), white, May, 2 ft., N. Europe.

**Leea.**—Ord. Ampelidaceæ. Stove Shrub. Orn. foliage. Nat. Borneo. First introduced 1880. Leaves, feather-shaped, bronzy-green, striped with white above, and dark-red below.

**CULTURE:** Compost, two parts loam, one part well-decayed manure or leaf-mould & one part sharp silver sand. Position, well-drained pots in shade. Pot, Feb. or March. Temp., March to Sept., 65° to 75°; Sept. to March, 55° to 65°. Water freely, March to Sept., moderately afterwards. Syringe daily, April to Aug. Propagate by cuttings of side shoots inserted in sandy soil under bell-glass in temp. 75° to 85° in spring.

**SPECIES CULTIVATED:** *L. amabilis*, 3 ft.; *amabilis splendens*, superior form.

**Leek.**—See Allium.

**Leiophyllum** (Sand Myrtle).—Ord. Ericaceæ. Hardy flowering shrubs. Evergreen. First introduced 1736.

**CULTURE:** Soil, equal parts peat, leaf-mould, & sand. Position, open, margins of well-drained beds or borders. Plant, Oct., Nov., or March. Propagate by seeds sown 1-16 in. deep in well-drained pan of sandy peat in a cold frame in March; by layering in Sept.

**SPECIES CULTIVATED:** *L. buxifolium* (Syn. *Ledum buxifolium*), white, May, 1 ft., Carolina; *buxifolium prostratum* (Syn. *Lyonii*), prostrate growing.

**Lemon Grass** (*Andropogon Schœnanthus*).—See *Andropogon*.

**Lemon Oil-plant** (*Citrus Limonum*).—See *Citrus*.

**Lemon-scented Geranium** (*Pelargonium crispum*).—See *Pelargonium*.

**Lemon-scented Gum-tree** (*Eucalyptus citriodora*).—See *Eucalyptus*.

**Lemon-scented Thyme** (*Thymus citriodorus*).—See *Thymus*.

**Lemon-scented Verbena** (*Lippia citriodora*).—See *Lippia*.

**Lemon-tree** (*Citrus Limonum*).—See *Citrus*.

**Lens** (*Lentils*).—Ord. Leguminosæ. Hardy annual. First introduced 1548. Leaves, feather-shaped. Pods, about  $\frac{3}{4}$  in. long,  $\frac{1}{2}$  in. broad, containing two seeds. Seeds, edible, used chiefly in soups, etc.

**CULTURE:** Soil, light, ordinary. Position, sunny borders. Sow seeds 2 in. deep & 2 in. apart in drills 18 in. asunder early in April. Allow the plants to grow till quite yellow, then pull up, dry thoroughly in the sun, gather pods & store in a dry place till required for use.

**SPECIES CULTIVATED:** *L. esculentea*, blue, June to Aug., 1 ft., Orient.

**Lenten Rose** (*Helleborus colchicus*).—See *Helleborus*.

**Lentils** (*Lens esculentea*).—See *Lens*.

**Lent Lily** (*Narcissus pseudo-narcissus*).—See *Narcissus*.

**Leonotis** (*Lion's Ear*).—Ord. Labiatæ. Greenhouse and half-hardy flowering shrub. Evergreen. First introduced 1712.

**INDOOR CULTURE:** Compost, two parts rich loam, one part equal proportions of leaf-mould, charcoal, & silver sand. Position, well-drained pots in light airy part of greenhouse, Sept. to June; sunny place outdoors, June to Sept. Pot, March or April. Prune into shape after flowering. Water moderately, April to Sept., very sparingly afterwards. Temp., Sept. to April, 40° to 50°; April to June, 55° to 65°.

**OUTDOOR CULTURE:** Soil, sandy loam. Position, warm sheltered

border in mild southern districts only. Plant, May. Protect in winter with bracken or straw. Propagate by cuttings of shoots inserted in light sandy soil in temp. 55° to 65° in March or April. Young plants require tops of shoots to be removed occasionally to induce bushy growth.

SPECIES CULTIVATED: *L. Leonorus*, orange-scarlet, summer, 3 to 5 ft., S. Africa.

**Leontice** (Lion's Leaf; Lion's Turnip). — Ord. Berberidaceæ. Hardy tuberous-rooted perennials. First introduced 1597.

CULTURE: Soil, equal parts sandy loam, leaf-mould, & sand. Position, sheltered sunny rockery. Plant tubers in Sept. or Oct.; base only of tuber to be buried in the soil, leaving the upper part exposed. Mulch with cocoanut-fibre refuse or decayed leaves in summer, & protect tubers with covering of ashes in winter. Propagate by offsets removed & planted in Sept. or Oct.

SPECIES CULTIVATED: *L. Alberti* (Lion's Turnip), brown and yellow, spring, 6 to 8 in., Turkestan; *Leontopetalum* (Lion's Leaf), yellow, spring, 1 ft., Caucasus.

**Leontopodium** (Edelweiss).—Ord. Compositæ. Hardy perennial herb. Nat. Alps. First introduced 1776.

CULTURE: Soil, well-drained, sandy. Position, exposed sunny rockeries. Plant, March or April. Protect from heavy rains in autumn & winter by placing a square of glass, supported by sticks at each corner, a few inches above the plants. Gather flowers in Aug., & dry for preserving. Best results are obtained by raising fresh plants from seed annually, or by dividing old plants in spring. Propagate by seeds sown in March in a well-drained pan of fine loam, leaf-mould, & granite chips, placed under a hand-light, or in a cold frame in a cool shady spot, transplanting seedlings outdoors in Aug. or Sept.; by division of plants in April.

SPECIES CULTIVATED: *L. alpinum* (Edelweiss), yellow, May to July, surrounded by star-shaped, white, cottony involucre, 6 in.

**Leopard-flower** (*Belamacanda sinensis*).—See *Belamacanda*.

**Leopard Lily** (*Lachenalia tricolor*).—See *Lachenalia*.

**Leopard's-bane** (*Doronicum Pardalianches*).—See *Doronicum*.

**Leopard's-bane Groundsel** (*Senecio Doronicum*). — See *Senecio*.

**Lepidium** (Cress). — Ord. Cruciferæ. Hardy annual. First introduced 1548. Leaves, finely divided, agreeably flavoured & largely used in conjunction with mustard for salads.

OUTDOOR CULTURE: Soil, ordinary. Position, open borders. Sow seeds on surface of soil, water, and cover with mats or boards until they germinate; or in drills  $\frac{1}{2}$  in. deep, & 6 in. apart. Make first sowing end of March, follow with successional sowings every 10 days until Sept., then cease. Gather for salading when 1 in. high. Two crops sufficient off one piece of ground.

INDOOR CULTURE: Sow seed on surface of light soil in shallow boxes, moisten with tepid water, cover with sheet of paper, slate, or board, & place in warm position in greenhouse or room. Sow for succession every 7 days. Two crops may be grown in same soil. Seeds may be sown on flannel kept moist in a warm room, at any time of year.

MARKET CULTURE: Make up a bed on the staging or on the floor of a heated glass-house or pit. Place 2 in. of rough manure on bed, then 2 in. of sifted decayed manure, & one inch of fine soil on top. Make level. Soak the seeds in water for 12 hours, then rub dry with

sand, sow thickly, give a good watering, & cover with mats till plants are one-inch high, then expose to light. Crop ready to cut a week after sowing. Market in punnets. Average price per doz. punnets, 1s. 3d. to 1s. 6d. Cress seed retains its germinating powers for three years, & takes 5 to 6 days to germinate.

**SPECIES CULTIVATED:** *L. sativum* (Common Cress), white, 3 to 6 in., Persia. Two varieties—plain and curled.

**Leptosiphon.**—See *Gillia*.

**Leptosyne.**—Ord. *Compositæ*. Hardy annuals & perennials.

**CULTURE:** Soil, ordinary. Position, sunny well-drained beds or borders. Plant, perennial species in Oct. or March; annual species, May or June. Propagate both species by seeds sown  $\frac{1}{2}$  in. deep, in light soil in temp.  $65^{\circ}$  to  $75^{\circ}$  in March; transplant seedlings when 1 in. high, 2 in. apart in boxes of light soil, & keep in cool greenhouse till May or June, then plant outdoors.

**SPECIES CULTIVATED:** *L. calliopsides*, yellow, Sept., 18 in., California; *Douglasii*, yellow, autumn, 1 ft., California; *maritima*, yellow, autumn, 1 ft., California; *Stillmanii*, yellow, autumn, 1 ft., California.

**Leptotes.**—See *Tetranicra*.

**Leschenaultia.**—Ord. *Goodenoviæ*. Greenhouse flowering shrubs. Evergreen. First introduced 1824.

**CULTURE:** Compost, two parts fibrous peat & one part silver sand. Pot, March or April. Position, well-drained pots in light sunny greenhouse. Temp., Sept. to March,  $40^{\circ}$  to  $50^{\circ}$ ; March to Sept.,  $55^{\circ}$  to  $65^{\circ}$ . Water sparingly, Oct. to April, moderately afterwards; use soft water only. Manures or stimulants not required. After flowering, nip off the points of the shoots. Repotting only necessary every second year. Firm potting essential. Ventilate freely in fine weather. Propagate by cuttings inserted in sandy peat under bell-glass in temp.  $50^{\circ}$  to  $55^{\circ}$ .

**SPECIES CULTIVATED:** *L. biloba*, blue, summer, 1 ft., Australia; *biloba major*, large-flowered; *formosa*, scarlet, summer, 1 ft., Australia.

**Lespedeza** (Bush Clover; Japanese Clover).—Ord. *Leguminosæ*. Hardy flowering shrubs. Deciduous. First introduced 1789.

**CULTURE:** Soil, sandy loam. Position, sheltered sunny borders. Plant, Oct. or Nov., Feb., or March. Prune slightly after flowering. Propagate by seeds sown  $\frac{1}{2}$  in. deep in light soil in a sheltered position outdoors in Feb. or March; cuttings inserted in heat in spring; layering Sept. or Oct.

**SPECIES CULTIVATED:** *L. bicolor*, rosy purple, Sept., 3 ft., China and Japan; *bicolor alba*, white; *capitata* (Bush Clover), yellow, white and purple, Aug., 3 ft., Japan; *Sieboldii*, purple, autumn, 5 ft., China and Japan.

**Letter-leaf** (*Grammatophyllum speciosum*).—See *Grammatophyllum*.

**Lettuce.**—See *Lactuca*.

**Leucadendron** (Cape Silver Tree).—Ord. *Proteaceæ*. Greenhouse evergreen trees with silvery silky leaves. In Cape Colony the leaves are utilised for ornamental purposes, especially for painting local scenes thereon. First introduced 1693.

**CULTURE:** Compost, equal parts sandy loam & peat, with some charcoal & sand. Position, light, airy greenhouse, free from damp in winter. Pot in March. Water moderately in summer; very little in winter. Temp., March to Oct.,  $60^{\circ}$  to  $65^{\circ}$ ; Sept. to March,  $40^{\circ}$  to  $50^{\circ}$ . Propagate by seeds sown in sandy peat in a temp. of  $55^{\circ}$  to  $65^{\circ}$  directly they are imported; by cuttings of firm shoots, in sand in a temp. of  $55^{\circ}$  in summer.

SPECIES CULTIVATED: *L. argenteum*, yellow, Aug., 15 ft., S. Africa.

**Leucocrinum**.—Ord. Liliaceæ. Hardy bulbous-rooted perennials.

**CULTURE**: Soil, sandy loam. Position, sunny, sheltered nooks of rockery; good drainage needed. Plant, Aug. to Nov. Protect from rain in winter by a hand-glass. May also be grown in pots of sandy soil in cold greenhouse. Pot in August. Water moderately when growing; keep dry when at rest. Propagate by offsets in autumn.

SPECIES CULTIVATED: *L. montanum* (Californian Soapwort), white, fragrant, spring, 3 in., Arizona.

**Leucojum** (Snowflake; Summer Snowdrop).—Ord. Amaryllidaceæ. Hardy bulbous plants.

**CULTURE**: Soil, ordinary rich. Position, Summer Snowflake (*L. æstivum*) in sunny or shady borders or woodlands; Spring Snowflake (*L. vernum*) in shady borders or on rockeries. Both may also be naturalised in grass. Plant, bulbs 4 in. deep, & 3 in. apart, Aug. to Nov. Bulbs do not usually flower first year after planting, and only require to be lifted & replanted every five to eight years. Propagate by offsets, removed & replanted in Sept. or Oct.

SPECIES CULTIVATED: *L. æstivum* (Summer Snowflake), white and green, May, 1 ft., Europe (Britain); *hyemale* (Syn. *Acis autumnalis*), white and green, April, 9 in., Portugal; *pulchellum*, white and green, May, 1 ft., Balearic Isles; *vernum* (Spring Snowflake), white and green, March, 1 ft., Europe; *vernum carpatum*, white and yellow.

**Leucopogon** (Australian Currant).—Ord. Epacridaceæ. Greenhouse flowering shrubs. Evergreen. Nat. Australia. First introduced 1815.

**CULTURE**: Compost, three-fourths fibry peat, one-fourth silver sand. Position, light airy greenhouse Sept. to July, sunny place outdoors July to Sept. Repot, April, May, or June; good drainage essential. Prune shoots of erect kinds to within 1 in. of base directly after flowering; pendulous kinds about half-way. Water moderately at all times. Syringe plants daily, March to July. Temp., Sept. to March, 40° to 50°; March to July, 55° to 60°. Stimulants not essential. Propagate by seeds sown immediately they ripen on surface of sandy peat under bell-glass in temp. 55°; cuttings of ends of shoots inserted in pots of sandy peat covered with bell-glass placed in cool greenhouse in Aug. or April.

SPECIES CULTIVATED: *L. lanceolatus*, white, May, 8 to 10 ft.; *Reichei*, white, May, 4 to 6 ft.

**Leucothoe**.—Ord. Ericaceæ. Hardy flowering shrubs. Evergreen. First introduced 1765.

**CULTURE**: Soil, equal parts peat, leaf-mould, & sand. Position, open sheltered borders. Plant, Sept., Oct., March, or April. Pruning not necessary. Propagate by seeds sown 1-16 in. deep in sandy peat in cold frame, Feb. or March; layering shoots in Sept.; division, Oct. or Nov.

SPECIES CULTIVATED: *L. axillaris* (Syn. *Andromeda axillaris*), white, May, 3 ft., N. States; *Catesbæi* (Syn. *Andromeda Catesbæi*), white, May, 3 ft., Georgia; *Davisæ*, white, July, 1 ft., California; *racemosa* (Syn. *Andromeda* and *Lyonia racemosa*), white, May, 4 to 6 ft., N. America.

**Lewisia** (Bitter-wort; *Spatulum*).—Ord. Portulacaceæ. Hardy herbaceous perennials. First introduced 1826.

**CULTURE**: Soil, equal parts sandy loam, peat, & sand. Position, crevices of moist sunny rockeries. Plant, Sept., Oct., March, or April. Water occasionally in dry weather. Leaves wither at the time of flowering, or may not be produced at all. Growing period above

ground, about six weeks. Propagate by seeds sown in well-drained pans of sandy loam & peat in a cool shady frame in March or April; division of the roots in March or April.

**SPECIES CULTIVATED:** *L. rediviva*, rose, summer, 6 in., California; Tweedyi, pink, summer, 4 in., California.

**Leycesteria** (Himalayan Honeysuckle; Flowering Nutmeg).—Ord. Caprifoliaceæ. Hardy-flowering shrub. Deciduous. First introduced 1824.

**CULTURE:** Soil, ordinary. Position, sunny sheltered borders. Plant, Oct., Nov., Feb., or March. Prune into shape after flowering. Propagate by seeds sown 1-16 in. deep in light soil in temp. 45° to 55° in March or April; cuttings of side shoots inserted in light soil and similar temp. in April, also of firm shoots inserted in sandy soil under hand-light in Sept. or Oct.

**SPECIES CULTIVATED:** *L. formosa*, white and purple, May to Aug., succeeded by purple berries, 4 to 6 ft., Himalayas; *formosa variegata*, leaves variegated.

**Liatris** (Button Snake-root).—Ord. Compositæ. Hardy perennial herbs. First introduced 1732.

**CULTURE:** Soil, light, rich, ordinary. Position, open sunny beds or borders. Plant, Oct., Nov., March, or April. Cut off decayed stems in Oct. Mulch with decayed manure in April. Water freely in dry weather. Propagate by seeds sown 1-16 in. deep in light sandy soil outdoors in Aug. or Sept., transplanting seedlings the following May; division of plants in March or April.

**SPECIES CULTIVATED:** *L. pycnostachya*, purple, Aug., 3 to 4 ft., N. America; *scariosa*, purple, Aug., 2 to 3 ft., N. America; *spicata*, purple, Aug., 4 to 5 ft., N. America.

**Libertia**.—Ord. Iridaceæ. Hardy evergreen perennials. Flowering & orn. foliage. First introduced 1823. Leaves, sword-shaped or grass-like, graceful, dark green.

**CULTURE:** Soil, equal parts sandy loam, peat, and leaf-mould. Position, well-drained sunny borders, or preferably, rockeries. Plant, Sept., Oct., March, or April. Protect, Nov. to April, by covering with dry fern, tree leaves, or strawy manure. Propagate by seeds sown  $\frac{1}{2}$  in. deep in sandy soil in cold frame or greenhouse, Aug. to Nov.; division of creeping rhizomes, March or April.

**SPECIES CULTIVATED:** *L. formosa*, white, June, 1 ft., Chili; *grandiflora*, white, June, 3 ft., New Zealand; *tricolor*, white, June, 1 ft., New Zealand.

**Libocedrus** (Incense Cedar).—Ord. Coniferæ. Hardy evergreen trees. Orn. foliage. First introduced 1847. Leaves, scale-like, flat, glossy, or milk-green. Habit, pyramidal or column-like. Cones, small, oblong.

**CULTURE:** Soil, rich loam; subsoil, gravelly. Position, warm, sheltered; as single specimens on lawns in mild districts in S. of England only. Plant, Sept. to Nov. Propagate by seeds sown  $\frac{1}{2}$  in. deep in pans of sandy soil in cold frame or greenhouse, Oct. to April; cuttings of firm shoots or branchlets inserted in sandy soil in cold frame or under hand-light in Aug. or Sept.

**SPECIES CULTIVATED:** *L. chilensis*, 60 to 80 ft., Chili; *decurrens* (Incense Cedar), 100 ft., California; *douiana*, 70 ft., New Zealand.

**Libonia**.—Ord. Acanthaceæ. Greenhouse shrubby flowering plants. Evergreen. First introduced 1864.

**CULTURE:** Compost, equal parts turfy loam, leaf-mould, or decayed manure & little sand. Position, light part of greenhouse, Sept. to June; sunny cold frame, June to Sept. Pot, March or April in 5-in. or 6-in. sizes. Prune shoots after flowering to within 1 in. of base.

Water moderately, Oct. to April; freely afterwards. Apply weak stimulants once or twice weekly during flowering period. Syringe foliage twice daily, March to Sept. Temp., Sept. to March 50° to 60°; March to June 60° to 70°. Propagate by cuttings of young shoots 1 in. to 2 in. long, inserted in well-drained pots filled with sandy soil in temp. 75° to 85°, Feb. to May.

**SPECIES CULTIVATED:** *L. floribunda* (properly *Jacobinia pauciflora*), yellow, winter, 2 ft., Brazil; *penrhosiensis*, crimson, winter, 2 ft., hybrid.

**Licuala.**—Ord. Palmaceæ. Stove palms. Orn. foliage. First introduced 1802. Leaves, fan-shaped, green.

**CULTURE:** Compost, two parts peat & one of loam & sand. Position, well-drained pots in light part of stove. Pot, Feb. to April. Water moderately, Oct. to March; freely afterwards. Syringe twice daily, March to Sept.; once daily, Sept. to March. Temp., March to Sept. 65° to 75°; Sept. to March 55° to 65°. Propagate by seeds sown  $\frac{1}{2}$  in. deep in light rich soil in temp. 80° to 90°, Feb., March, or April.

**SPECIES CULTIVATED:** *L. grandis*, 10 ft., New Britain; *Veitchii*, 6 to 8 ft.

**Ligularia.**—See *Senecio*.

**Ligurian Bell-flower** (*Campanula isophylla*). — See *Campanula*.

**Ligustrum** (Privet).—Ord. Oleaceæ. Hardy deciduous & evergreen shrubs. Orn. foliage & flowering. Flowers, white, borne in terminal panicles, fragrant. Berries round, shining, black or yellow. Leaves, oblong, oval, & pointed, green, or variegated with white or yellow.

**CULTURE:** Soil, loam or good ordinary. Position, common species in shrubberies, under shade of trees, in open or as hedges; others in open shrubberies. Plant, deciduous kinds, Oct. to Feb.; evergreen kinds, Oct. to April. Prune deciduous kinds in autumn, evergreens in April.

**HEDGE CULTURE:** Soil, ordinary, trenched two spits deep & 3 ft. wide. Plant, privet (1 to 3 ft. high) 6 to 9 in. apart, Oct. to April. Trim into shape, June & July. Cost of plants per 100, 5s. Cost of planting & preparing the soil per lineal yard, 9d. Privet and hawthorn planted alternately, makes a splendid hedge. Varieties suitable, Common Privet (*L. vulgare*), Oval-leaved Privet (*L. ovalifolium*), and Golden Privet (*Ovalifolium aureum*). Also suitable shrubs for growing in town gardens. Propagate by seeds (berries) sown 1 in. deep in open ground in Nov., transplanting largest seedlings the following Oct., the remainder next year; cuttings of young shoots 2 to 4 in. long, inserted in a shady position outdoors or under a hand-light, in summer; also cuttings of firm shoots 8 to 12 in. long, inserted in shady position in ordinary soil outdoors, Sept. to Nov.; layering shoots in Sept. or Oct.

**SPECIES CULTIVATED:** *L. Ibot* (Syn. *amurensis*), 3 ft., Japan; *japonicum*, 6 to 8 ft., evergreen, Japan; *japonicum coriaceum*, evergreen, 3 to 4 ft., Japan; *luicidum*, 8 to 12 ft., evergreen, China; *luicidum tricolor*, variegated; *ovalifolium* (Oval-leaved Privet), 6 to 8 ft., evergreen, Japan; *ovalifolium variegatum*, leaves blotched with yellow or white; *ovalifolium aureum* (Golden Privet), golden leaved, much used for window boxes and hedges; *sinense*, 10 to 20 ft., evergreen, China; *sinense variegatum*, leaves variegated; *vulgare* (Common Privet), 6 to 10 ft., Britain, deciduous.

**Lilac** (*Syringa vulgaris*).—See *Syringa*.

**Lilium** (Lily).—Ord. Liliaceæ. Hardy and half-hardy bulbous flowering plants. First introduced 1596.

**CLASSIFICATION OF LILIUMS:** Erect, cup-shaped flowers (*Isoli-*



riion group).—*L. bulbiferum*, *L. concolor* & vars., *L. dauricum* & vars., *L. philadelphicum*, *L. elegans* & vars. Trumpet-shaped flowers (Eulirion group).—*L. Browni*, *L. candidum* & vars., *L. cordifolium*, *L. giganteum*, *L. Krameri*, *L. longiflorum* & vars., *L. Parryi*, *L. washingtonianum* & var. Recurved flowers (Martagon group).—*L. canadense*, *L. carniolicum*, *L. carolineum*, *L. chalcedonicum*, *L. Hansoni*, *L. Humboldtii*, *L. Leichtlini*, *L. martagon* & vars., *L. monadelphum* & var., *L. pomponum*, *L. pyrenaicum*, *L. superbum* & vars., *L. tenuifolium*, *L. testaceum*. Flowers drooping (Archelirion group).—*L. auratum* & vars., *L. speciosum* & vars., *L. tigrinum* & vars., & *L. roseum*.

**OUTDOOR CULTURE:** Soil, ordinary, enriched with decayed manure, for *L. bulbiferum*, *L. candidum*, *L. chalcedonicum*, *L. croceum* & *L. testaceum*; rich loam for *L. auratum*, *L. martagon*, *L. monadelphum*, *L. pomponum*, *L. tenuifolium*, *L. tigrinum*, & *L. pyrenaicum*; loam, peat, and leaf-mould for *L. Browni*, *L. giganteum*, & *L. dauricum*, *L. Hansoni*, *L. longiflorum*, *L. Parryi*, *L. pardalinum*, *L. speciosum*, *L. superbum*, *L. Leichtlini*. Peat, leaf-mould, & sand for *L. canadense*, *L. concolor*, *L. Humboldtii*, *L. washingtonianum*. Position, shady beds or borders for *L. Browni*, *L. canadense*, *L. Hansoni*, *L. pardalinum*, *L. auratum*, *L. concolor*, *L. polyphyllum*, *L. superbum*, *L. washingtonianum*, *L. Leichtlini*; others in sun or shade. Plant, Oct. to March, in groups of 3, 6, or 12 bulbs. Plant stem-rooting lilies like *auratum*, *Batemanniæ*, *Brownii*, *croceum*, *Dalhousoni*, *elegans*, *Hansoni*, *Henryi*, *Kramerii*, *longiflorum*, *nepalense*, *speciosum*, & *tigrinum* 6 in. deep & 6 in. apart; *L. giganteum* only just beneath the surface; all others 4 in. deep & 6 in. apart. Place a handful of silver sand under each bulb and a little around it.

**SPECIAL BEDS:** Remove soil to depth of 18 in. and circumference of 12 in. for 3 bulbs, 24 in. for 6 bulbs, 3 ft. for 12 bulbs. Place 6 in. of cow manure in bottom and compost on this. In case of heavy, wet subsoils, allow surface of bed to rise 4 in. above ordinary level. Mulch with decayed cow manure in April, first removing few inches of surface soil. Protect choice kinds during winter with covering of cinder ashes or strawy manure. Cut down flower stems when leaves turn yellow. Water in very dry weather. Apply liquid manure once or twice weekly when plants are in flower.

**TREATMENT OF IMPORTED BULBS:** Remove injured scales & surround bulbs with thin layer of cocoanut-fibre refuse in shallow box in cool position until latter become plump, then plant out. Transplant *L. candidum* in Aug. or Sept.; others in Oct. or Nov. Lilies should only be transplanted when unhealthy.

**POT CULTURE:** Compost, equal parts loam, peat, leaf-mould, decayed manure, & sand. Pot, Sept. to March, placing one bulb of *L. auratum*, *L. speciosum*, or *L. Harrisi*, in a 5 or 6 in. pot, or three in an 8 or 10 in. pot; and three of *L. longiflorum*, *L. philippense*, or *L. neilgherense*, in a 6 or 8 in. pot. Put  $\frac{1}{2}$  drainage, then half-fill with compost, place bulbs thereon, & cover with  $\frac{1}{2}$  in. of compost. After potting, place pots in cold frame, greenhouse, or shed, & cover with 2 in. of cinder ashes or cocoanut-fibre refuse. Allow them to remain thus till growth begins, then remove to light airy part of greenhouse or to a window or cool room till they flower, or until June, then stand outdoors. Water moderately when growth begins; freely when in full growth. Top-dress with compost of equal parts loam, leaf-mould, & decayed manure when shoots are 3 in. high, filling pots to within  $\frac{1}{2}$  in. of rim.

Apply liquid manure twice weekly to plants in full growth. Suitable stimulants: Soot-water, guano-water ( $\frac{1}{2}$  oz. to a gallon), liquid cow or horse manure. Temp. for forcing *L. Harrisii*, *L. neilgherense*, & *L. philippense*, 55° to 65°. Replot *L. Harrisii* annually in Sept.; others in Oct. or Nov., & treat as advised for first potting. After flowering, place plants in sunny position outdoors, gradually withhold water, & keep quite dry from Oct. to Feb. *L. Harrisii* should, however, never be kept quite dry, only moderately for six weeks, then watered as before. Propagate by seeds sown 1-16 in. deep in well-drained pans or boxes of sandy soil in cold frame in autumn or spring, transplanting seedlings when large enough to handle into similar soil in boxes, & in specially prepared bed outdoors when two years old; offsets or bulbils, planted an inch deep & 2 or 3 inches apart in boxes of sandy soil, or in similar soil in sunny cold frame in autumn. Seedlings flower when six to seven years old; offsets or bulbils when three to five years old.

**TENDER SPECIES:** Those best grown under glass are—*L. longiflorum* *Harrisii* or *eximium* (Bermuda Lily), white, winter to summer, 3 ft., Japan; *nepalense*, yellow and purple, autumn, 3 to 4 ft., Nepal; *neilgherense*, sulphur-yellow, autumn, 3 ft., Nilghiris; *sulphureum* (*Syn. Wallichianum superbum*), sulphur-yellow and brown, summer, 6 ft., Burma; *wallichianum*, white, summer, 3 ft., Japan; *philippense*, white, Aug., 2 ft., Philippines.

**HARDY SPECIES:** *L. auratum*, white, yellow, and purple, summer, 4 to 5 ft., Japan, and its numerous varieties, *platyphyllum*, *virginale*, *Wittel*, etc.; *Browni*, white and brown, summer, 3 to 4 ft., China and Japan; *Bolanderi*, purple and red, summer, 3 ft., California; *canadense*, yellow and red, summer, 3 ft., N. America; *bulbiferum*, red, summer, 3 ft., Europe; *candidum* (Madonna or Bourbon Lily), white, summer, 3 ft., S. Europe; *carniolicum*, red, summer, 3 ft., Carniola; *chalcædonicum* (Turk's Cap Lily), scarlet, summer, 3 ft., Greece; *concolor*, red, summer, 2 to 3 ft., Japan; *cordifolium*, white, Aug., 3 ft., Japan; *croceum* (Orange Lily), orange, June, 3 ft., S. Europe; *Dalhousoni*, purple, summer, 5 ft., hybrid; *dauricum* (*Syn. davuricum*), yellow, red, and black, June, 3 ft., Siberia; *elegans* (*Syn. thunbergianum*), scarlet, July, 1 to 2 ft., Japan, and its numerous varieties; *giganteum* (Giant Lily), white, July, 10 to 12 ft., Himalayas; *Hansoni*, yellow, June, 3 to 4 ft., Japan; *Henryi*, orange-yellow, July, 6 to 10 ft., W. China; *Humboldti*, yellow and purple, July, 5 ft., California; *japonicum*, rose, summer, 2½ ft., Japan, and its varieties *Alexandræ* (white) and *Colchesteri*; *longiflorum*, white, June, 3 ft., Japan; *Leichtlini*, yellow and purple, July, 3 ft., Japan; *Lowii*, white and violet, summer, 3 ft., Burma; *Martagon* (Turk's Cap Lily), purple, summer, 3 ft., Europe; *Martagon album*, white; *monadelphum szovitzianum*, yellow, June, 4 ft., Caucasus; *pardalinum* (Panther Lily), orange-crimson, July, 4 to 6 ft., California; *Parryi*, yellow, summer, 3 ft., California; *parvum*, yellow, July, 4 ft., California; *pomponium* (Scarlet Pompono Lily), red, summer, 3 ft., Lombardy; *pyrenaicum*, yellow, summer, 3 ft., Pyrenees; *roseum* (*Syn. thomsonianum*), lilac, spring, 18 in., Himalayas; *rubellum*, pink, May, 1 to 2 ft., Japan; *speciosum* (*Syn. lancifolium*), white and red, summer, 3 ft., Japan, and its varieties *album Kraetzleri*, *aurantium*, *Melpomene*, *macranthum*, *roseum superbum* and *rubrum*; *testaceum* (Nankeen Lily), yellow, summer, 4 to 6 ft.; *superbum* (Swamp Lily), orange and crimson, summer, 6 ft., U. States; *tenuifolium*, scarlet, summer, 1 ft., Siberia; *tigrinum* (Tiger Lily), orange, red, and black, summer, 3 to 5 ft., Japan, and its varieties *flore pleno* (double), *Fortunei*, and *splendens*; *umbellatum*, red, June, 3 ft.; and *washingtonianum*, white, July, 4 ft., California.

**Lily.**—See *Lilium*.

**Lily of the Valley.**—See *Convallaria*.

**Lily Thorn** (*Catesbæa spinosa*).—See *Catesbæa*.

**Lily Tree** (*Magnolia conspicua*).—See *Magnolia*.

**Lime-fruit-tree** (*Citrus medica acida*).—See *Citrus*.

**Limestone Fern** (*Polypodium calcareum*).—See *Polypodium*.

**Lime Tree** (*Tilia europæa*).—See *Tilia*.

**Limnanthemum** (Marsh-flower; Fringed Buck-Bean; Fringed Water Lily).—Ord. *Gentianacæe*. Hardy floating aquatics. Perennial.

**CULTURE OF GREENHOUSE SPECIES:** Soil, loam & leaf-mould.

Position, tub or tank of water in greenhouse. Temp., Oct. to March 45° to 55°; March to Oct. 55° to 65°. Plant in spring.

**CULTURE OF HARDY SPECIES:** Soil, ordinary. Position, ponds, or shallow lakes. Plant in March. Propagate tender species by seeds sown in pot of light soil immersed in water, or division of the plants; hardy species by seeds sown in mud in spring or division of roots in March.

**GREENHOUSE SPECIES:** *L. humboldtianum*, white and yellow, summer, S. America.

**HARDY SPECIES:** *L. peltatum* (Syn. *Villarsia nymphæoides*), yellow, summer, Europe, the Fringed Buckbean or Fringed Water Lily.

**Limnanthes.**—Ord. Geraniaceæ. Hardy annual. Nat. California. First introduced 1833.

**CULTURE:** Soil, ordinary. Position, in masses, edges to sunny beds, or on rockeries. Sow for spring flowering in Sept., for summer flowering in April. Propagate by seeds sown where plants are required to flower 1-16 in. deep in Sept. or April.

**SPECIES CULTIVATED:** *L. alba*, white, summer, 6 to 8 in.; *Douglasii*, yellow and white, April to Sept., 1 ft., fragrant; *rosea*, rose, summer, 1 ft.

**Limncharis.**—Ord. Alismaceæ. Stove aquatic perennials. First introduced 1822.

**CULTURE:** Compost, two parts sandy loam, one part leaf-mould & sand. Position, in shallow tubs, cisterns, or aquariums. Plant, 6 to 9 in. below surface of water, in March or April. Temp., March to Sept. 60° to 70°; Sept. to March 50° to 60°. Propagate by seeds sown in soil below water in March or April; division of plants in April.

**SPECIES CULTIVATED:** *L. emarginata* (Syn. *Plumeri*), yellow, July, S. America. See also the genus *Hydrocleis*.

**Linaria** (Toad-flax).—Ord. Scrophulariaceæ. Hardy shrubby or trailing perennial herbs & annuals.

**CULTURE OF PERENNIAL SPECIES:** Soil, ordinary, mixed with grit or old mortar. Position, moist rockeries or margin of borders for *L. alpina*, *L. pilosa*, *L. crassifolia*, & *L. organifolia*; sunny or shady walls for *L. cymbalaria*; open sunny borders for *L. dalmatica*, *L. purpurea*, *L. vulgaris*, & *L. triornithophora*. Plant, Oct., Nov., March or April.

**CULTURE OF ANNUAL SPECIES:** Soil, ordinary. Position, sunny beds or borders. Sow seeds 1-16 in. deep in patches in April, for flowering in summer; in Aug., for flowering in spring. *L. tristis*, a pretty dwarf annual for beds or rockeries.

**POT CULTURE OF L. CYMBALARIA:** Compost, two parts loam, one part of equal proportions of dried cow manure, old mortar, & sand. Sow seeds 1-16 in. deep in 3 or 5 in. pots in March or April. Place pots in shady window or greenhouse until seedlings appear, then remove to light & suspend in a basket. Water moderately at first, freely afterwards; keep nearly dry during winter. This species is a perennial. Propagate perennial species by seeds sown in ordinary soil in sunny position outdoors in Sept., March, or April; division in Oct. or April.

**ANNUAL SPECIES:** *L. aparinoides*, yellow and black, summer, 18 in., Europe and N. Africa; *bipartita*, red, violet, purple, rose and white, summer, 1 ft., Algeria; *multipunctata*, or *Brousonetti*, yellow and brown, summer, 6 in., Algiers; *reticulata*, purple and yellow, summer, 2 to 4 ft., Portugal.

**PERENNIAL SPECIES:** *L. alpina*, blue, violet, and yellow, summer, 6 in., Alps; *Cymbalaria* (Ivy-leaved Toad-flax or Mother o' Millions), lilac, summer, trailing, Britain; *dalmatica*, yellow, summer, 3 to 5 ft., Dalmatia; *pallida*, blue, summer, 3 in., Italy; *saxatilis*, yellow and brown, summer, trailing, Spain; *triornithophora*, purple and yellow, summer, 1 ft., Portugal; *vulgaris* (Common Toad-flax), yellow, summer, 2 ft., Britain.

**Lindelofia** (Himalayan Lung-wort).—Ord. Boraginaceæ. Hardy perennial herb. First introduced 1839.

**CULTURE:** Soil, ordinary. Position, sunny well-drained borders. Plant, Oct., Nov., March or April. Cut off flower stems, Sept. Apply weak liquid manure occasionally during flowering period, or dig decayed manure into surface of soil round base of plants in March or April. Propagate by seeds sown 1-16 in. deep in sandy soil in sunny position outdoors in April or May, transplanting seedlings following Aug. or Sept., for flowering the next year; division of roots in March.

**SPECIES CULTIVATED:** *L. spectabilis*, purple, July, 18 in., Himalayas.

**Linden Tree** (*Tilia europæa*).—See *Tilia*.

**Lindera** (Benjamin Bush; Spice Bush).—Ord. Laurineæ. Hardy flowering tree. Deciduous. Nat. N. America. First introduced 1683.

**CULTURE:** Soil, ordinary. Position, open sunny shrubberies or borders. Plant, Oct. to Feb. Prune into shape when necessary after flowering. Propagate by cuttings of shoots, 6 to 8 in. long, inserted in sandy soil in shady sheltered position outdoors, Oct. to Nov.; layering in Sept. or Oct.

**SPECIES CULTIVATED:** *L. Benzoin*, yellow, spring, 15 to 20 ft.

**Lindsaya**.—Ord. Filices. Greenhouse evergreen ferns. Fronds, feathery, kidney, or arrow-shaped. First introduced 1813.

**CULTURE:** Compost, two parts turfy loam, one part lumpy peat, & one part equal proportions of broken crocks, charcoal, & sand. Position, moist shady part of stove, in wardian case, or under bell-glasses. Pot very firmly in well-drained pots, Feb. or March. Water abundantly March to Oct., moderately afterwards. Temp., March to Sept. 55° to 65°; Sept. to March 50° to 55°. Propagate by spores sown on fine sandy peat, in well-drained pans under bell-glass, in temp. 55° to 65°, at any time.

**SPECIES CULTIVATED:** *L. linearis*, 6 in., New Zealand; *trichomanoides*, 6 in., New Zealand.

**Ling** (*Calluna vulgaris*).—See *Calluna*.

**Linnæa** (Twin-flower).—Ord. Caprifoliaceæ. Hardy trailing flowering shrub. Evergreen.

**CULTURE:** Soil, sandy peat. Position, moist rockeries or banks, or as edgings to beds of N. American shrubs. Plant, Oct. to March. Water freely in dry weather.

**POT CULTURE:** Compost, two parts peat & one part leaf-mould & little silver sand. Position, well-drained pots, with shoots trained to trellises or stakes, or suspended in baskets in cool or unheated greenhouse or frame. Pot, Feb. or March. Water freely March to Oct., moderately afterwards. Propagate by division of plants in Oct. or March.

**SPECIES CULTIVATED:** *L. borealis*, white and pink, fragrant, May to July, N. Europe (Scotland).

**Linum** (Flax; Linseed Oil Plant).—Ord. Linaceæ. Hardy annuals, perennials & shrubs.

**CULTURE OF ANNUAL SPECIES:** Soil, ordinary. Position, sunny beds or borders. Sow seeds  $\frac{1}{2}$  in. deep in April, in lines or masses where plants are required to flower.

**CULTURE OF PERENNIAL SPECIES:** Soil, good ordinary. Position, sunny rockeries, borders, or banks. Plant, Oct. to Dec. or Feb. to April.

**CULTURE OF HARDY SHRUBBY SPECIES:** Soil, sandy loam, leaf-mould, peat, & sand. Position, warm sheltered rockeries or bor-

ders. Plant, Oct. or Nov. Prune straggly shoots into shape, March or April. Protect in severe weather with covering of bracken, straw or leaves.

**CULTURE OF *L. GRANDIFLORUM* IN POTS:** Soil, two parts good mould, one part decayed manure & sand. Sow seeds 1-16 in. deep in April in 6 in. pots, filled with above compost to within  $\frac{1}{2}$  in. of rim. Place pots in cold frame or shady window till seedlings appear, then remove to full light. Water moderately at first, freely afterwards. Apply weak stimulants when in flower. Support shoots by inserting small twiggy branches between them. Sow again in July, plunging pots to rim in garden soil, and keep well supplied with water to flower in autumn. Propagate perennial species by seeds sown  $\frac{1}{2}$  in. deep outdoors in April, also by division in March or April; shrubby species by cuttings of young shoots inserted in sandy soil under bell-glass outdoors in summer.

**FIELD CULTURE OF FLAX:** Soil, deep, well-tilled loam. Rotation, follow potatoes or cereals; requires an interval of nine years between successive crops. Manures: Farmyard ploughed in previous autumn. Time of sowing, end of March or early in April. Seed required to sow an acre, two bushels. Distance apart for drills, 8 in. Harvest when the stems turn yellow. Pull up by hand, and let crop lie on ground for a few days. Average yield of seed per acre, 16 to 20 bushels. Average yield of fibre per acre, 4 cwt. Average yield of straw per acre, 2 tons. Weight of seed per bushel, 52 to 56 lb.

**ANNUAL SPECIES:** *L. grandiflorum*, rose, summer, 1 ft., Algeria, and its varieties, *coccineum* (scarlet), *splendens*, rose, and *rubrum*, red; *usitatissimum* (Common Flax), blue, June, 18 in., Europe.

**PERENNIAL SPECIES:** *L. alpinum*, blue, summer, 6 in., Europe; *flavum*, yellow, summer, 18 in., Austria; *narbonense*, blue, May to July, 2 ft., S. Europe; *perenne*, blue or white, summer, 18 in., Britain.

**SHRUBBY SPECIES:** *L. arboreum*, yellow, June, 1 ft., Crete; *monogynum*, *candidissimum*, white, summer, 1 ft., New Zealand.

**Lion's-ear** (*Leonotis Leonurus*).—See *Leonotis*.

**Lion's-foot** (*Leontopodium alpinum*).—See *Leontopodium*.

**Lion's-leaf** (*Leontice Leontopetalum*).—See *Leontice*.

**Lion's-tail** (*Leonotis leonurus*).—See *Leonotis*.

**Lion's-turnip** (*Leontice Albertii*).—See *Leontice*.

**Lip Fern** (*Cheilanthes californica*).—See *Cheilanthes*.

**Lippia** (Sweet-scented Verbena; Herb Louisa).—Ord. Verbenaceæ. Greenhouse deciduous shrub. Fragrant foliage. Introduced 1781.

**CULTURE:** Compost, two parts loam, one leaf-mould & sand. Position, pots in windows or greenhouses; beds outdoors against south walls S. England & Ireland. Pot or plant March. Water freely March to Sept., little afterwards. Prune shoots Feb. to within an inch of base. Temp., 45° to 50° in winter; 50° to 55° other times. Propagate by cuttings pulled off stem when 4 in. long & inserted in sandy soil under bell-glass, temp. 65°, March.

**SPECIES CULTIVATED:** *L. citriodora* (Syn. *Aloysia citriodora*), lilac, Aug., 2 to 5 ft., S. America.

**Liquidambar** (Sweet Gum-tree).—Ord. Hamamelidaceæ. Hardy deciduous trees. Orn. foliage. First introduced 1681. Flowers greenish yellow, inconspicuous; spring. Leaves, hand-shaped, downy, very fragrant.

**CULTURE:** Soil, deep moist loam. Position, sheltered in shrubberies or on lawns. Plant, Oct. to Dec. Prune into shape when neces-

sary in Nov. Propagate by seeds sown  $\frac{1}{2}$  in. deep in sandy soil outdoors, Oct., Nov., March or April, transplanting seedlings two to three years afterwards; layering shoots, Sept. to Nov.

SPECIES CULTIVATED: *L. formosana* (Syn. *acerifolia*), 20 ft., China and Japan; *orientalis*, 15 to 20 ft., Asia Minor; *styraciflua* (Sweet Gum), 30 to 40 ft., U. States.

**Liquorice-plant** (*Glycyrrhiza glabra*).—See *Glycyrrhiza*.

**Liriodendron** (Tulip-tree).—Ord. Magnoliaceæ. Hardy deciduous tree. Flowering & orn. foliage. First introduced 1668. Flowers, very fragrant. Leaves, saddle-shaped, bright green.

CULTURE: Soil, sandy loam. Position, sunny, sheltered shrubberies or as specimen on lawns. Plant, Oct. to Feb. Prune straggling shoots only into shape, Nov. or Dec. Propagate by seeds sown  $\frac{1}{2}$  in. deep, in moist sandy loam in sheltered position outdoors, Sept. to Nov.; layering in Oct. to Nov.

SPECIES CULTIVATED: *L. tulipifera*, yellow, June to Aug., 50 to 100 ft., N. America.

**Lissochilus**.—Stove terrestrial orchids. First introduced 1818.

CULTURE: Compost, equal parts fibrous loam, leaf-mould, & silver sand. Position, shallow pans or well-drained pots in warm moist part of stove during the growing period, & cool part when at rest. Pot, Feb. or March. Water freely March to Sept., moderately Sept. to Nov., keeping quite dry Nov. to March. Apply weak liquid manure every 10 days during growth. Temp., March to Oct. 65° to 75°; Oct. to March 60° to 65°. Growing period, March to Oct.; resting period, Oct. to March. Propagate by division of pseudo-bulbs, Feb. or March.

SPECIES CULTIVATED: *L. giganteus*, pink, yellow and purple, autumn, 10 to 16 ft., River Congo; *Krebsii*, brown, purple and yellow, May to Oct., 3 ft., Natal; *speciosus*, yellow, June, 3 ft., Cape of Good Hope.

**Lithospermum** (Gromwell).—Ord. Boraginaceæ. Hardy dwarf trailing evergreen flowering shrubs & perennials.

CULTURE: Soil, sandy or loamy. Position, margins of sunny borders or on ledges of sunny rockeries. Plant, Oct., Nov., March or April. *L. prostratum* an excellent plant for draping stones on rockeries. Propagate seeds sown 1-16 in. deep in well-drained pots of sandy soil in cold frame in March or April, transplanting seedlings when an inch high singly in 2 in. pots & grow in frame until following spring, then planting out; cuttings of shoots of previous year's growth, 2 to 3 in. long, inserted in well-drained pots of sandy soil in cold frame in Aug., Sept., or Oct.; layering shoots in Sept.

SPECIES CULTIVATED: *L. canescens*, yellow, July, 1 ft., N. America; *Gastoni*, blue, summer, 1 ft., Pyrenees; *graminifolium*, blue, June to Aug., 1 ft., Italy; *prostratum* (Gromwell), blue, summer, trailing, S. Europe; *purpureo-cæruleum* bluish purple, June and July, 1 ft., Europe.

**Lithy-tree** (*Viburnum lantana*).—See *Viburnum*.

**Littonia**.—Ord. Liliaceæ. Greenhouse herbaceous perennial climber. First introduced 1853.

CULTURE: Compost, two parts loam, one part each of leaf-mould, peat, & silver sand. Position, well-drained pots or bed in warm greenhouse. Pot or plant, March. Train shoots up roof or wall. Water freely during spring & summer, moderately autumn & winter. Syringe morning & evening during early period of growth. Plant likes plenty of sunshine. Temp., March to Sept. 65° to 75°; Sept. to March 50° to 60°. Propagate by division of the plant at potting time.

SPECIES CULTIVATED: *L. modesta*, orange, April, 3 to 4 ft., S. Africa.

**Live-long** (*Sedum telephium*).—See *Sedum*.

**Liver Leaf** (*Anemone Hepatica triloba*).—See *Anemone*.

**Livistona**.—Ord. *Palmaceæ*. Warm greenhouse palm. Orn. foliage. Leaves large, fan-shaped. First introduced 1816.

**CULTURE**: Compost, two parts loam, one part peat, little sand. Position, well-drained pots in warm greenhouse, Sept. to June; outdoors or in cool greenhouse in summer. Pot, Feb. or March. Water freely March to Sept., moderately afterwards. Syringe twice daily March to Oct.; once Oct. to March. Temp., March to Sept. 60° to 70°; Sept. to March 55° to 60°. Propagate by seeds sown  $\frac{1}{2}$  in. deep in rich light soil in temp. 80° to 90° in Feb. or March.

**SPECIES CULTIVATED**: *L. sinensis* (Syn. *Latania borbonica*), 5 to 10 ft., China and Japan.

**Lizard Orchis** (*Orchis hircina*).—See *Orchis*.

**Llavea**.—Ord. *Filices*. Stove evergreen fern. First introduced 1853. Fronds, large, three times divided; upper portion contracted, fertile; lower portion broad, barren.

**CULTURE**: Compost, equal parts loam, peat sand. Position, well-drained pots in shady part of stove. Pot, March or April. Water freely March to Sept., moderately Sept. to March. Temp., March to Sept. 70° to 80°; Sept. to March 60° to 70°. Propagate by spores sown on fine sandy peat, in well-drained pans under bell-glass in temp. 70° to 80° at any time.

**SPECIES CULTIVATED**: *L. cordifolia*, 2 to 3 ft., Mexico.

**Lloydia** (*Mountain Spider-wort*).—Ord. *Liliaceæ*. Hardy bulbous, flowering plant.

**CULTURE**: Soil, sandy loam. Position, sunny dryish borders or rockeries. Plant, Sept. or Oct. Depth for bulbs, 3 to 4 in. Lift & replant when unhealthy only. Propagate by offsets, removed & planted in Sept. or Oct.

**SPECIES CULTIVATED**: *L. alpina*, white and green, June, 6 in., Britain (Snowdon).

**Loasa** (*Chili Nettle*).—Ord. *Loasaceæ*. Greenhouse & half-hardy annual climbing & twining plant. First introduced 1822.

**OUTDOOR CULTURE**: Sow seeds 1-16 in. deep in light mould in temp. 65° in Feb. or March. Transplant seedlings singly in 3 in. pots when 1 in. high, & grow in temp. 55° till June, then plant outdoors. Position, against sunny walls or fences. Soil, ordinary.

**INDOOR CULTURE**: Sow seeds as above. Transplant seedlings singly into 3 in. pots, and when 6 in. high into 5 in. size, or place three in an 8 in. size. Compost, two parts sandy loam, one part leaf-mould & sand. Train shoots round wire trellis or stakes inserted in the soil. Water moderately at first, freely afterwards. Apply stimulants occasionally to plants in bloom. Temp., 55° to 65°. All the species are furnished with stinging hairs, & hence should not be touched by naked hands.

**SPECIES CULTIVATED**: *L. laterita*, coral-red, Aug., 8 to 10 ft., Chili. See also *Blumenbachia*.

**Lobelia** (*Cardinal Flower*).—Ord. *Campanulacæ*. Hardy & half-hardy herbaceous perennials. First introduced 1629.

**OUTDOOR CULTURE OF HARDY SPECIES**: Soil, ordinary rich. Position, sunny moist borders. Plant, Oct., March or April. On cold, damp soils all the species (except *L. syphilitica*) best lifted in Oct., placed in pots, stored in cold frame till March, then replanted.

**POT CULTURE**: Compost, two parts sandy loam, one part leaf-mould & sand. Pot, Oct. or March. Position, cold frame, Oct. to March;

cool greenhouse, March till past flowering, then outdoors. Water very little Oct. to March, freely afterwards. Apply stimulants, May to Aug.

**CULTURE OF HALF-HARDY SPECIES:** Soil, ordinary. Position, pots in greenhouse heated to temp. 55°, Oct. to June; as edgings to beds, etc., outdoors, June to Oct. Plant, June, 3 to 6 in. apart. Lift plants in Sept., place in small pots, & store in greenhouse to furnish cuttings in spring. Cut off flower stems a fortnight before lifting.

**POT CULTURE:** Compost, equal parts good soil, leaf-mould & sand. Position, dwarf kinds in 4 or 5 in. pots, & trailing kinds in pots or baskets, in shady or sunny greenhouse or window. Pot, March to July. Water freely in summer, moderately other times. Apply stimulants to plants in flower. Propagate hardy perennial species by seeds sown 1-16 in. deep in sandy loam & leaf-mould in cold frame in Sept. or Oct., or in temp. 55° in March; cuttings of shoots inserted in small pots in temp. 55° in spring; division in March. Half-hardy species by seeds sown in heat in Feb., transplanting seedlings 2 in. apart in boxes, hardening off in cold frame, & planting out in May; cuttings of young shoots inserted in sandy soil in temp. 65° to 75° in spring; division in March or April.

**HARDY PERENNIAL SPECIES:** *L. cardinalis* (Cardinal Flower), scarlet, summer, 3 ft., N. America; *fulgens*, scarlet, May, 1 to 3 ft., Mexico; *syphilitica*, blue, July, 2 to 3 ft., N. America; *Gerardi*, violet, July, 3 to 4 ft., hybrid; *splendens*, scarlet, 2 to 3 ft., N. America.

**HALF-HARDY PERENNIAL SPECIES:** *Cavanillesii*, red, July, 2 to 3 ft., Chili; *Erinus*, blue, blue and white, summer, 6 in., parent of bedding varieties, S. Africa; *Robina ramosa*, 6 to 12 in., stronger and more straggly growers than the type.

**Lobster-flower** (*Euphorbia pulcherrima*).—See *Euphorbia*.

**Locks and Keys** (*Dicentra spectabilis*).—See *Dicentra*.

**Locust Tree** (*Robina pseudacacia*).—See *Robina*.

**Loganberry**.—See *Rubus*.

**Loiseleurea** (Alpine Azalea; Trailing Azalea).—Ord. Ericaceæ. Hardy trailing flowering shrub. Evergreen.

**CULTURE:** Soil, deep sandy peat. Position, open moist rockeries. Plant, Sept. to Nov. Propagate by layering shoots, Sept. to Nov.

**SPECIES CULTIVATED:** *L. procumbens*, rose, July to Aug., N. Europe. Syn. *Azalea procumbens*.

**Lomaria** (Deer Fern).—Ord. Filices. Tree & dwarf evergreen ferns. Stove, greenhouse, & hardy.

**CULTURE OF STOVE SPECIES:** Compost, equal parts loam, leaf-mould, peat, & sand. Position, pots, beds, or rockeries in shady part of stove. Pot or plant, Feb. or March. Water abundantly April to Sept., moderately afterwards. Temp., March to Sept. 70° to 80°; Sept. to March 60° to 70°. Syringe tree species twice daily, Feb. to Sept.

**CULTURE OF GREENHOUSE SPECIES:** Compost, as above. Pot, March or April. Position, pots, beds, or rockery in shady part of house. Water freely March to Oct., moderately Oct. to March. Syringe as advised for stove species. Temp., March to Sept. 55° to 65°; Sept. to March 50° to 55°.

**CULTURE OF HARDY SPECIES:** Soil, two parts sandy peat, one part loam & pounded limestone. Position, shady rockeries. Plant, Oct. to April. Water freely in dry weather. Protect *L. alpina* in very severe weather. Propagate by spores sown on fine sandy peat in well-drained pans in temp. 80° any time; dwarf species by division of plants, Oct. or April.



**STOVE SPECIES:** *L. attenuata*, Tropics; *gibba*, New Caledonia, and its varieties, *Platyptera* and *rosea*; *L'Hermieri*, Tropical America.

**GREENHOUSE SPECIES:** *L. boryana*, Tropics; *discolor*, Australia, and its varieties *bipinnatifida* and *nuda*; *lanceolata*, New Zealand; *pumila*, New Zealand.

**HARDY SPECIES:** *L. alpina*, New Zealand, etc.; *Spicant* (Hard Fern), Britain; *Spicant trinerva*.

**Lomatia.**—Ord. Proteacæ. Greenhouse evergreen shrubs. Orn. foliage. First introduced 1792. Leaves, feather & egg-shaped, green or glaucous.

**CULTURE:** Compost, equal parts peat, loam, & sand. Position, well-drained pots in sunny airy greenhouse. Pot, Feb. to April. Prune into shape when necessary, Feb. Water moderately Sept. to April, freely afterwards. Ventilate freely April to Sept., moderately afterwards. Temp., March to Oct. 55° to 65°; Oct. to March 45° to 55°. Propagate by cuttings of firm shoots, 2 to 3 in. long, inserted in sandy peat under bell-glass in temp. 60° to 70°, June to Sept.

**SPECIES CULTIVATED:** *L. Bidwillii*, 10 ft., N.S. Wales; *elegantissima*, 8 ft., New Zealand; *longifolia*, 8 to 10 ft., N.S. Wales.

**Lombardy Poplar** (*Populus nigra pyramidalis*).—See *Populus*.

**London Plane** (*Platanus acerifolia*).—See *Platanus*.

**London Pride** (*Saxifraga umbrosa*).—See *Saxifraga*.

**Lonicera** (Honeysuckle).—Ord. Caprifoliacæ. Hardy & half-hardy, erect & twining, deciduous & evergreen shrubs. Flowering & orn. foliage. Flowers fragrant.

**CULTURE OF TWINING SPECIES:** Soil, rich ordinary. Position, S. or W. walls or fences for evergreen kinds; fences, walls, or arbors in any aspect for deciduous kinds. Plant, Oct. to April. Top-dress with well-decayed manure in March or April. Prune *L. fragrantissima* slightly after flowering; other kinds in Feb., shortening shoots of previous year's growth to within 1 or 3 in. of base. Water freely in dry weather. Apply weak liquid manure occasionally in summer, to healthy plants.

**POT CULTURE:** Compost, two parts sandy loam, one part leaf-mould or well-decayed manure & sand. Pot, Oct. to Dec. Position, cold frame or greenhouse, Nov. to Feb.; warm greenhouse, Feb. to June; sunny place outdoors, June to Nov. Water freely, Feb. to Oct.; moderately afterwards. Apply stimulants occasionally when in flower. Prune previous year's shoots to within 1 or 2 in. of base in June.

**CULTURE OF *L. SEMPERVIRENS* IN GREENHOUSE:** Compost, same as for pot culture. Plant, Oct. to March. Position, small well-drained bed, or tub with shoots trained up rafter or trellis. Prune slightly after flowering. Water freely March to Sept., moderately afterwards. Temp., March to Sept. 55° to 65°; Sept. to March 40° to 50°.

**CULTURE OF SHRUBBY SPECIES:** Soil, ordinary. Position, open or shady shrubberies. Plant, Oct. to March. Prune away weak growths only, Dec. to Feb. Mulch with decayed manure, Feb. or March. Propagate by cuttings of firm shoots, 8 in. long, inserted in sandy soil in sheltered position outdoors in Oct. & Nov.; or in cocoa-nut-fibre refuse & silver sand in pots in cold frame or greenhouse; layering shoots, Aug. to Nov.

**TWINING SPECIES:** *L. Caprifolium* (Goat-leaf Honeysuckle), yellow, May and June, 10 to 15 ft., Europe (Britain); *confusa*, white or yellow, summer, 8 to 10 ft., Japan; *etrusca*, purple and yellow, May, 8 to 10 ft., Europe; *flava*, yellow, June, 10 ft., N. America; *flexuosa*, yellow or purplish, June, 10 ft., Japan; *fragrantissima*, creamy white or yellow, Jan. and Feb., 10 to 12 ft., China; *japonica*, red and white, July to Sept., 8 to 10 ft., Japan; *japonica aureo-reticulata*, leaves netted

with yellow; *Periclymenum* (Common Honeysuckle), red and yellow, June to Sept., 6 to 10 ft., Britain; *sempervirens* (Evergreen Honeysuckle), scarlet and yellow, May to Aug., 10 to 15 ft., N. America; hardy only in S. of England; *Standishii*, white and purple, spring, 8 to 10 ft., China; *tartarica*, rosy, April and May, 8 to 10 ft., Siberia.

**SHRUBBY SPECIES:** *L. alpigena*, red, April and May, 6 ft., Europe; *angustifolia*, yellow, April and May, 4 to 6 ft., Himalayas; *bella*, rosy yellow, April and May, 4 to 6 ft., hybrid; *Morrowii*, yellow, June, 4 to 6 ft., Japan; *Xylosteum* (Flag Honeysuckle), yellow, May and June, 4 to 6 ft., Europe.

**Loofah Gourd** (*Luffa ægyptica*).—See *Luffa*.

**Loosestrife**.—See *Lysimachia* and *Lythrum*.

**Lopezia**.—Ord. Onagraceæ. Hardy annuals. First introduced 1804.

**CULTURE:** Soil, ordinary. Position, sunny borders. Propagate by seeds sown 1-16 in. deep in April in patches or lines where plants are required to flower, or in light soil in temp. 55° to 65° in March, transplanting outdoors in May.

**SPECIES CULTIVATED:** *L. cordata*, purple, Aug., 18 in., Mexico; *cornata*, red, Aug., 1 ft., Mexico; *grandiflora*, red, Aug., 1 ft., Mexico.

**Lophospermum**.—See *Maurandia* and *Rhodochiton*.

**Loquat** (*Eriobotrya japonica*).—See *Eriobotrya*.

**Lord Anson's Pea** (*Lathyrus magellanicus*).—See *Lathyrus*.

**Lord Harrington's Yew** (*Cephalotaxus pedunculata*).—See *Cephalotaxus*.

**Loropetalum**.—Ord. Hamamelideæ. Hardy deciduous flowering shrubs, adapted for outdoor and cold greenhouse culture.

**OUTDOOR CULTURE:** Soil, ordinary, light, rich. Position, warm sheltered borders. Plant, Oct. to Feb. Prune to maintain good shape after flowering.

**GREENHOUSE CULTURE:** Compost, two parts sandy loam, one part leaf-mould, & a liberal amount of sand. Position, pots in cold, sunny greenhouse; must not be forced. Water freely between March & Oct., moderately afterwards. Pot in Oct.; stand outdoors in full sun from June to Oct. to ripen wood. Propagate by cuttings in sandy soil in a cold frame in spring or summer; by seeds in similar soil in a cold frame at any time.

**SPECIES CULTIVATED:** *L. sinense*, white, autumn to winter, 3 to 4 ft., China.

**Lotus** (Bird's-foot Trefoil).—Ord. Leguminosæ. Greenhouse & hardy perennials.

**CULTURE OF GREENHOUSE SPECIES:** Compost, two parts sandy loam, one part leaf-mould, half-part each pounded charcoal & sand. Pot, Feb. or March. Position, pots in light airy part of sunny greenhouse. Water moderately March to Sept., very little afterwards. Apply weak stimulants to healthy plants in flower. Temp., March to Sept. 55° to 65°; Sept. to March 45° to 55°.

**CULTURE OF HARDY SPECIES:** Soil, ordinary rich. Position, sunny rockeries or elevated beds. Plant, March or April. This species makes a very pretty rock plant. Propagate greenhouse species by seeds sown 1-16 in. deep in sandy soil in well-drained pot or pan in temp. 55° to 65° in March or April; cuttings of shoots inserted in well-drained pots of sandy soil under bell-glass in temp. 55° to 65° in summer. Hardy species by seeds sown 1-16 in. deep in April where plants are required to grow; division of plants in March or April.

**GREENHOUSE SPECIES:** *L. Bertholetii* (Syn. *pelliorinchus*), scarlet, summer, 2 ft., Canaries.

**HARDY SPECIES:** *L. corniculatus* (Bird's-foot Trefoil), yellow, summer, creeping, Britain.

**Lotus** (*Nymphaea lotus*).—See *Nymphaea*.

**Lotus-tree** (*Diospyros lotus*).—See *Diospyros*.

**Love-apple** (*Lycopersicum esculentum*).—See *Lycopersicum*.

**Love Grass** (*Eragrostis elegans*).—See *Eragrostis*.

**Love-in-a-Mist** (*Nigella damascena*).—See *Nigella*.

**Love-lies-bleeding** (*Amaranthus caudatus*).—See *Amaranthus*.

**Love Pea** (*Abrus precatorius*).—See *Abrus*.

**Love-tree** (*Cercis siliquastrum*).—See *Cercis*.

**Luculia**.—Ord. Rubiaceæ. Greenhouse evergreen shrubs. Flowering & orn. foliage. First introduced 1823.

**CULTURE**: Compost, equal parts fibrous loam, peat, charcoal, & sand. Position, in large well-drained pots, or preferably in beds 2 to 3 ft. wide & 18 in. deep. Put 6 in. of drainage into latter. Pot or plant, Feb., March or April. Prune shoots moderately after flowering to within 2 or 3 in. of base. Water freely April to Nov., withhold entirely afterwards. Syringe foliage twice daily, April to Sept. Temp., April to Sept. 60° to 70°; Sept. to Dec. 55° to 65°; Dec. to April 45° to 55°. Propagate by seeds sown 1-16 in. deep in well-drained pans of light sandy soil in temp. of 60 to 70° in Feb., March or April; cuttings of young shoots inserted in sandy soil under bell-glass in temp. 70° to 80° in June or July. Seedlings flower when 3 to 5 years old.

**SPECIES CULTIVATED**: *L. gratissima*, rose, autumn, 8 to 10 ft., Himalayas; *pinceana*, rose, autumn, 10 ft., Himalayas.

**Luffa** (*Loofah*).—Ord. Cucurbitaceæ. Stove climbing annuals bearing curious gourd-like fruits.

**CULTURE**: Sow seeds in a compost of equal parts leaf-mould & loam in a temp. of 75° in Feb. Transfer seedlings when third leaf forms singly into 3 in. pots, and later on to 8 or 10 in. pots, using three parts of loam to one of leaf-mould. Train shoots up roof. Water freely. Syringe daily. Feed with weak liquid manure when fruit has formed.

**SPECIES CULTIVATED**: *L. ægyptica*, yellow, spring; fruits long and club shaped, Tropics.

**Lunaria** (*Common Honesty*; *Money Flower*; *Satin Flower*).—Ord. Cruciferae. Biennial & perennial flowering & orn. fruiting plants. First introduced 1595. Seed pods flat, oval, containing a satiny partition; very useful for drying for winter decorations.

**CULTURE OF BIENNIAL SPECIES**: Soil, ordinary. Position, partially shaded borders or margins of shrubberies. Plant, Aug. to Nov., singly or in groups of 3 or 6. Discard plants after flowering.

**CULTURE OF PERENNIAL SPECIES**: Soil, light rich ordinary. Position, partially shaded borders. Plant, Oct., Nov., March or April. Propagate biennial species by seeds sown in shallow drills or patches outdoors in sunny position in April, transplanting seedlings when third leaf is formed 6 in. apart each way; perennial species by seeds similarly, or by division of roots in March or April.

**ANNUAL SPECIES**: *L. annua* (*Syn. biennis*), lilac, white, or purple, May and June, 2 to 3 ft., Europe. Common Honesty.

**PERENNIAL SPECIES**: *L. rediviva*, purple, fragrant, June, 2 to 3 ft., Europe.

**Lung-wort** (*Pulmonaria officinalis*).—See *Pulmonaria*.

**Lupine** (*Lupinus polyphyllus*).—See *Lupinus*.

**Lupinus** (*Lupine* or *Lupin*).—Ord. Leguminosæ. Hardy shrubby & herbaceous perennials & annuals. Flowering and orn. foliage. First introduced 1596.

**CULTURE OF SHRUBBY PERENNIALS**: Soil, sandy loam. Position, sunny rockeries or open sheltered borders. Plant, Oct. or April.

Protect, Nov. to April, with layer of bracken or litter around base of plant.

**CULTURE OF HERBACEOUS PERENNIALS:** Soil, ordinary rich. Position, open sunny or partially-shaded borders. Plant, Oct., Nov., March or April. Mulch with decayed manure in April. Cut down flower stems in Oct.

**CULTURE OF ANNUAL SPECIES:** Sow seeds  $\frac{1}{8}$  in. deep & 1 in. apart in April in patches where required to flower. Thin seedlings in May to 2 or 3 in. apart. Remove seed pods directly they form to ensure continuous display of flowers. Apply stimulants when in flower. Water freely in dry weather. Propagate by seeds sown  $\frac{1}{8}$  in. deep outdoors in April, transplanting seedlings into flowering positions, June to Aug.; division of plants in April.

**SHRUBBY SPECIES:** *L. arboreus* (Tree Lupine), yellow, fragrant, summer, 3 to 4 ft.; *arboreus alba*, white.

**HERBACEOUS SPECIES:** *L. Cruickshankii*, blue, purple, and yellow, July, 4 ft., Peru; *nootkatensis*, blue, purple, and yellow, summer, 1 ft., N. America; *polyphyllus* (Perennial Lupin), blue, summer, 3 to 6 ft., California; *polyphyllus albus*, white.

**ANNUAL SPECIES.**—*L. atrococcineus hybridus*, crimson, summer, 2 ft., hybrid; *Hartwegii*, blue, white, and rose, Aug. to Sept., 2 ft., Mexico, really a perennial, but best grown as an annual; *densiflorus* (Syn. *Menziesii*), yellow, fragrant, Aug., 2 ft., California; *mutabilis*, white, blue, and yellow, fragrant, summer, 3 to 4 ft., Colombia; *nanus*, lilac and blue, summer, 1 ft., California; *subcarneus*, blue and yellow, summer, 1 ft., Texas; *tricolor elegans*, blue and white, summer, 1 ft.

**Lycaste.**—Ord. Orchidacæ. Warm greenhouse, evergreen, & deciduous orchids. First introduced 1790.

**CULTURE:** Compost, equal parts fibry peat & chopped sphagnum moss, with little sand & charcoal. Position, well-drained pots, pans, or baskets, in light part of greenhouse. Pot when new growth commences. Water deciduous species freely from time new growth begins until Nov., then occasionally; evergreen species freely from March to Nov., moderately Nov. to March. Syringe once or twice daily whilst making growth. Ventilate freely May to Sept. Temp., April to Oct. 55° to 65°; Oct. to April 45° to 55°. Growing period, Feb. to March; resting period, Oct. to Feb. Plants may be grown in sitting-room or cool conservatory when in flower. Flowers appear at base of new pseudo-bulb when latter begins to form. Propagate by division of pseudo-bulbs immediately after flowering.

**SPECIES CULTIVATED:** *L. aromatica*, yellow and orange, June, 1 ft., Mexico; *Depeii*, green, purple, yellow, and crimson, March to July, 1 ft., Mexico; *macrophylla*, white and crimson, winter, Bolivia; *macrophylla measuresiana*, brown, green, white, and purple, winter; *Skinneri*, white, rose, and crimson, Oct. to March, 1 ft., Guatemala; *Skinneri alba*, white; *tetragona*, green, white, purple, and crimson, fragrant, summer, 1 ft., Brazil.

**Lychnis** (Campion; German Catchfly; Rose Champion). — Ord. Caryophyllacæ. Hardy annuals & perennials.

**CULTURE OF PERENNIAL SPECIES:** Soil, light rich loam for *L. alpina* & *L. Lagascæ*; open dryish beds, borders, or banks for other species. Plant, Oct. to Dec. & Feb. to May. Cut down flower stems of *L. chalconica* & *L. vespertina* in Oct. or Nov. Top-dress border species with well-decayed manure in March or April. Apply weak liquid manure occasionally to border species when in flower. Lift & replant border species every other year.

**CULTURE OF ANNUAL SPECIES:** Soil, ordinary. Position, sunny beds or edgings to or masses in borders. Sow in March or April for summer blooming; Sept. for spring flowering. Propagate by seeds sown  $\frac{1}{8}$  in. deep in light soil in sunny position outdoors in March or

April, transplanting seedlings into flowering position, Aug. to Nov.; division of plants, Sept. to Dec. & Feb. to April.

**PERENNIAL SPECIES:** *L. alba* (Syn. *vespertina*), White Campion, white, May to Aug., 3 ft., Britain; alpina, rosy pink, summer, 6 in., Europe (Britain); chalcidonia (Scarlet Lychnis or Jerusalem Cross), scarlet, summer, 3 ft., Russia, and its varieties *alba* (white) and *flore-pleno* (double); coronaria (Syn. *Agrostemma coronaria*), crimson, July and Aug., 2 to 3 ft., S. Europe, and its varieties, *atrosanguinea* (crimson-red), *alba* (white), and *flore-pleno* (red); *dioica* (Red Campion), purple, rose, summer, 3 ft., Britain; *Flos-cuculi* (Ragged Robin), rose, May and June, 1 to 2 ft., Britain, and its double variety, *flore-pleno*; *fulgens*, vermilion, May to Sept., 6 to 12 in., Siberia; *haageana*, scarlet, summer, 1 to 2 ft., hybrid; Lagasceæ, rose and white, summer, 3 in., Pyrenees; *viscaria* (German Catchfly), reddish purple, summer, 1 ft., Europe (Britain); *viscaria splendens*, red; *viscaria alba*, white; *viscaria flore-plena*, rose, double.

**ANNUAL SPECIES:** *L. Cœli-rosa* (Syn. *Agrostemma Cœli-rosa*), Rose of Heaven, rose and purple, summer, 1 ft., Levant; *oculata* (Syn. *Viscaria oculata*), pinkish purple, summer, 1 ft., also its varieties *splendens* (scarlet), *cardinalis* (crimson), *alba* (white), *Dunnetti* (rose). *Oculata* is said by some authorities to be a form of *Cœli-rosa*.

**Lycium** (Box-thorn; African Tea-tree; Duke of Argyll's Tea-tree.—Ord. Solanaceæ. Hardy erect & climbing flowering shrubs. Deciduous. First introduced 1696. Branches more or less spiny.

**CULTURE:** Soil, ordinary. Position, well-drained borders with shoots trained to fences, arbours, porches, pergolas, verandas, trellises, or walls in any aspect; also suitable for hedges. Plant, Oct. to Feb. Prune, Oct. to Feb., removing weak shoots entirely & shortening vigorous ones a little.

**HEDGE CULTURE:** Trench ground 2 spits deep & 3 ft. wide. Plant 12 in. apart in single rows, Oct. to Feb. Trim into shape, June & July. *L. europæum* an excellent climber for positions near the sea. Propagate by cuttings of firm shoots 6 to 8 in. long, inserted in ordinary soil in shady position in Sept. or Oct.; layering shoots, Sept. to Nov.; by removing suckers with roots attached, Oct. to Feb.

**SPECIES CULTIVATED:** *L. afrum*, crimson and violet, June and July, 6 to 8 ft. S. Africa; *sinense* (Syn. *L. barbarum*), the Common Box-thorn or Duke of Argyll's Tea-tree, purple and yellow, summer, 10 to 12 ft., succeeded by scarlet berries, China.

**Lycopersicum** (Love Apple; Tomato).—Ord. Solanaceæ. Tender annual. Nat. S. America. First introduced 1596. Fruit, variously shaped, red or yellow; edible.

**POT CULTURE:** Compost, two parts decayed turfy loam, one part well-decomposed manure. Position, warm light greenhouse, Feb. to June; cold sunny greenhouse, June to Oct. Sow seeds in Jan. in temp. 75° for warm greenhouse; in March in temp. 65° for cold greenhouse. Depth for sowing seeds,  $\frac{1}{2}$  in. Ordinary light mould suitable for sowing seeds in. Transfer seedlings when 3 leaves have formed singly into 2 in. pots, or 2 in. apart in larger pots or boxes; into 6 in. pots when 6 in. high; into 8 or 10 in. pots when 12 in. high. Drain pots well & pot firmly. Fill pots two-thirds full only with compost. Train plants with one stem only. Rub off all side shoots. Water sparingly till fruit forms. Syringe twice daily in fine weather, except when in flower. Fertilise flowers at mid-day by tapping with a stick. Apply liquid or artificial manures when fruit has set. Top-dress when bearing freely with compost of two parts loam & one part decayed manure, adding tablespoonful of superphosphate to every bushel. Ventilate freely when in flower. Dry atmosphere essential to ensure good set. Temp. for warm greenhouse, Feb. to June, 55° to 65°.

**CULTURE IN BOXES:** Size of boxes for single plants 10 in. square;

for two plants 12 in. wide, 9 in. deep, 18 in. long; for four plants 18 in. wide, 2 ft. long, 9 in. deep; for eight plants 18 in. wide, 36 in. long, 12 in. deep. Half-fill with compost only, until fruit sets, then top-dress. Cultural details same as for pots.

**CULTURE IN BEDS:** Compost, decayed turfy soil only; no manure. Place compost in ridge 18 in. wide & 12 in. high in centre on staging near front of house, or in beds on floor 2 ft. wide & 18 in. deep, enclosed with dry bricks or turves. Plant 12 in. apart for single stems; 3 ft. apart for 3 or more stems. Remove all side shoots from single stem, also any that issue from the side of the three-stemmed plants. Water very little till fruit has set, then freely. Apply stimulants only when fruit has formed. Fertilise as for pot plants. Ventilate freely when temp. reaches 90°. Top-dress when several bunches of fruit have formed with similar compost to that advised for pot plants. Temp., Feb. to June., 55° to 65°.

**CULTURE IN FRAMES:** Compost, as above. Plant in heated frame in Feb., March or April; in cold frame, June. Allow one plant to each light, and train to three stems, these resting on trellis or branches near glass. Water moderately until fruit forms, then freely. Ventilate freely during middle of day. Shade not required. Stimulants, top-dressing and training as above. Temp. for heated frame, 55° to 65°. Syringing unnecessary.

**WINTER CULTURE:** Compost as above. Position, pots preferably or beds. Sow seed in June. Plant or pot, Aug. or Sept. Water sparingly. Apply stimulants only to plants bearing freely. Train to one or three stems. Dry atmosphere necessary to ensure flowers setting. Temp., 55° to 65°.

**OUTDOOR CULTURE:** Soil, ordinary, not recently manured. Position, against S. or W. walls or fences, or in open. Plant, June, 12 in. apart against walls & 2 ft. apart each way in open. Train to one stem, removing all side shoots. Place stout stakes to plants in open. Apply stimulants when fruit has set. Plants should bear their first fruit when 11 weeks old. Average yield of fruit: Single-stemmed plant in 10 in. pot, 6 to 8 lb.; in beds, 7 to 10 lb.; outdoors, 4 to 6 lb. Triple-stemmed, 8 to 15 lb.

**MARKET CULTURE:** Best type of house: Span-roof (15 to 25 ft. wide). Distances to plant: 1 ft. apart in rows 2 ft. asunder. Mode of training: Single stem secured to a strand of twine or a bamboo stake. Soil: Good loam. Manures: One barrow-load of dung, 12 oz. of superphosphate, & 6 oz. of kainit to each three square yards before planting. Stop main stems of plants grown in pots after third truss has set; others when they reach the roof. Plant firmly. Best results obtained from plants reared from seed. Soil should be removed after third crop. Average prices: Oct. to Jan., 5s. to 6s.; Feb. to May, 6s. to 12s.; May to Sept., 3s. to 5s. per 12 lb.

**SUITABLE MANURES FOR TOMATOES:** 1. One part nitrate of potash, two parts nitrate of soda, two parts double superphosphate of lime. Use 1 oz. to a gallon of water, or apply dry at same rate to six pots. 2. One part nitrate of soda, one part dried blood, one part kainit, & two parts superphosphate of lime. Apply to plants in beds at rate of 2 oz. per square yard when fruit has set. Apply above quantities once a week.

**USEFUL DATA:** Seeds germinate in 10 to 12 days. One ounce of

seed will yield 2,000 plants. Seeds will retain germinating powers for six years. Propagate by seeds or cuttings.

SPECIES CULTIVATED: *L. esculentum*.

**Lycopodium** (Fir Club Moss; Stag's-horn Moss).—Ord. Lycopodiaceæ. Stove & hardy perennial mosses. Orn. foliage. Habit, creeping or erect, stems clothed with scale-like, dark green leaves.

CULTURE OF STOVE SPECIES: Compost, equal parts loam, peat, limestone & silver sand. Position, well-drained shallow pans, under bell-glass or in beds in wardian cases. Pot or plant, Feb. to April. Water freely, March to Sept.; moderately afterwards. Syringe once or twice daily, April to Sept. Shade from direct rays of sun. Temp., March to Sept. 65° to 75°; Sept. to March 55° to 65°.

CULTURE OF HARDY SPECIES: Soil, deep, moist, sandy peat. Position, low bed on open sunny rockery. Plant, March or April. Water freely in dry weather.

CULTURE OF HARDY SPECIES IN WARDIAN CASES: Compost, two parts peat, one part leaf-mould, one part charcoal, & liberal quantity of limestone chips or tufa. Bed to be well drained. Plant, Feb. to April. Water once or twice a week April to Sept., once a fortnight Sept. to Dec., once a month Dec. to April. Syringe or dew over daily April to Oct. Shade from sun. Ventilate a little daily. Propagate by division, Feb. to April.

STOVE SPECIES: *L. squarrosum*, 1 ft., India; *taxifolium*, W. Indies; *verticillatum*, Tropics.

HARDY SPECIES: *L. clavatum* (Club or Stag's-horn Moss), creeping, Britain; *Selago* (Fir Club Moss), 3 in., Britain. See also the genus *Selaginella*.

**Lycoris** (Golden Lily).—Ord. Amaryllidaceæ. Greenhouse flowering bulbs. Deciduous. First introduced 1758.

CULTURE: Compost, two parts sandy loam, one part equal proportions of leaf-mould & cow manure. Pot dry bulbs Sept. to Dec., afterwards repotting annually immediately after flowering. Bury bulbs about two-thirds of their depth. Water moderately from time flowers show till leaves appear, then freely; keep quite dry after leaves fade. Temp., Sept. to April 55° to 65°. Place pots from April to Sept. in light sunny cool position. Propagate by offsets treated as bulbs, Sept. to Dec.

SPECIES CULTIVATED: *L. aurea* (Syn. *Amaryllis aurea*), yellow, Aug., 1 ft., China; *radiata* (Syn. *Nerine japonica* and *Amaryllis radiata*), scarlet, June, 18 in., China and Japan; and its varieties *alba* (white), and *variegata* (crimson and white); *squamigera*, rosy lilac, fragrant, summer, 2 ft., Japan.

**Lygodium** (Climbing Fern).—Ord. Filices. Stove & greenhouse climbing ferns. Deciduous & evergreen. First introduced 1793. Fronds, slender, twining; divisions tongue or hand-shaped.

CULTURE: Compost, equal parts peat, loam, sand, & charcoal. Position, well-drained pots or beds in shade with fronds twined round sticks, pillars, string, or trellis. Plant or pot, Feb. to April. Water freely Feb. to Oct., moderately afterwards. Temp.: Stove species, Sept. to March 55° to 65°; March to Sept. 65° to 75°; Greenhouse species, Sept. to March 45° to 50°; March to Sept. 55° to 65°. Propagate by spores sown on surface of fine sandy peat under bell-glass in temp. 75° to 85° any time; division of plants at potting time.

STOVE SPECIES: *L. dichotomum*, Trop. Asia; *reticulatum*, Polynesia.

GREENHOUSE SPECIES: *L. japonicum* (Syn. *L. scandens*), Japan, etc., palmarum, U. States.

**Lyonia**.—Ord. Ericaceæ. Hardy-flowering shrubs. Evergreen. First introduced 1748.

**CULTURE:** Soil, peaty. Position, moist shady borders. Plant, Sept. to Nov. & Feb. to April. Pruning unnecessary. Propagate by seeds sown on surface of sandy peat under bell-glass in shade in cold frame or greenhouse in Oct. or April; layering shoots, Sept. or Oct.

**SPECIES CULTIVATED:** *L. ligustrina* (Syn. *L. paniculata*), white, June, 4 to 8 ft., N. America.

**Lyon's Shell-flower** (*Chelone Lyoni*).—See *Chelone*.

**Lyre-tree** (*Liriodendron tulipifera*).—See *Liriodendron*.

**Lysimachia** (Yellow Loose-strife; Creeping Jenny; Yellow Pimpernel).—Ord. Primulacæ. Hardy erect or creeping herbaceous perennials.

**CULTURE OF HERBACEOUS SPECIES:** Soil, ordinary rich. Position, moist shady borders, margins of ponds or streams. Plant, Oct. to April. Cut down flower stems, Nov.

**OUTDOOR CULTURE OF CREEPING JENNY.**—Soil, ordinary. Position, moist shady rockeries or margins of beds, ponds, or streams. Plant, March to June.

**INDOOR CULTURE:** Compost, two parts good ordinary soil or loam, one part leaf-mould, decayed manure or cocconut-fibre refuse, & one part sand. Position, well-drained pots or baskets suspended in shady window or cool greenhouse. Pot, March to May. Water freely April to Sept., moderately Sept. to Dec., keep nearly dry Dec. to April. Apply stimulants once or twice a week May to Aug. Propagate herbaceous species by division of plants Oct. to Dec., or March. Creeping Jenny by division, March to May.

**HERBACEOUS SPECIES:** *L. atropurpurea*, purple, summer, 2 ft., Greece; *clethroides*, white, July to Sept., 3 ft., Japan; *ephemerum*, white, summer, 3 ft., S. Europe; *lanceolata*, yellow, summer, 18 in., N. America; *punctata* (Syn. *verticillata*), yellow, summer, 1 ft., Europe; *thyrsiflora*, yellow, June and July, 3 ft., N. Europe; *vulgaris* (Yellow Loose-strife), yellow, July and August, 3 ft., Britain.

**CREEPING SPECIES:** *L. nemorum* (Yellow Pimpernel), yellow, May to July, Britain; *L. nummularia* (Creeping Jenny), yellow, June to Sept., Britain; *nummularia aurea* (Golden Creeping Jenny), golden leaved.

**Lythrum** (Purple Loose-strife; Willow-weed).—Ord. Lythracæ. Hardy herbaceous & shrubby perennials.

**CULTURE:** Soil, ordinary. Position, moist shady borders or margins of ponds or streams. Plant, Oct. to Dec. or Feb. to April. Cut down flower stems in Nov. Water freely in dry weather. Top-dress with well-decayed manure, March or April. Lift, divide, and replant every third year. Propagate by division of plants, Oct. or April.

**SPECIES CULTIVATED:** *L. alatum*, purple, July to Oct., 2 to 4 ft., N. America; *Salicaria* (Common Loose-strife), reddish purple, July 3 to 4 ft., Britain, and its varieties *roseum* and *superbum*; *virgatum*, purple, summer, 3 ft., Europe.

**Macartney Rose** (*Rosa bracteata*).—See *Rosa*.

**Mace Reed** (*Typha latifolia*).—See *Typha*.

**Mackaya.**—Ord. Acanthacæ. Greenhouse flowering shrub. Deciduous. First introduced 1869.

**CULTURE:** Compost, two parts decayed fibrous loam, one part dried cow manure, half a part sharp silver sand. Position, light airy greenhouse. Pot, March. Prune after flowering, shortening shoots to 2 or 3 in. Water freely March to Sept., moderately Sept. to Nov., keep quite dry Nov. to March. Temp., April to Oct. 55° to 65°; Oct. to April 45° to 55°. Propagate by cuttings inserted singly in 2 in. pots filled with sandy soil, June to Aug. Transfer to 5 in. pots when rooted; prune closely in April and shift into 8 in. & 10 in. pots. Plants flower when two to three years old.

**SPECIES CULTIVATED:** *M. bella*, lilac and purple, April to June, 4 to 6 ft., Natal.



**Mackerel Mint** (*Mentha viridis*).—See *Mentha*.

**Macleania**.—Ord. *Vacciniaceæ*. Greenhouse trailing flowering shrubs. Evergreen. First introduced 1848.

**CULTURE**: Compost, equal parts turfy loam, peat & sand. Position, well-drained pots with shoots drooping over front of staging, or in suspended baskets. Pot, March or April. Water freely March to Sept., moderately afterwards. Prune straggling shoots into shape March. Temp., March to Sept. 55° to 65°; Sept. to March 45° to 55°. Propagate by cuttings inserted in fine sand in temp. 55° to 65° in summer.

**SPECIES CULTIVATED**: *M. pulchra*, yellow and scarlet, spring, 8 to 10 ft., Colombia; *speciosissima*, yellow and scarlet, spring, trailing, Colombia.

**Maclura** (*Osage Orange*).—Ord. *Urticaceæ*. Hardy deciduous tree. Orn. foliage. First introduced 1818. Flowers, yellowish green, inconspicuous. Fruit, round, golden yellow, 3 to 5 in. in diameter; rarely borne in this country. Leaves, egg-shaped, bright green.

**CULTURE**: Soil, ordinary. Position, in open sheltered shrubbery or hedges. Plant, Oct. to Feb. Prune into shape when necessary, Nov. to Feb.

**HEDGE CULTURE**: Plant 12 in. apart in single row. Soil to be trenched two spits deep & 3 ft. wide. Trim into shape, July & Nov. Propagate by cuttings 6 to 8 in. long, inserted in ordinary soil, in shady position, Oct. to March.

**SPECIES CULTIVATED**: *M. aurantiaca*, 10 to 15 ft., N. America.

**Macrozamia** (*Swan River Fern Palm*; *Giant Fern Palm*).—Ord. *Cycadaceæ*. Greenhouse evergreen perennials. Orn. foliage. First introduced 1846. Leaves, feather-shaped, green; very graceful.

**CULTURE**: Compost, equal parts peat, loam & sand. Position, well-drained pots, in light greenhouse, shaded from sun. Pot, Feb. or March. Water freely April to Oct., moderately afterwards. Syringe daily April to Sept. Temp., March to Sept. 60° to 70°; Sept. to March 55° to 60°. Propagate by seeds sown in sandy peat in temp. 75° in March; division of plants in March; offsets in Feb. or March.

**SPECIES CULTIVATED**: *M. Fraseri*, W. Australia; *Hopei*, Australia; *peroffskyana*, Australia; *tenuifolia*, Australia.

**Madagascar Jasmine** (*Stephanotis floribunda*).—See *Stephanotis*.

**Madagascar Periwinkle** (*Vinca rosea*).—See *Vinca*.

**Madeira Orchis** (*Orchis foliosa*).—See *Orchis*.

**Madeira Vine** (*Boussingaultia basseloides*).—See *Boussingaultia*.

**Madia** (*Madia Oil Plant*).—Ord. *Compositæ*. Hardy annuals. First introduced 1794.

**CULTURE**: Soil, ordinary. Position, shady borders. Propagate by seeds sown  $\frac{1}{2}$  in. deep in April in patches where required to flower, thinning out seedlings when 2 in. high, to 3 in. apart.

**SPECIES CULTIVATED**: *M. elegans*, yellow, Aug., 1 ft., N.W. America; *sativa*, yellow, Aug., 1 ft., N. America.

**Madonna Lily** (*Lilium candidum*).—See *Lilium*.

**Mad-wort** (*Alyssum saxatile*).—See *Alyssum*.

**Magnolia** (*Cucumber Tree*; *Yulan*).—Ord. *Magnoliaceæ*. Hardy deciduous & evergreen trees & shrubs. Flowering & orn. foliage. First introduced 1688.

**GREENHOUSE CULTURE**: Compost, two parts sandy loam, one part peat or leaf-mould & sand. Position, well-drained pots or tubs, or against walls in sunny greenhouse. Pot or plant, March. Water freely in summer, moderately other times. Syringe daily March to

Sept. Temp for forcing, 55° to 65°. Prune straggling shoots only into shape, March or April. *M. Campbellii*, *Lennei* & *Stellata*, good kinds for greenhouse culture.

**OUTDOOR CULTURE:** Soil, rich, deep sandy loam. Position, sheltered parts of lawn or pleasure garden, or against S. or S.W. walls; against S. or W. walls for *M. grandiflora* & *M. glauca*. Plant, March or April. Prune evergreen species March or April; deciduous species after flowering. Protect evergreen species in very severe weather in cold districts. Apply weak liquid manure to healthy specimens occasionally. Propagate by seeds sown  $\frac{1}{2}$  in. deep in spring or autumn in well-drained pots of sandy soil in a cold frame or greenhouse; layering in summer or autumn; grafting in heat in July or Aug.

**DEODUOUS SPECIES:** *M. conspicua* (Yulan), white, spring, 20 to 25 ft., China and Japan; *acuminata* (Cucumber Tree), green and yellow, May to July, 30 to 60 ft., N. America, and its variety *cordata*, yellow and purple, April; *Campbellii*, rosy crimson, fragrant, April, 20 to 30 ft., Himalayas, does best in greenhouse; *Fraseri*, creamy yellow, fragrant, May, 30 to 40 ft., S. United States; *hypoleuca*, creamy white, fragrant, spring, 30 to 40 ft., Japan; *Lennei*, rosy purple, April and May, 10 to 15 ft., hybrid; *macrophylla*, white and purple, fragrant, June, 20 to 30 ft., N. America; *obovata*, white and purple, fragrant, May, 5 ft., Japan; *obovata purpurea*, deeper coloured; *parviflora*, white and rose, May, 8 ft., Japan; *stellata*, white, fragrant, March to May, 6 ft., Japan; *tripetala* (Syn. *M. Umbrella*), the Umbrella Tree, white, fragrant, April and May, 20 to 30 ft., S. United States; *Watsoni*, creamy white, fragrant, June, 4 ft., Japan; *soulangiana*, white and purple, May, 20 ft., hybrid.

**EVERGREEN SPECIES:** *M. grandiflora*, white, fragrant, July and Aug., 15 to 20 ft., S. United States; *glauca* (Sweet Bay), creamy white, fragrant, June, 20 ft., E. United States.

**Mahaleb Cherry.**—See *Prunus*.

**Maianthemum** (Twin-leaved Lily-of-the-Valley). Ord. Liliacæ. Hardy herbaceous perennial. Leaves & habit similar to the Lily-of-the-Valley.

**CULTURE:** Soil, ordinary rich. Position, shady borders in the open, or under shrubs. Plant, Sept. & Oct. Water freely in dry weather. Propagate by division of creeping root-stocks in Sept. or April.

**SPECIES CULTIVATED:** *M. convallaria* (Syn. *Smilacina bifolia*), white, May, 6 in., N. Europe.

**Maiden-hair Fern** (*Adiantum capillus-veneris* & *A. cuneatum*).—See *Adiantum*.

**Maiden-hair Grass** (*Briza media*).—See *Briza*.

**Maiden-hair Meadow-Rue** (*Thalictrum adiantifolia minus*).—See *Thalictrum*.

**Maiden-hair Spleen-wort** (*Asplenium trichomanes*).—See *Asplenium*.

**Maiden-hair Tree** (*Gingko biloba*).—See *Gingko*.

**Maiden Oak** (*Quercus sessiliflora*).—See *Quercus*.

**Maiden Pink** (*Dianthus deltoides*).—See *Dianthus*.

**Maiden's Wreath.**—See *Francoa*.

**Maid's Love** (*Artemisia Abrotanum*).—See *Artemisia*.

**Maize** (*Zea Mays*).—See *Zea*.

**Malabar Glory Lily** (*Gloriosa superba*).—See *Gloriosa*.

**Malcomia** (Virginian Stock).—Ord. Cruciferæ. Hardy annual. First introduced 1713.

**CULTURE:** Soil, ordinary. Position, edging to sunny beds, masses on sunny borders, or on banks or rockeries. Sow seeds for summer flowering 1-16 in. deep in March, April, May or June, where plants are required to grow, and similar depth in Sept. for flowering in spring.

**POT CULTURE:** Compost, two parts good ordinary soil, one part leaf-mould, cocoanut-fibre refuse, decayed manure & sand. Position in 5 in. pots, well drained, in cold sunny greenhouse or window. Sow seeds 1-16 in. deep in above pots in March, April or May. Water moderately when first sown, freely when in full growth. Thin seedlings to  $\frac{1}{2}$  in. apart when 1 in. high. Apply weak stimulants when flower buds show.

**SPECIES CULTIVATED:** *M. maritima* (Virginian Stock), various colours, summer, 6 in., S. Europe.

**Male Dog-wood** (*Cornus Mas*).—See *Cornus*.

**Male Fern** (*Nephrodium Filix-mas*).—See *Nephrodium*.

**Mallow**.—See *Malva*.

**Mallow, False**.—See *Malvastrum*.

**Malmaison Carnation**.—See *Dianthus*.

**Malope** (Large-flowered Mallow-wort).—Ord. *Malvaceæ*. Hardy annuals. First introduced 1710.

**CULTURE:** Soil, rich ordinary. Position, sunny beds, or in masses in borders. Sow seeds  $\frac{1}{2}$  in. deep & 4 to 6 in. apart, where required to grow, in April or May. Water freely in dry weather. Apply stimulants occasionally when plants show flower. Propagate also by seeds sown  $\frac{1}{2}$  in. deep in pots or boxes of light soil in temp. 55° in March, transplanting into flowering positions in May or June.

**SPECIES CULTIVATED:** *M. malacoides*, rosy pink and purple, summer, 1 ft., S. Europe; *trifida*, purple, summer, 2 to 3 ft., Spain; *trifida alba*, white, *trifida grandiflora*, crimson.

**Maltese Clover** (*Hedysarum coronarium*).—See *Hedysarum*.

**Malva** (Musk Mallow).—Ord. *Malvaceæ*. Hardy annual & perennial flowering plants.

**CULTURE OF PERENNIAL SPECIES:** Soil, ordinary. Position, sunny or partially shaded beds or borders. Plant, Oct. or March. Mulch with manure in autumn.

**CULTURE OF ANNUAL SPECIES:** Soil, ordinary. Position, sunny. Plant, May or June. Propagate annual species by seeds sown  $\frac{1}{2}$  in. deep in light, sandy soil in temp. 55° in March or April; perennial species by seeds sown similarly, or by cuttings inserted in cold frame in July or Aug.

**ANNUAL SPECIES:** *M. crispa*, white and purple, summer, 3 to 6 ft., Europe; *auritanica*, purple, June, 4 to 6 ft., S. Europe.

**PERENNIAL SPECIES:** *M. Alcea*, rosy purple, summer, 4 ft., Europe, best grown as an annual; *moschata* (Musk Mallow), rose, summer, 3 ft., Britain; *moschata alba*, white.

**Malvastrum** (False Mallow).—Ord. *Malvaceæ*. Hardy perennials. First introduced 1811. Soil, ordinary. Position, sunny rockeries for dwarf species; sunny well-drained borders for tall species. Plant, Oct. or March. Protect in severe winters with a layer of cinder ashes, manure or leaf-mould. Propagate by seeds sown  $\frac{1}{2}$  in. deep in light, sandy soil in temp. 55° in March or April; cuttings inserted in cold frame in July or Aug.

**SPECIES CULTIVATED:** *M. coccineum*, scarlet, July to Sept., 6 in., U. States; *Gilliesii* (Syn. *Modiola geranoides*), red, summer, 6 in., S. America; *lateritum* (Syn. *Malva laterita*), salmon-pink, summer, 1 ft., Monte Video.

**Mammillaria** (Nipple Cactus; Elephant's Tooth Cactus).—Ord. *Cactaceæ*. Greenhouse succulent perennials. First introduced 1690. Flowers, generally expanding about 11 a.m., and closing at 1 p.m.; somewhat fugitive. Stems leafless, cylindrical or globular, bearing at even distance over their surface small tubercles or teats, crowned with rosettes or stars of spines.

**CULTURE:** Compost, equal parts sandy loam, rough old mortar & pounded bricks. Position, sunny, airy greenhouse or window. Pot, March or April, in well-drained pots just large enough to accommodate roots. Replot every third or fourth year only. Water moderately, March to Sept.; once a fortnight, Sept. to Dec., none afterwards. Syringe on evenings of warm days, June to Sept. Apply soot water to healthy plants, June to Sept. Ventilate freely in summer. Temp., March to Sept., 60° to 70°; Sept. to March, 50° to 55°. Propagate by seeds sown  $\frac{1}{8}$  in. deep in well-drained pans or pots of sandy soil in temp. 75° in March, keeping soil moderately moist; by cuttings of the tops of the plants inserted in small pots of sandy, gritty compost in spring; by grafting on *Cereus speciosissimus* at any time.

**SPECIES CULTIVATED:** *M. bicolor*, purple, June, 6 to 12 in., Mexico; *chlorantha*, greenish yellow, summer, 6 in., Mexico; *cirrifer*, rose, summer, 4 in., Mexico; *clava*, green, red, and yellow, June, 1 ft., Mexico; *compressa* (*Syn. augularis*), rosy purple, summer, 4 to 8 in., Mexico; *dasycantha* (*Thimble Cactus*), red, summer, 3 in., Mexico; *discolor*, rosy red, 2 in., Mexico; *dolichoentra*, pale purple, summer, 6 to 8 in., Mexico; *echinata*, rose, summer, 6 in., Mexico; *echinus*, yellow, June, 2 to 3 in., Mexico; *elegans*, 2 in., Mexico, grown for its stem only; *elephantidens*, violet-rose, autumn, 6 in., Paraguay; *elongata*, yellow, summer, 3 in., Mexico; *fissurata*, rose, 2 in., Mexico; *floribunda*, rose, summer, 5 in., Chili; *gracilis*, yellow or white, summer, 2 in., Mexico; *Grahami*, rose, July, 3 in., Colorado; *haageana*, carmine-rose, June, 4 in., Mexico; *longimamma*, citron-yellow, June, 4 in., Mexico; *macromeris*, carmine, Aug., 4 in., Mexico; *macrothela*, yellow, June, Mexico; *micromeris*, white or pink, Aug., 4 in., Mexico; *multiceps*, yellow and red, summer, 1 ft., Mexico; *neumanniana*, rose, summer, 6 in., Mexico; *Otonis*, white, May, 3 in., Mexico; *phellosperma*, 5 ft., Mexico; *pulchra*, rose, June, 4 in., Mexico; *pusilla*, yellowish white and red, May, 2 in., Mexico; *pycnacantha*, yellow, July, 6 in., Mexico; *sanguinea*, crimson, June, 6 in., Mexico; *Scheerii*, yellow and cream, summer, 7 in., Mexico; *Schelhasii*, white and rose, summer, 4 in., Mexico; *schiediana*, white, summer, 3 in., Mexico; *semperviva*, 3 in., Mexico; *senilis*, scarlet, summer; *stella-aurata*, white, summer, 2 in., Mexico; *subpolyhedra*, yellow and red, summer, 8 in., Mexico; *sulcolonata*, yellow, summer, 4 in., Mexico; *tetracantha*, rose, July, 9 in., Mexico; *tuberosa*, pale purple, May, 6 in., Mexico; *turbinata*, yellow, June, Mexico; *uncinata*, purple, May and June, 4 in., Mexico; *vetula*, yellow, May and June, 3 in., Mexico; *villifera*, rose and purple, May, 3 in., Mexico; *viridis*, yellow, May and June, 4 in., Mexico; *vivipara*, purple, May and June, 2 in., N. America; *wildiana*, rose, summer, 3 to 4 in., Mexico; *Wrightii*, purple, May, Mexico; *zuccariniana*, purple, May and June, 3 in., Mexico.

**Mammoth Tree of California** (*Sequoia gigantea*).—See *Sequoia*.

**Mandarin Orange-tree** (*Citrus nobilis*).—See *Citrus*.

**Mandevilla** (*Chili Jasmine*).—Ord. Apocynaceæ. Greenhouse flowering climber. Deciduous. First introduced 1837.

**CULTURE:** Compost, equal parts peat & loam, half part each of sand & pounded charcoal. Position, well-drained beds or borders; shoots trained up trellis, pillars, or roof of sunny greenhouse. Plant, Feb. Water freely, Feb. to Sept.; moderately, Sept. to December; none afterwards. Syringe twice daily, Feb. to July. Temp., Feb. to Sept. 55° to 65°; Sept. to Dec. 45° to 55°; Dec. to Feb. 40° to 50°. Prune shoots to within two buds of their base immediately after flowering. Propagate by seeds sown in pans or bed of sandy peat slightly covered with fine soil in a temp. of 65° to 75°, Feb. to April; cuttings of firm side shoots, 2 to 3 in. long, inserted in sand under bell-glass in temp. of 70° to 85° in summer.

**SPECIES CULTIVATED:** *M. suaveolens*, white, fragrant, summer, 15 to 30 ft., Buenos Ayres.

**Manettia**.—Ord. Rubiaceæ. Greenhouse evergreen climbers. First introduced 1832.

**CULTURE:** Compost, equal parts loam, peat, pounded charcoal &

silver sand. Position, well-drained pots or beds; shoots trained to trellises, round pillars or up rafters. Plant, Feb. to March. Prune slightly after flowering. Water freely, March to Sept., moderately afterwards. Syringe daily, March to Sept. Temp., Feb. to Oct. 55° to 65°; Oct. to Feb. 45° to 55°. Propagate by seeds sown in shallow pans of sandy soil, slightly covered with fine mould & placed in temp. 55° to 65°, Feb. or March; cuttings of young shoots 2 to 3 in. long inserted in small pots of sandy soil in temp. 65° to 75° in summer.

**SPECIES CULTIVATED:** *M. luteo-rubra* (Syn. bicolor), scarlet, white, and orange, March to Dec., 10 to 15 ft., S. America.

**Mangosteen-tree** (*Garcinia mangostana*).—See *Garcinia*.

**Manna Ash** (*Fraxinus Ornus*).—See *Fraxinus*.

**Manna-plant** (*Tamarix anglica*).—See *Tamarix*.

**Man Orchis** (*Aceras anthropophora*).—See *Aceras*.

**Maple** (*Acer campestre*).—See *Acer*.

**Maple-leaved Plane-tree** (*Platanus acerifolia*).—See *Platanus*.

**Maple Vine** (*Menispermum canadense*).—See *Menispermum*.

**Marajah Palm** (*Bactris caryotæfolia*).—See *Bactris*.

**Maranta** (Arrowroot Plant).—Ord. Scitamineæ. Stove herbaceous perennials. Orn. foliage. First introduced 1732. Leaves, egg, lance or heart-shaped, roundish or oblong; greyish, purplish, or rose below, upper sides green, blotched or streaked with white, yellow, brown, purple, or rose.

**CULTURE:** Compost, two parts fibrous peat, one part rich loam, one part sand. Position, well-drained pots in shady part of stove. Pot, Feb. or March. Water abundantly, March to Sept.; moderately, Sept. to Dec.; keep nearly dry afterwards. Syringe daily, March to Sept. Apply weak stimulants occasionally during summer. Temp., Feb. to Oct. 65° to 75°; Oct. to Feb. 55° to 65°. Repot annually. Propagate by division of tubers or rhizomes in Feb. or March.

**SPECIES CULTIVATED:** *M. arundinacea variegata* (Indian Arrowroot), leaves green and white, 2 to 3 ft., S. America; bicolor, leaves olive green, 1 ft., Brazil; bicolor makoyana, leaves green, blotched dark colour; bicolor massangeana, leaves, green and white; Chantrieri, leaves grey and dark green, 1 ft.

**Marattia** (Ash-leaf Fern).—Ord. Filices. Greenhouse evergreen ferns. Ht., 3 to 5 ft. Fronds, 5 to 12 ft. long, feather shaped; leaflets twice or three times divided.

**CULTURE:** Compost, two parts peat, equal parts loam, leaf-mould & sand. Position, large well-drained pots or moist beds. Pot or plant, Feb. or March. Shade from sun essential. Water freely, March to Oct., moderately afterwards. Syringing not required. Temp., Feb. to Oct. 60° to 70°; Oct. to Feb. 50° to 60. Propagate by spores sown on surface of sandy peat in shallow well-drained pans placed under bell-glass in temp. 65° to 75° any time.

**SPECIES CULTIVATED:** *M. alata*, Central America; *attenuata* (Syn. *Cooperi*), New Caledonia; *fraxinea*, Tropics.

**Mare's-tair** (*Hippuris vulgaris*).—See *Hippuris*.

**Marguerite** (*Chrysanthemum frutescens*).—See *Chrysanthemum*.

**Margyricarpus** (Pearl Berry; Pearl Fruit).—Ord. Rosaceæ. Hardy evergreen trailing shrub. Orn. fruiting. First introduced 1829.

**CULTURE:** Soil, equal parts leaf-mould, loam & sand. Position, sunny rockery, with shoots trailing over stones. Plant, Feb. to May. Propagate by seeds sown 1-16 in. deep in shallow boxes of light sandy soil in cold frame in autumn or spring; cuttings of young shoots,

1 to 2 in. long, inserted in sandy peat under bell-glass in cold frame in summer; layering branches in Sept. or Oct.

SPECIES CULTIVATED: *M. setosus*, green, summer, berries white, 2 to 3 ft., Chili.

**Marica** (Toad-cup Lily).—Ord. Iridaceæ. Stove herbaceous perennials. First introduced 1789.

CULTURE: Compost, equal parts peat, leaf-mould & sand. Position, well-drained pots in light part of stove. Pot, Feb. or March. Water freely, March to Oct.; keep dry, Nov. to Feb. Apply weak stimulants occasionally when in flower. Temp., 65° to 75°, March to Sept.; Sept. to March, 55° to 65°. Propagate by division of rhizomatous roots, Feb. or March.

SPECIES CULTIVATED: *M. brachypus*, yellow and red, summer, 18 in., Trinidad; *cœrulea*, blue, yellow, brown, and orange, summer, 2 ft., Trop. America; *northiana*, white, yellow, and red, summer, 3 to 4 ft., Trop. America.

**Marigold** (*Calendula officinalis*).—See *Calendula*.

**Mariposa-lily** (*Calochortus venustus*).—See *Calochortus*.

**Marjoram** (*Origanum vulgare*).—See *Origanum*.

**Marrubium** (Horehound).—Ord. Labiatae. Hardy perennial medicinal herb. Leaves & young shoots used as a popular remedy for coughs.

CULTURE: Soil, ordinary. Position, sunny dry borders. Plant, March or April, 18 in. apart. Propagate by seeds sown  $\frac{1}{2}$  in. deep in shady position outdoors, March to May; cuttings inserted in shady border in April; division of roots in March.

SPECIES CULTIVATED: *M. vulgare*, white, June to Sept., 1 ft., Britain.

**Marsh Cistus** (*Ledum palustre*).—See *Ledum*.

**Marsh Elder** (*Viburnum opulus*).—See *Viburnum*.

**Marsh Fel-wort** (*Swertia perennis*).—See *Swertia*.

**Marsh Fern** (*Nephrodium Thelypteris*).—See *Nephrodium*.

**Marsh-flower**.—See *Limnanthemum*.

**Marsh Gentian** (*Gentiana pneumonanthe*).—See *Gentiana*.

**Marsh Helleborine** (*Epipactis palustris*).—See *Epipactis*.

**Marsh Marigold** (*Caltha palustris*).—See *Caltha*.

**Marsh Orchis** (*Orchis latifolia*).—See *Orchis*.

**Marsh Ox-eye Daisy** (*Chrysanthemum lacustre*).—See *Chrysanthemum*.

**Marsh Rosemary** (*Ledum palustre*).—See *Ledum*.

**Marsh Trefoil** (*Menyanthes trifoliata*).—See *Menyanthes*.

**Marsh Violet** (*Viola palustris*).—See *Viola*.

**Martagon Lily** (*Lilium Martagon*).—See *Lilium*.

**Martynia** (Elephant's Trunk; Unicorn Plant).—Ord. Pedaliaceæ. Half-hardy annual. First introduced 1731. Fruit edible & used for making pickles.

POT CULTURE: Compost, equal parts loam, leaf-mould, decayed manure & sand. Sow seeds 1 in. deep singly in 2-inch pots & place in temp. of 60° to 70°, Feb. or March. Transfer to 5-in. pots in April or May; to 6 or 7-in. pots in June. Pot firmly. Position, light sunny greenhouse or window. Water moderately at first, freely when in full growth. Apply weak stimulants occasionally to healthy plants in flower. Temp., Feb. to May, 60° to 70°; afterwards, 55° to 65°.

OUTDOOR CULTURE: Soil, ordinary rich. Position, sunny well-drained sheltered beds or borders. Sow seeds 1 in. deep singly in 3-in. pots, or 3 in. apart in shallow boxes of light soil in temp. of 60° to 70° in Feb. or March, transplanting seedlings 8 to 12 in. apart early in

June. Mulch with cocoanut-fibre refuse or decayed manure after planting. Water in dry weather.

SPECIES CULTIVATED: *M. fragrans* (Unicorn Plant), crimson-purple, summer, 2 ft., Mexico.

**Marvel-of-Peru** (*Mirabilis Jalapa*).—See *Mirabilis*.

**Maryland Cassia** (*Cassia marilandica*).—See *Cassia*.

**Maryland Pink Root** (*Spigelia marilandica*).—See *Spigelia*.

**Masdevallia** (Spectral-flowered Orchid).—Ord. Orchidaceæ. Greenhouse epiphytal orchids. Evergreen. First introduced 1842.

CULTURE: Compost, for robust species (*M. Coccinea*, etc.), two parts fibrous peat, one part sphagnum moss & sand; for other species (*M. Chimæra*, etc.), equal parts peat, moss & lumps of charcoal, & a little sand. Pot annually in Feb. or March. Position, well-drained pots for *M. Coccinea*; teak-wood baskets, lined with moss, for *M. Chimæra*. Shade from sun essential. Water freely, April to Sept.; moderately afterwards, and keep atmosphere moist all the year round. Syringe staging, floors & pots daily in summer. Temp., Nov. to March, 45° to 55°; March to Nov., 55° to 65°. Ventilate freely in summer. Resting period, none. Flowers appear at base of last-made leaves. Propagate by division of plants in Feb.

SPECIES CULTIVATED: *M. amabilis*, rose, crimson, orange, and yellow, summer, 6 in., Colombia; *bella*, yellow, crimson, and white, spring, 6 in., Colombia; *caudata*, yellow, purple and red, summer, 4 in., Colombia; *Chestertonii*, yellow, purple and pink, spring, 6 in., Colombia; *Chimæra*, yellow and purple, spring, 8 in., Colombia; *coccinea*, scarlet and crimson, spring, 6 to 8 in., Colombia; *Coccinea harryana*, a variety; *Davisii*, yellow and orange, Aug., 8 in., Peru; *igneæ*, red, orange and purple, spring, 6 in., Colombia; *rosea*, orange, red, and carmine, summer, 6 in., Peru; *tovarensis*, white, winter, 6 in., Venezuela; *veitchiana*, vermilion, and purple, spring, 1 ft., Peru. There are also numerous hybrids.

**Mask-flower** (*Alonsoa incisifolia*).—See *Alonsoa*.

**Matricaria** (Double May Weed).—Ord. Compositæ. Hardy perennial herb.

CULTURE: Soil, ordinary. Position, open sunny beds or borders. Plant, Oct., Nov., March, or April. Propagate by cuttings inserted in ordinary soil in shady position outdoors in spring; division of roots in Oct. or March.

SPECIES CULTIVATED: *M. inodora plenissima* (Double Mayweed), white, double, summer, 1 ft., Britain.

**Matthiola** (Ten-week, Brompton, German, Night-scented, Intermediate, Cape Giant, and Wallflower-leaved Stock).—Ord. Crucifera. Half-hardy annuals & biennials. First introduced 1731.

CULTURE OF TEN-WEEK STOCK OUTDOORS: Soil, deep, rich, well manured. Position, open sunny beds or borders. Sow seeds 1-16 in. deep in light soil in temp. 55° to 65° in March, transplanting seedlings outdoors end of May; or in cold frame or outdoors in April, transplanting seedlings in June. Plant, dwarf kinds 9 in. & tall kinds 12 to 15 in. apart each way. Mulch surface of soil after planting with decayed manure. Remove seed pods as they form.

POT CULTURE OF TEN-WEEK STOCKS: Sow seeds as above advised. Transplant three seedlings 1 in. high into a 3-in. pot, & when 3 to 4 in. high into a 5-in. pot. Compost, two parts good soil, one part decayed manure & sand. Position, cold frame during May; afterwards outdoors. Water freely. Apply stimulants when flower buds form.

CULTURE OF WALLFLOWER-LEAVED STOCK: Same as for ten-week.

CULTURE OF NIGHT-SCENTED STOCK: Soil, ordinary. Posi-

tion, sunny beds or borders. Sow seeds  $\frac{1}{2}$  in. deep in April where required to flower.

**CULTURE OF INTERMEDIATE STOCK:** Sow seeds  $\frac{1}{2}$  in. deep in light soil in well-drained pots or boxes in cold frame in Aug. or Sept. Transplant seedlings when 1 in. high singly in a 2-in. pot or four in a 4-in. pot. Compost, equal parts loam, leaf-mould & old mortar. Plunge pots to rim in cinder ashes in sunny cold frame. Water sparingly. Ventilate freely in fine weather. Plant out in rich soil in March, or transfer single plants to a 5-in. or three plants to a 6-in. pot. Water moderately. Apply stimulants when flowers show. Position, when in flower, light, airy greenhouse. For autumn-flowering, sow seeds in March or April, & plant out in June.

**CULTURE OF BROMPTON & QUEEN STOCKS:** Sow seeds  $\frac{1}{2}$  in. deep in light soil in cold frame in June or July. Transplant seedlings when 1 in. high 8 to 12 in. apart where required to flower following year, or place singly in 2-in. pots; keep in cold frame & plant out in March. Seed-Saving: Largest percentage of double flowers obtained from plants grown in poor soil, & of the dwarfest habit.

**SPECIES CULTIVATED:** *M. annua* (or *incana annua*), parent of the Ten-week and Intermediate Stocks, S. Europe, annual; *bicornis*, purplish-red, spring, fragrant at night, Greece, perennial or shrub; *fenestralis*, scarlet or purple, summer, 1 ft., biennial, Crete; *incana* (Brompton, Queen, and Wallflower-leaved Stock), purple or violet, summer, 1 to 2 ft., Levant, biennial; *tricuspidata*, lilac, summer, 1 ft., S. Europe, annual; *tristis* (Night-scented Stock), purple, fragrant at night, 1 ft., E. Europe, biennial.

**Maurandia.** — Ord. Scrophulariaceæ. Half-hardy climbing perennials. First introduced 1796.

**INDOOR CULTURE:** Compost, equal parts loam & leaf-mould & little sand. Pot, March to May. Position, well-drained pots with shoots draping over front of stage, or trained up trellis, walls, or rafters, or suspended in baskets in sunny greenhouse. Water freely, March to Sept.; moderately, Sept. to Nov.; keep nearly dry afterwards. Apply stimulants to healthy plants in flower only. Temp., March to Sept. 55° to 65°; Sept. to March 45° to 55°.

**OUTDOOR CULTURE:** Soil, ordinary rich. Position, against S. walls or in sunny vases or window boxes. Plant, June. Lift, repot & place in greenhouse in Sept. Water freely in dry weather. Propagate by seeds sown 1-16 in. deep in ordinary light soil in temp. of 60° to 70° in March, transplanting seedlings when 1 in. high singly into 2 or 3-in. pots; cuttings of young shoots inserted in sandy soil under bell-glass in temp. 55° to 65°, March to Aug.

**SPECIES CULTIVATED:** *M. barclayana*, violet-purple, summer, trailing, Mexico; *erubescens* (Syn. *Lophospermum erubescens*), rose and white, summer, Mexico; *scandens* (Syn. *Lophospermum scandens*), purple and violet, summer, 4 to 6 ft., Mexico.

**Maxillaria.**—Ord. Orchidaceæ. Stove terrestrial orchids. First introduced 1832.

**CULTURE:** Compost, equal parts fibry peat & chopped sphagnum moss, with little sand & charcoal. Position, well-drained pots, pans or baskets in light part of greenhouse. Pot when new growth commences. Water deciduous species freely from time new growth begins until Nov., then occasionally; evergreen species freely from March to Nov.; moderately, Nov. to March. Syringe once or twice daily whilst making growth. Ventilate freely, May to Sept. Temp., April to Oct. 55° to 65°; Oct. to April 45° to 55°. Growing period, Feb. to March; resting period, Oct. to Feb. Plants may be grown in sitting room or cool conservatory when in flower. Flowers appear at base of



new pseudo-bulb when latter begins to form. Propagate by division of pseudo-bulbs immediately after flowering.

**SPECIES CULTIVATED:** *M. grandiflora*, white and yellow, fragrant, autumn, Peru; *luteo-alba*, yellow, white, and purple, fragrant, various seasons, Colombia; *picta*, yellow, purple and white, winter, Colombia; *sanderiana*, white and crimson, spring, Peru; *venusta*, white and yellow, winter, Colombia.

**Max Leichtlin's Lily** (*Lilium Leichtlini*).—See *Lilium*.

**May** (*Cratægus Oxyacantha*).—See *Cratægus*.

**May Apple** (*Podophyllum peltatum*).—See *Podophyllum*.

**May Flower** (*Epigæa repens*).—See *Epigæa*.

**May Lily** (*Convallaria majalis*).—See *Convallaria*.

**Meadow Beauty** (*Rhexia virginica*).—See *Rhexia*.

**Meadow Crocus** (*Colchicum autumnale*).—See *Colchicum*.

**Meadow Geranium** (*Geranium pratense*).—See *Geranium*.

**Meadow Pink** (*Dianthus deltoides*).—See *Dianthus*.

**Meadow Rue** (*Thalictrum flavum*).—See *Thalictrum*.

**Meadow Saffron** (*Colchicum autumnale*).—See *Colchicum*.

**Meadow Saxifrage** (*Saxifraga granulata*).—See *Saxifraga*.

**Meadow-sweet** (*Spiræa Ulmaria*).—See *Spiræa*.

**Meconopsis** (Welsh Poppy; Himalayan Poppy; Prickly Poppy; Nepal Poppy).—Ord. Papaveraceæ. Hardy biennial & perennial herbs.

**CULTURE OF BIENNIAL SPECIES:** Sow seeds 1-16 in. deep in light sandy soil in temp. 60° to 70° in March or April. Transplant seedlings in April into bed of loamy soil enriched with manure, & cover with cold frame until June. Remove following March or April to where required to flower. Position, well-drained sunny rockery. Water freely in summer; keep dry as possible in winter. Cover surface of soil under leaves with small lumps of sandstone. Plants flower when 2 to 4 years old, & afterwards die.

**CULTURE OF PERENNIAL SPECIES:** Soil, deep, rich loam, mixed freely with decayed manure & leaf-mould. Position, sunny sheltered borders or rockeries. Plant, March or April. Water as above advised. Propagate *M. Wallichii* by seeds sown 1-16 in. deep in light sandy soil in temp. 55° to 65° in March or April; *M. cambrica* by seeds sown 1-16 in. deep in moist soil outdoors in March or April.

**BIENNIAL SPECIES:** *M. cambrica* (Welsh Poppy), yellow, summer, 1 ft. Europe (Britain); *cambrica flore-pleno*, double flowered; *aculeata*, purple, summer, 2 ft., Himalayas; *nepalensis* (Nepal Poppy), yellow, summer, 3 ft., Himalayas.

**PERENNIAL SPECIES:** *M. Wallichii* (Satin Poppy), blue, summer, 4 to 6 ft., Himalayas.

**Medeola**.—See *Asparagus*.

**Medicago** (Calvary Clover; Crown of Thorns).—Ord. Leguminosæ. Hardy annuals & perennials. Flowers succeeded by curiously twisted legumes.

**CULTURE OF CALVARY CLOVER:** Sow seeds ½ in. deep in ordinary soil in sunny position outdoors, April or May. Thin seedlings when 1 in. high to 6 in. apart. Water freely in dry weather.

**POT CULTURE:** Compost, two parts good soil, one part leaf-mould, half a part each of old mortar & sand. Sow seeds thinly in 5-in. pots filled with above compost. When seedlings are 1 in. high, thin to 3 in each pot. Water moderately. Position, sunny window or greenhouse.

**CULTURE OF PERENNIAL SPECIES:** Soil, ordinary. Position, dryish sunny banks, borders, or rockeries. Plant, Oct. or March.

Propagate by seeds sown  $\frac{1}{2}$  in. deep in ordinary soil outdoors in March; division of roots in Oct. or March.

ANNUAL SPECIES: *M. echinus* (Calvary Clover), yellow, summer, 6 in., S. Europe.

PERENNIAL SPECIES: *M. falcata* (Sickle-podded Medick), yellow, summer, trailing, Britain.

**Medinilla.** — Ord. Melastomaceæ. Stove evergreen flowering shrubs. First introduced 1845.

CULTURE: Compost, two parts fibrous peat, one part loam, half part sand, half part well-decayed manure. Position, sunny moist part of stove, Feb. to Sept.; light & moderately dry part afterwards. Pot, Feb. Temp., Feb. to Sept. 75° to 85°; Sept. to Nov. 70° to 80°; Nov. to Feb. 65° to 75°. Water freely, March to Sept., moderately afterwards. Syringe twice daily, March to Sept. Moist atmosphere very essential. Apply stimulants when plants commence flowering. Prune straggly shoots into shape, Jan. or Feb. Propagate by cuttings of firm young side shoots, 3 to 4 in. long, inserted in sandy peat & leaf-mould, under bell-glass, in temp. 85° in spring or summer.

SPECIES CULTIVATED: *M. magnifica*, rosy pink, May, 4 ft., Philippines; *amabilis* (Syn. *Teysmannii*), rosy pink, spring, 4 ft., Java.

**Mediterranean Heath** (*Erica mediterranea* or *E. carnea*).—See *Erica*.

**Mediterranean Lily** (*Pancreatium maritimum*).—See *Pancreatium*.

**Mediterranean Stock** (*Hesperis maritima*).—See *Hesperis*.

**Medlar** (*Pyrus germanica*).—See *Pyrus*.

**Medusa's Head** (*Euphorbia Caput-Medusæ*).—See *Euphorbia*.

**Medusa's Head Orchid** (*Cirrhopetalum Caput-Medusæ*).—See *Cirrhopetalum*.

**Megasea.**—See *Saxifraga*.

**Melancholy Gentleman** (*Hesperis tristis*).—See *Hesperis*.

**Melia** (Bead-tree; Indian Lilac).—Ord. Meliaceæ. Half-hardy evergreen & deciduous trees. Flowering & orn. foliage. First introduced 1656. Leaves, graceful, feather-shaped, green.

CULTURE: Soil, sandy loam. Position, large well-drained pots in cool greenhouse or conservatory, or sheltered shrubberies outdoors S. of England. Pot or plant, Oct. to Feb. Water freely (in pots), March to Oct.; little afterwards. Propagate by cuttings inserted in sand under bell-glass in temp. 55° to 65°, summer or autumn.

SPECIES CULTIVATED: *M. Azedarach*, lilac, summer, leaves fragrant, 10 to 20 ft., India and China.

**Melianthus** (Great Cape Honey-flower). — Ord. Sapindaceæ. Half-hardy evergreen shrubs. Orn. foliage. First introduced 1688. Leaves, graceful, feather-shaped, green.

POT CULTURE: Compost, two parts loam, one part leaf-mould & sand. Position, well-drained pots in sunny greenhouse. Pot, Feb. or April. Water freely, March to Oct., moderately afterwards. Temp., March to Sept. 55° to 65°; Sept. to March 40° to 50°.

OUTDOOR CULTURE: Soil, ordinary rich. Position, sunny beds or borders. Plant, May or June. Lift roots in Sept. or Oct., & store like dahlias in cool frost-proof shed or greenhouse until planting time. May be grown entirely outdoors in warm sheltered parts of England. Propagate by seeds sown 1-16 in. deep in light sandy soil in temp. 65° to 75° in January, Feb., or March, or in similar soil in temp. 55° to 65° in Aug. or Sept.; by cuttings inserted in light sandy soil under bell-glass in temp. 55° to 65° in spring or summer.

**SPECIES CULTIVATED:** *M. major*, brown, summer, 4 to 6 ft., S. Africa.

**Melissa** (Common Balm). — Ord. Labiatae. Hardy herbaceous perennials. Aromatic foliage. Leaves, egg-shaped, dark green, or variegated with yellow; fragrant.

**CULTURE:** Soil, ordinary light. Position, warm sunny beds or borders. Plant, Oct. or March in groups or 12 in. apart in rows. Gather stems when flowers open for drying for winter use. Cut stems off close to ground after flowering. Propagate by seeds sown  $\frac{1}{2}$  in. deep outdoors in March; division of roots in Oct. or March.

**SPECIES CULTIVATED:** *M. officinalis* (Balm), white or yellow, summer, 3 ft., Europe (Britain); *officinalis variegata*, leaves golden.

**Melittis** (Bastard Balm).—Ord. Labiatae. Hardy perennial.

**CULTURE:** Soil, ordinary rich. Position, partially shaded beds or borders. Plant, Oct., Nov., March, or April. Propagate by division of roots directly after flowering.

**SPECIES CULTIVATED:** *M. melissophyllum*, creamy white and pink, May, 18 in., Europe (Britain).

**Melocactus** (Melon Cactus; Melon Thistle; Turk's Cap Cactus; Pope's Head).—Ord. Cactaceae. Greenhouse succulent perennials. First introduced 1788. Stems globular, ribbed, spiny, surmounted by a cylindrical cap.

**CULTURE:** Compost, two parts fibrous sandy loam, one part brick rubble, old mortar & sand. Position, well-drained pots in sunny greenhouse or window. Repot every three or four years in March. Water once a month, Sept. or April, once a week afterwards. Temp., Sept. to March 50 to 55°; March to Sept. 65° to 75°. Propagate by seeds sown  $\frac{1}{2}$  in. deep in well-drained pans of sandy soil in temp. 75° in March, keeping soil moderately moist; cuttings of stems inserted in small pots of sandy soil kept barely moist in summer; grafting on common kinds in April.

**SPECIES CULTIVATED:** *M. communis* (Turk's Head or Melon Cactus), rosy red, summer, 12 to 18 in., W. Indies.

**Melon** (*Cucumis melo*).—See *Cucumis*.

**Melon-cactus** (*Melocactus communis*).—See *Melocactus*.

**Melon Thistle** (*Melocactus communis*).—See *Melocactus*.

**Meniscium**. — Ord. Filices. Stove evergreen rhizomatous ferns. First introduced 1793. Fronds entire or once divided.

**CULTURE:** Compost, equal parts loam, leaf-mould, peat & sand. Position, well-drained pots or ledges of rockery in shady part of stove. Pot or plant, Feb. or March. Water freely, April to Sept., moderately afterwards. Temp., March to Sept. 65° to 75°; Sept. to March 55° to 65°. Propagate by spores sown on surface of pans of fine sandy peat in temp. 75° to 80° any time; division of plants at potting time.

**SPECIES CULTIVATED:** *M. reticulatum*, and its variety *macrophyllum*, W. Indies; *serratum*, West Indies; *simplex*, Tropical Asia.

**Menispermum** (Moon Seed; Moon Creeper).—Ord. Menispermaceae. Hardy deciduous flowering climber. First introduced 1691.

**CULTURE:** Soil, ordinary rich. Position, moist shady borders with shoots twined up walls, arbours, pergolas, or trellises. Plant, Oct. or March. Prune away weak or unhealthy shoots, Nov. to Feb. Propagate by cuttings of young shoots inserted in sandy soil in shady position outdoors, or under hand-light in spring; division of roots, Oct. to March.

**SPECIES CULTIVATED:** *M. canadense*, yellow, summer, 10 to 15 ft., N. America.

**Mentha** (Mint; Pennyroyal). — Ord. Labiatae. Hardy perennials. Aromatic foliage.

**CULTURE OF SPEARMINT:** Soil, rich, moist, ordinary. Position, sunny or partially shady border. Plant roots 2 in. deep in rows 9 in. apart in Feb. or March. Mulch with layer of decayed manure in March. Water freely in dry weather. Cut off stems close to ground in Sept. & cover bed with 2 in. of soil. Lift & replant every three years. Gather shoots for drying when flowers first open. Forcing: Place roots close together (with ordinary soil between) in large pot or box, & put in a temp. of 55° to 65°, Oct. to March. Keep soil moist.

**CULTURE OF PEPPERMINT:** Same as advised for Spearmint. Gather when in flower for distillation.

**CULTURE OF PENNYROYAL:** Soil, moist loamy. Position, partially shaded border. Plant, Sept., March or April, 6 in. apart in rows 12 in. asunder. Water freely in dry weather. Mulch with decayed manure in April.

**CULTURE OF OTHER SPECIES:** Soil, light rich. Position, partially shady borders. Plant, March or April. *M. Requienii* an excellent creeping plant for covering surface of soil in moist places. *M. Pulegium gibraltarica* should be wintered in a cold frame, & planted out in April or May. Propagate Spearmint & Peppermint by division of roots in Feb. or March; also cuttings of young shoots, 3 in. long inserted in shady position outdoors in summer; Pennyroyal by offshoots or divisions in Oct. or March; ordinary species by division in Oct. or Feb.

**SPECIES CULTIVATED:** *M. aquatica* (Bergamot Mint), purple, summer, 1 ft., Europe; *piperita* (Peppermint), purple, autumn, 1 ft., Europe; *pulegium* (Pennyroyal), purple, Aug., 4 to 6 in., Europe; *pulegium gibraltarica* (Gibraltar Mint), 2 in., used for carpet bedding; *Requienii*, purple, summer, creeping, Corsica; *viridis* (Spearmint or Lamb Mint), purple, Aug., 2 ft., Europe.

**Mentzelia.**—Ord. Loasaceæ. Hardy annuals. First introduced 1811.

**CULTURE:** Sow seeds  $\frac{1}{2}$  in. deep in light sandy soil in temp. 55° to 65° till May; place in cold frame, & plant outdoors in June. Soil, ordinary. Position, sunny well-drained borders, or, sow outdoors in sunny borders in April or May.

**SPECIES CULTIVATED:** *M. bartonioides*, yellow, summer, 1 ft., U. States; *Lindleyi* (Syn. *Bartonia aurea*), golden yellow, summer, 1 ft., California; *ornata*, white, fragrant, Aug., 1 ft., N. America.

**Menyanthes** (Buck-bean; Bog Bean; Bog Trefoil; Marsh Trefoil; Water Trefoil).—Ord. Gentianaceæ. Hardy perennial aquatic.

**CULTURE:** Soil, ordinary mud or bog. Position, shallow streams, pools or ponds, marshes & bogs. Plant, Sept. to Nov. & March or April. Propagate by inserting pieces of creeping stems in the mud, March to Oct.

**SPECIES CULTIVATED:** *M. trifoliata*, white, red and purple, fragrant, March to June, Europe (Britain).

**Menziesia.**—See *Daböecia*.

**Menzies' Spruce** (*Picea pungens*).—See *Picea*.

**Merendera** (Pyrenean Meadow Saffron).—Hardy bulbous perennials. First introduced 1820. Flowers fragrant.

**CULTURE:** Soil, light sandy loam, enriched with decayed manure or leaf-mould. Position, moist beds or rockeries, shrubbery borders, or lawns near shade of trees. Plant bulbs 3 in. deep & 3 in. apart in July or Aug. Foliage dies down in June & July, & does not reappear until after plant has flowered. Propagate by seeds sown  $\frac{1}{2}$  in. deep in bed of fine soil outdoors in Aug. or Sept., or in pans or boxes of

similar soil in cold frame at same time, transplanting seedlings 3 in. apart when two years old; division of bulbs in Aug. Seedling bulbs do not flower until four or five years old.

**SPECIES CULTIVATED:** *M. bulbocodium*, rosy lilac, autumn, 3 in., Spain; *bulbocodium bulbicoides*, larger flowered; *caucasica*, rosy purple, spring, 3 in., Caucasus; *persica*, lilac, Nov., 3 in., Persia.

**Mertensia** (Virginian Cowslip). — Ord. Boraginaceæ. Hardy perennial herbs.

**CULTURE:** Soil, sandy peat & loam. Position, partially shady rockeries or borders. Plant, Oct. & Nov., March & April. Lift & replant in fresh soil every four or five years. *M. siberica* will thrive in ordinary soil in partial shade. Propagate by seeds sown 1-16 in. deep in sandy peat in cold frame in autumn; division of roots in Oct. or March.

**SPECIES CULTIVATED:** *M. pulmonarioides* (Syn. *M. virginica*), the Virginian Cowslip, purple and blue, May, 12 to 18 in., N. America; *sibirica*, purple and blue, May, 18 in.; *sibirica alba*, white; *sibirica atro-cærulea*, blue.

**Mesembryanthemum** (Fig Marigold; Ice Plant).—Ord. Ficoidaceæ. Greenhouse & hardy annuals & herbaceous & shrubby perennials. Mostly evergreen & trailing. First introduced 1690.

**CULTURE OF GREENHOUSE SHRUBBY AND SUCCULENT-LEAVED SPECIES:** Compost, equal parts old mortar, pounded crocks, sandy loam, well-decayed manure or leaf-mould & sand. Position, well-drained pots in sunny greenhouse or window. Pot, March to May. Water freely, April to Sept.; moderately, March & Sept.; keep nearly dry during the remainder of year. Temp., March to Oct., 55° to 65°; Oct. to March, 40° to 50°.

**SHRUBBY AND HERBACEOUS SPECIES** may be planted in sunny beds or on rockeries in June; lifted, repotted, & placed in greenhouse in Sept.

**CULTURE OF ANNUAL SPECIES IN POTS:** Sow seeds 1-16 in. deep in April in 4 or 5-in. pots filled with above compost in temp. 55° to 65°. Thin seedlings to ½-in. apart. Treat otherwise as advised for shrubby species.

**CULTURE OF ANNUAL SPECIES OUTDOORS:** Soil, ordinary, with liberal addition of old mortar. Sow seeds 1-16 in. deep in April, where plants are required to grow. Thin to 1 in. apart. Position, sunny well-drained rockery.

**CULTURE OF *M. CORDIFOLIUM VARIEGATUM*:** Propagate by cuttings inserted in sandy soil in March, April, or Sept. in temp. 60° to 70°. Grow in temp. 50° to 60°, Oct. to May; in cold frame until June, then plant outdoors.

**CULTURE OF ICE PLANT:** Soil, ordinary. Position, sunny bed, border or rockery. Sow seeds ½ in. deep in sandy soil in temp. 55° to 65° in March, transplanting seedlings outdoors in June.

**CULTURE OF HARDY SPECIES:** Soil, ordinary. Position, sunny well-drained borders in S. of England. Plant, May. Propagate annual species by seeds sown 1-16 in. deep in spring in similar compost to that advised for plants; shrubby & herbaceous species by seeds, also by cuttings inserted in old mortar & sand in temp. 55° to 65°, March to Sept.

**GREENHOUSE SHRUBBY SPECIES:** *M. aureum*, yellow, June, 1 ft., S. Africa; *blandum*, white, June, 18 in.; *Bolusii*, yellow and red, July, 1 ft.; *Brownii*, orange-red, summer, 1 ft.; *coccineum*, scarlet, July, 18 in.; *Cooperi*, rosy purple, summer, 1 ft.; *cruciatum*, yellow, 6 in., summer; *deltoides*, pink, May, 18 in.; *echinatum*, yellow, Aug., 1 ft.; *multiflorum*, white, Aug., 3 ft.; *tigrinum*, yellow, autumn, 6 in.; *violaceum*, purple, July, 1 ft.

**GREENHOUSE SUCCULENT-LEAVED SPECIES.**—*M. densum*, pink, June, 6 in.; *floribundum*, pink, July, 6 in.; *spectabile*, red, May, 1 ft.; *cordifolium variegatum*, leaves golden yellow.

**ANNUAL SPECIES:** *M. Crystallinum* (Ice Plant), white, July; *pomeridianum*, yellow, July, 1 ft.; *pyropeum* (Syn. *M. tricolor*), rose and white, June, 6 in.

**HARDY SPECIES:** *M. edule* (Hottentot Fig), yellow, July; *uncinatum*, red, summer.)

**Mespilus.**—See *Pyrus*.

**Metake Bamboo** (*Bambusa Metake*).—See *Bambusa*.

**Metrosideros.**—See *Callistemon*.

**Meum** (Baldmoney; Spignel).—Ord. Umbelliferæ. Hardy perennial aromatic herb.

**CULTURE:** Soil, ordinary. Position, sunny beds, borders, banks or rockeries. Plant, Oct., Nov., March, or April. Cut down flower stems, Sept. Water freely in dry weather. Propagate by division of the roots, Oct., Nov., March, or April.

**SPECIES CULTIVATED:** *M. athamanticum*, white, May, 1 ft., Europe (Britain).

**Mexican Cigar-flower.**—See *Cuphea*.

**Mexican Ivy** (*Cobæa scandens*).—See *Cobæa*.

**Mexican Lily.**—See *Furcraea*.

**Mexican Marigold** (*Tagetes mexicana*).—See *Tagetes*.

**Mexican Mock-orange** (*Philadelphus microphyllus*).—See *Philadelphus*.

**Mexican Orange-flower** (*Choisya ternata*).—See *Choisya*.

**Mexican Poppy** (*Argemone mexicana*).—See *Argemone*.

**Mexican Soap-plant** (*Agave saponaria*).—See *Agave*.

**Mexican Tiger Flower** (*Tigridia pavonia*).—See *Tigridia*.

**Meyenia.**—See *Thunbergia*.

**Mezereon** (*Daphne mezereum*).—See *Daphne*.

**Michaelmas Daisy.**—See *Aster*.

**Michauxia** (Michaux's Bell-flower).—Ord. Campanulacæ. Hardy perennials. First introduced 1787.

**CULTURE:** Soil, moist sandy loam. Position, warm sheltered sunny borders. Propagate by seeds sown  $\frac{1}{2}$  in. deep in sunny position outdoors in April, transplanting seedlings into flowering position following July or Aug.; or by sowing seeds in April where plants are required to grow.

**SPECIES CULTIVATED:** *M. campanuloides*, white, July, Asia Minor. Best grown as a biennial.

**Michaux's Bell-flower** (*Michauxia campanuloides*).—See *Michauxia*.

**Miconia.**—Ord. Melastomacæ. Stove evergreen orn. foliage plants. First introduced 1858. Leaves, broad, upper surface velvety green, under side reddish purple.

**CULTURE:** Compost, equal parts fibrous peat & leaf-mould, fourth part silver sand. Position, pots in moist shady plant stove. Pot, Feb. or March. Water moderately in winter, freely other times. Syringe foliage March to Sept. Temp., March to Sept. 75° to 85°; Sept. to March 60° to 70°. Propagate by seeds sown in fine light compost in temp. 85° in March or April; cuttings of shoots of stems inserted in light soil in temp. 80° to 90° in spring.

**SPECIES CULTIVATED:** *O. flammea*, leaves green, 1 to 2 ft., Brazil; *hookerianum*, leaves green and white, 1 to 2 ft.; *magnifica*, leaves bronzy green, 2 to 3 ft., Mexico.

**Microglossa** (Shrubby Star-wort).—Ord. Compositæ. Hardy shrubby perennial. First introduced 1833.

**CULTURE:** Soil, ordinary. Position, sunny borders. Plant Oct.,

Nov., March, or April. Propagate by seeds sown  $\frac{1}{2}$  in. deep in sunny position outdoors, March or April, or in sandy soil in cold frame, April; division of roots, Oct. or March.

SPECIES CULTIVATED: *M. albescens*, blue and white, autumn, 2 to 3 ft., Himalayas.

**Microlepia**.—See *Davallia*.

**Micromeria**.—Ord. Labiatae. Half-hardy shrubby perennials.

CULTURE: Soil, ordinary. Position, sunny rockeries. Plant, Oct., Nov., March, or April. Propagate by cuttings inserted in ordinary sandy soil under hand-light in cold frame, Sept. to Nov.

SPECIES CULTIVATED: *M. Piperella*, purplish white, July to Oct., 3 in., S. Europe.

**Mignonette** (*Reseda odorata*).—See *Reseda*.

**Mikania** (German Ivy; Parlour Ivy).—Ord. Compositae. Half-hardy perennial flowering climber. First introduced 1823.

OUTDOOR CULTURE: Soil, good ordinary. Position, against S. or W. walls, sunny arbours or trellises. Plant, May. Lift in Oct., & store in pots in frost-proof greenhouse or frame.

INDOOR CULTURE: Compost, two parts loam, one part leaf-mould or well-decayed manure & little sand. Position, well-drained pots with shoots trained round trellises, or up rafters, or in suspended baskets with shoots hanging down, in sunny greenhouse or window. Pot, Feb. or March. Water freely, March to Oct., moderately afterwards. Apply stimulants occasionally, May to Sept. Temp., March to Oct. 55° to 65°; Oct. to March 40° to 50°. Propagate by cuttings of shoots inserted in sandy soil in temp. 55° to 65° in spring.

SPECIES CULTIVATED: *M. scandens*, yellow and white, summer, 6 to 8 ft., Trop. America.

**Milfoil**.—See *Achillea*.

**Military Orchis** (*Orchis militaris*).—See *Orchis*.

**Milk-Thistle** (*Silybum Marianum*).—See *Silybum*.

**Milk Vetch**.—See *Astragalus*.

**Milk-weed Gentian** (*Gentiana asclepiadea*).—See *Gentiana*.

**Milk-wort**.—See *Polygala*.

**Milla**.—See *Brodiaea*.

**Miltonia**.—Ord. Orchidaceae. Stove epiphytal orchids. First introduced 1830.

CULTURE: Compost, equal parts fibrous peat & chopped sphagnum moss, with a few lumps of charcoal. Position, well-drained pots or pans in shady part of stove. Pot, Feb. or March. Water freely, March to Sept., moderately afterwards. Shade from sun, & moist atmosphere essential. Temp., March to Oct. 65° to 75°; Oct. to March 60° to 65°. Growing period, Feb. to Sept.; resting period, Sept. to Feb. Flowers appear at base of last-made pseudo-bulb. Propagate by division of pseudo-bulbs at potting time.

SPECIES CULTIVATED: *M. candida*, red, brown, yellow, and white, autumn, 12 to 18 in., Brazil; *Clowesii*, yellow, brown, white, and purple, Sept. and Oct., 2 ft., Brazil; *cuneata*, brown, yellow, white, and rose, Feb., 12 to 18 in., Brazil; *phalaenopsis*, white and purple, May, 1 ft., Colombia; *Regnelli*, rose, purple, and white, autumn, 1 ft., Brazil; *Roetzlii*, white, purple and green, autumn, 1 ft., Colombia; *schroederiana*, yellow, brown, purple, and white, fragrant, 1 ft., Sept., Costa Rica; *spectabilis*, rose and purple, summer, 8 to 10 in., Brazil; *spectabilis moreliana*, purple, November, 1 ft.; *spectabilis bicolor*, white and rosy purple; *spectabilis rosea*, rose; *vexillaria*, white, rose, yellow, and orange, spring, 18 in., Colombia; *Warszewiczii*, brown, purple, white, and lilac, spring, 1 ft., Colombia.

**Mimosa** (Sensitive Plant; Humble Plant).—Ord. Leguminosae. Stove perennials. Orn. foliage. First introduced 1638. Leaves, feather-shaped, green, sensitive.

**CULTURE:** Compost, equal parts peat, loam & sand. Position, for sensitive plants (*M. pudica* & *M. sensitiva*), well-drained pots in light part of stove; for *M. marginata* similar, but with shoots trained up roof. Pot, Feb. or March. Water freely, March to Sept., moderately afterwards. Temp., March to Oct. 65° to 75°. Propagate by seeds sown 1-16 in. deep in light soil in temp. 65° to 75°, Feb. or March; cuttings of young shoots inserted in sandy soil in temp. 65° to 75°, at any time. *M. pudica* & *M. sensitiva*, though strictly perennials, are generally treated as annuals.

**SPECIES CULTIVATED:** *L. marginata*, pink, summer, 5 to 10 ft., Mexico; *pudica* (Sensitive or Humble Plant), rose, summer, 12 to 18 in., Brazil; *sensitiva*, purple, summer, 3 to 6 ft., Brazil.

**Mimulus** (Cardinal Flower; Monkey Flower; Musk; Harrison's Musk). — Ord. Scrophularinaceæ. Greenhouse & hardy annual & perennial herbs. First introduced 1826. Flowers, fragrant.

**POT CULTURE OF MUSK:** Compost, two parts loam, one part each of leaf-mould & decayed cow manure & sand. Pot, Feb. to April. Position, shady window or greenhouse. Water freely, March to Oct.; moderately, Oct. to Dec.; keep nearly dry afterwards. Apply stimulants two or three times weekly, May to Sept. Suitable stimulants: Soot water, liquid guano, nitrate of soda, cow & horse manure. Temp. March to Oct. 50° to 65°; Oct. to March 40° to 50°.

**OUTDOOR CULTURE OF MUSK:** Soil, ordinary rich. Position, moist shady border. Plant, April or May.

**CULTURE OF SPOTTED MIMULUS:** Sow seeds on surface of light soil; slightly cover with fine mould & place in temp. 55° to 65°, Feb., March, or April. Transplant seedlings when three leaves have formed 1 in. apart in shallow boxes of light mould. Place in temp. 55° until May, then transfer to cold frame. Plant, outdoors, 4 in. apart, in June. Position, shady bed or border. Soil, light, moist, well enriched with decayed manure. Mulch with cocoonut-fibre refuse or decayed manure. Apply stimulants occasionally, July to Sept.

**CULTURE OF PERENNIAL SPECIES** (*M. cardinalis*, etc.): Soil, ordinary rich. Position, moist, shady border. Plant, March to June. Apply stimulants occasionally, June to Oct. Mulch with decayed manure in Oct. May be grown in pots similar to common musk.

**CULTURE OF SHRUBBY SPECIES:** Compost, two parts loam, one leaf-mould, decayed cow manure & sand. Position, well-drained pots in light airy greenhouse; shoots trained on sticks or trellis. Pot, March. Prune, Feb. Water moderately Oct. to March, freely afterwards. Temp., Oct. to March 40° to 50°; March to Oct. 50° to 60°. Propagate by seeds sown, Feb. to May, on surface of light soil, & covered with a little sand or fine mould, in temp. 55° to 60°; cuttings of young shoots inserted in light sandy soil in temp. 55° to 65° at any time; division of roots, Feb. to May; by cuttings of shoots 2 in. long inserted in sandy soil under bell-glass in temp. 55° to 65° in March, or in cool greenhouse or window, in summer.

**PERENNIAL SPECIES:** *M. cardinalis* (Cardinal Flower), scarlet, summer, 1 to 2 ft., N. America; *luteus* (Syn. *M. cupreus*), orange and crimson, summer, 6 to 12 ins., N. America; *luteus guttatus* or *maculosus* (Spotted Mimulus), parent of the large-flowered spotted kinds, various, 6 to 8 in., summer; *moschatus* (Musk), yellow, summer, 6 in., N. America; *moschatus Harrisonii*, yellow, large-flowered.

**SHRUBBY SPECIES:** *M. glutinosus* (Syn. *Diplacus glutinosus*), orange, red to scarlet, all the year, 4 to 6 ft., California; *glutinosus puniceus*, orange-red.

**Miniature Sun-flower** (*Heliopsis lævis*).—See *Heliopsis*.



**Minorca Box Tree** (*Buxus balearica*).—See *Buxus*.

**Minorca Holly** (*Ilex balearica*).—See *Clematis*.

**Mint** (*Mentha viridis*).—See *Mentha*.

**Mirabilis** (*Marvel of Peru*).—Ord. *Nyctaginaceæ*. Half-hardy perennials. Tuberous rooted. First introduced 1596.

**CULTURE**: Soil, good, ordinary. Position, sunny beds or borders. Plant tuberous roots in April; seedlings in June. Apply stimulants occasionally when plants are flowering. Lift tubers in Oct., and store in sand, cocoanut-fibre refuse or cinder ashes in frost-proof place until April. Propagate by seeds sown  $\frac{1}{2}$  in. deep in light soil in temp. 65° to 75°, Feb. or March, transferring seedlings to cold frame in May & planting out in June; division of tubers at planting time. *Marvel of Peru* may be treated as an annual.

**SPECIES CULTIVATED**: *M. hybrida*, various colours, summer, 2 ft., hybrid; *Jalapa* (*Marvel of Peru*), various colours, summer, fragrant, 2 to 3 ft., Trop. America; *longiflora*, various colours, summer, fragrant, 3 ft., Mexico; *multiflora*, purple, summer, 2 to 3 ft., N.W. America.

**Miscanthus** (*Zebra-striped Rush*).—Ord. *Gramineæ*. Hardy orn. foliaged grass. Nat. Japan. Leaves, narrow, deep green, creamy, yellow.

**CULTURE**: Soil, ordinary. Position, pots in cold, or heated, greenhouse; in groups on lawns, or sunny borders. Pot or plant, March or April. Water plants in pots moderately in winter, freely in summer. Variegated kinds best adapted for pot culture. Propagate by division of plants in March or April.

**SPECIES CULTIVATED**: *M. japonica* (*Syn. Eulalia japonica*), inflorescence red, summer, and leaves green, 6 to 7 ft.; *japonica folius-striatus*, leaves striped white and green, 3 to 4 ft.; *japonica zebrina*, leaves banded green and yellow, 3 ft.; *sinensis* (*Syn. Eulalia gracillima*), leaves, green, graceful, 3 to 5 ft., China and Japan; *sinensis unvittata*, leaves with yellow band down centre.

**Missouri Currant** (*Ribes aureum*).—See *Ribes*.

**Missouri Evening-Primrose** (*Oenothera missouriensis macrocarpa*).—See *Oenothera*.

**Missouri Hyacinth**.—See *Brevoortia*.

**Mistletoe** (*Viscum album*).—See *Viscum*.

**Mistletoe Cactus**.—See *Rhipsalis*.

**Mitchella** (*Chequer-berry*; *Deer-berry*; *Partridge-berry*).—Ord. *Rubiaceæ*. Hardy evergreen trailing herb. First introduced 1761. Flowers succeeded by small scarlet berries.

**CULTURE**: Soil, equal parts peat & leaf-mould. Position, shady borders or rockeries. Plant, Oct., Nov., March, or April. Propagate by division of roots in Oct. or March.

**SPECIES CULTIVATED**: *M. repens*, white and purple, fragrant, summer, 3 in., N. America.

**Mitella** (*Mitre-wort*; *Bishop's Cap*).—Ord. *Saxifragaceæ*. Hardy perennial herbs. First introduced 1731.

**CULTURE**: Soil, sandy peat. Position, partially shaded rockeries. Plant, March or April. Propagate by division of the roots, March or April.

**SPECIES CULTIVATED**: *M. diphylla* (*Mitre-wort*), white, spring, 6 in.; N. America.

**Mitriaria** (*Mitre Flower*; *Scarlet Mitre-pod*).—Ord. *Gesneraceæ*. Hardy evergreen flowering shrub. First introduced 1848.

**CULTURE**: Soil, two parts fibrous peat, one part sand. Position, moist sheltered borders or rockeries. Plant, Sept. or April.

**POT CULTURE**: Compost, two parts sandy peat, one part leaf-mould & sand. Pot, Sept. or Oct. Position, well-drained pots in

shady cold greenhouse or fernery. Water freely, March to Oct.; moderately afterwards. Propagate by cuttings of shoots inserted in light soil under bell-glass in cold shady frame or greenhouse, April to Sept.; division of roots in April.

SPECIES CULTIVATED: *M. coccinea*, scarlet, May to Aug., trailing, Chilos.

**Mitre-pod** (*Mitraria coccinea*).—See *Mitraria*.

**Mitre-wort** (*Mitella diphylla*).—See *Mitella*.

**Mitriostigma** (*Citron-scented Gardenia*).—Ord. Rubiaceæ. Stove evergreen flowering shrub. First introduced 1856.

CULTURE: Compost, one part loam, one part peat, one part well-decayed manure & charcoal. Position, well-drained pots, or beds in plant stove. Pot or plant, Feb. or March. Prune into shape, Feb. or March. Temp., March to Sept. 65° to 85°; Sept. to March 55° to 65°. Water moderately, Oct. to Feb., freely afterwards. Syringe daily (except when in bloom), March to Sept. Apply liquid manure occasionally to healthy plants in flower. Propagate by cuttings of firm young side shoots, 2 to 3 in. long, inserted in well-drained pots of sandy peat under bell-glass in temp. 75° to 85°, Jan. to April.

SPECIES CULTIVATED: *M. axillaris* (Syn. *Gardenia citriodora*), white, fragrant, spring, 3 to 5 ft., S. Africa.

**Mocassin Flower** (*Cypripedium spectabile*).—See *Cypripedium*.

**Mock Cypress** (*Kochia scoparia*).—See *Kochia*.

**Mock-Orange** (*Philadelphus coronarius*).—See *Philadelphus*.

**Mock-Plane** (*Acer pseudo-platanus*).—See *Acer*.

**Mock-Privet** (*Phillyrea angustifolia*).—See *Phillyrea*.

**Modiola**.—See *Malvastrum*.

**Mohria** (*Frankincense*).—Ord. Filices. Greenhouse evergreen ferns. First introduced 1842. Fronds, feather-shaped, green, fragrant.

CULTURE: Compost, two parts peat, one part small lumps of sandstone, one part silver sand. Position, well-drained pots in shady part of greenhouse, or in beds in wardian cases in dwelling room. Pot or plant, Feb. or March. Water moderately, Oct. to Feb., freely afterwards. Temp. March to Sept. 55° to 65°; Sept. to March 45° to 55°. Propagate by spores sown on surface of fine sandy peat in pans & placed in temp. 75° to 85° any time.

SPECIES CULTIVATED: *M. cafferorum*, S. Africa.

**Moldavian Balm** (*Dracocephalum moldavicum*).—See *Dracocephalum*.

**Molinia** (*Indian Grass*; *Lavender Grass*).—Ord. Gramineæ. Hardy perennial grass. Leaves, smooth, rigid, variegated with white.

CULTURE: Soil, ordinary. Position, open or shady, as edgings to beds or borders. Plant, Oct. or March to June. Propagate by division of roots, autumn or spring.

SPECIES CULTIVATED: *M. cœrulea variegata*, leaves variegated with white, 2 to 3 ft., Britain.

**Molopospermum**.—Ord. Umbelliferæ. Hardy perennial; orn. foliage. Leaves, fern-like & graceful.

CULTURE: Soil, deep, rich. Position, sunny, fully exposed borders, or naturalising in wild garden. Plant in March. Propagate by seeds sown outdoors when ripe, or in cold frame in March; also by division of roots in April.

SPECIES CULTIVATED: *M. oioutarium*, yellow and white, May, 3 to 4 ft., Central Europe.

**Momordica** (*Balsam Apple*).—Ord. Cucurbitaceæ. Half-hardy

annuals climbers. Orn. foliage. First introduced 1568. Fruit, round, oblong, or cylindrical, reddish orange; Sept.

**INDOOR CULTURE:** Compost, two parts decayed turfy soil, one part horse droppings or decomposed manure. Position, pots or beds with shoots trained up roof of sunny greenhouse. Pot or plant, April or May. Size of pots, 8 or 10 in. Water freely. Syringe twice daily. Moist atmosphere essential. Apply stimulants occasionally when fruit forms. Nip off point of shoot at first joint beyond fruit. Shade from hot sun. Temp., 65° to 75°.

**OUTDOOR CULTURE:** Soil, ordinary, rich. Position, against sunny walls, trellises, arbours, or trailing over banks. Plant, June. Water freely in dry weather. Apply stimulants occasionally when fruit forms. Pruning of shoots not required. Propagate by seeds sown singly in 2-in. pots filled with light soil in temp. 65° to 75° in Feb. or March.

**SPECIES CULTIVATED:** *M. Balsamina* (Balsam Apple), yellow, June, 4 ft., Tropics; *Charantia*, yellow, June, 4 to 6 ft., Tropics.

**Monarch of the East** (*Sauromatum guttatum*).—See *Sauromatum*.

**Monarda** (Sweet Bergamot; Wild Bergamot; Bee Balm; Oswego Mint).—Ord. Labiatae. Hardy herbaceous perennials. First introduced 1656. Leaves, mint, balm, or sage-scented.

**CULTURE:** Soil, ordinary. Position, singly, or in masses in open or partially shaded borders. Plant, Oct., Nov., March, or April. Top-dress with decayed manure in autumn or spring. Propagate by seeds sown 1-16 in. deep in light soil in partially-shaded position outdoors, March or April, or in boxes of light soil in cold frame or greenhouse in March; division of roots in Oct. or Nov.

**SPECIES CULTIVATED:** *M. didyma* (Oswego Tea or Sweet Bergamot), scarlet, summer, 1 to 2 ft., N. America; *fastulosa* (Wild Bergamot), purple, summer, 3 to 4 ft., N. America.

**Monardella**.—Ord. Labiatae. Hardy annual & perennial herbs. First introduced 1877. Leaves, fragrant.

**CULTURE:** Soil, ordinary. Position, open or partially shaded borders. Plant, Oct., Nov., March, or April. Sow annual species outdoors, where required to grow, in March or April. Top-dress with decayed manure in autumn or spring. Propagate by seed sown 1-16 in. deep in light soil in partially-shaded position outdoors, March or April, or in boxes of light soil in cold frame or greenhouse in March; division of roots, Oct. or March.

**ANNUAL SPECIES:** *M. candidans*, white, summer, 1 ft., N. America.

**PERENNIAL SPECIES:** *M. maorantha*, scarlet, autumn, fragrant, 1 ft., N. America.

**Money-flower** (*Lunaria biennis*).—See *Lunaria*.

**Money-in-both-Pockets** (*Lunaria biennis*).—See *Lunaria*.

**Money-wort** (*Lysimachia nummularia*).—See *Lysimachia*.

**Monkey-flower**.—See *Mimulus*.

**Monkey Nut** (*Arachis hypogæa*).—See *Arachis*.

**Monkey-puzzle** (*Araucaria imbricata*).—See *Araucaria*.

**Monkshood** (*Aconitum Napellus*).—See *Aconitum*.

**Monochætum**.—Ord. Melastomaceæ. Greenhouse evergreen flowering shrubs.

**CULTURE:** Compost, two parts fibrous peat, one part light loam, one part leaf-mould & little sand. Position, well-drained pots in light greenhouse, Sept. to June; cold sunny frames, June to Sept. Pot, March. Prune shoots moderately close immediately after flowering.

Water moderately, Oct. to March, freely afterwards. Syringing twice daily, March to June. Apply stimulants occasionally, June to Oct. Temp., Sept. to March 45° to 55°; March to June 55° to 65°. Propagate by cuttings of shoots, 2 to 3 in. long, inserted in well-drained pots of sandy peat under bell-glass in temp. 65° to 75°, March or April. Nip off points of shoots of young plants occasionally, April to Aug., to induce bushy growth.

SPECIES CULTIVATED: *M. alpestre*, red, winter, 2 ft., Mexico; *hartwegianum*, rose, winter, 2 ft., Peru; *humboldtianum*, red and purple, winter, 2 ft., Caraccas; *lemoineanum*, rose and violet, winter, 2 ft.; *sericeum multiflorum*, mauve, spring, 2 ft., New Grenada.

**Monstera** (Shingle Plant).—Ord. Aroideæ. Stove evergreen climbers. Orn. foliage & fruiting. Leaves, large, handsome, perforated, dark green. Stems, creeping, furnished with aerial roots. Fruit, cylindrical, fragrant, pine-apple flavoured; ripe in autumn.

CULTURE: Compost, equal parts peat, leaf-mould & loam, little sand. Position, well-drained border against damp wall of stove or warm fernery. Plant, Feb. to April. Water freely, March to Oct., moderately afterwards. Syringe twice daily, March to Sept., once daily afterwards. Temp., March to Sept. 65° to 75°; Sept. to March 55° to 65°. Propagate by cuttings of the stems inserted in light soil in temp. 70° to 80°, any time.

SPECIES CULTIVATED: *M. acuminata* (Syn. *M. tenuis* and *Gravia paradoxa*), the Shingle Plant, yellow, summer, Trop. America; *deliciosa*, yellow, summer, fruit, delicious, Mexico.

**Montbretia**.—See *Tritonia*.

**Monterey Cypress** (*Cupressus macrocarpa*).—See *Cupressus*.

**Monterey Pine-tree** (*Pinus insignis*).—See *Pinus*.

**Monthly Rose** (*Rosa indica*).—See *Rosa*.

**Moon Creeper** (*Menispermum canadense*).—See *Menispermum*.

**Moon Daisy** (*Chrysanthemum leucanthemum*).—See *Chrysanthemum*.

**Moon Fern** (*Botrychium lunaria*).—See *Botrychium*.

**Moon-seed** (*Menispermum canadense*).—See *Menispermum*.

**Moon-wort** (*Botrychium lunaria*).—See *Botrychium*.

**Moræa** (Butterfly Iris; Wedding Flower).—Ord. Iridacæ. Half-hardy bulbous plants. First introduced 1597.

CULTURE: Soil, light rich sandy. Position, sunny well-drained border. Plant, Sept. to Jan., placing bulbs 4 in. deep & 2 in. apart. Lift & replant bulbs annually. Mulch surface of bed in March with cow manure.

POT CULTURE: Compost, two parts sandy loam, one part leaf-mould or decayed cow manure. Pots, 4½ in. in diameter, well-drained. Place five bulbs 3 in. deep, in each pot in Nov., & cover with cocoanut-fibre refuse in cold frame or under cool greenhouse stage until growth begins. Water moderately from time bulbs begin to grow until flowers fade, then gradually cease, keeping bulbs dry till Jan. Temp., Sept. to March, 40° to 50°; other times, 50° to 60°. Propagate by offsets treated as advised for bulbs.

SPECIES CULTIVATED: *M. bicolor*, yellow and brown, summer, 2 ft., S. Africa; *robinsoniana* (Syn. *Iris robinsoniana*), the Wedding Flower, white, summer, 4 to 6 ft., Lord Howe's Islands; *unguiculata* (Syn. *Vieussexia unguicularis*), white and red, summer, 1 ft.

**Moreton Bay Lily** (*Eurycles Cunninghami*).—See *Eurycles*.

**Moreton Bay Pine-tree** (*Araucaria Cunninghami*).—See *Araucaria*.

**Moreton Bay Trumpet Jasmine** (*Tecoma jasminoides*).

—See *Tecoma*.

**Morina** (Whorl-flower). — Ord. Dipsacæ. Hardy perennial herbs. First introduced 1839.

**CULTURE:** Soil, deep moist sandy loam. Position, partially shaded sheltered borders. Plant, Sept. to Nov., March, or April. Protect, Nov. to March, by covering of litter. Propagate by seeds sown 1-16 in. deep in sandy peat & leaf-mould in cold frame in Sept. or Oct., March or April; division of roots, Sept.

**SPECIES CULTIVATED:** *M. coulteriana*, yellow, June, 18 in., Himalayas; *longifolia*, purple, July, 2 to 3 ft., Himalayas; *persica*, red and white, 1 to 2 ft., Himalayas.

**Mormodes.** — Ord. Orchidacæ. Stove deciduous epiphytæ<sup>1</sup> orchids. First introduced 1837. Flowers, fragrant.

**CULTURE:** Compost, good fibry peat. Position, pots or hanging baskets, well drained. Water freely from time new growth begins until leaves fall off; very little other times. Temp., March to Sept., 65° to 85°; Sept. to March, 60° to 70°. Resting period, winter. Flowers appear at base of new pseudo-bulb. Propagate by division of plant at potting time.

**SPECIES CULTIVATED:** *M. luxata*, lemon yellow and brown, July, Mexico; *luxata eburnea*, creamy white; *pardina*, yellow and crimson, July and August, Mexico.

**Morning Glory** (*Ipomœa purpurea*).—See *Ipomœa*.

**Morus** (Mulberry).—Ord. Urticacæ. Hardy deciduous trees. Orn. foliage & fruit-bearing. First introduced 1548. One of the oldest of cultivated fruits. Flowers, greenish white; May to July. Fruit, oblong white, red, or black berries; ripe, Sept. & Oct.

**CULTURE OF MULBERRY** (*M. nigra*): Soil, light, deep moist loam. Position, sunny, sheltered from north winds, in England; against south walls in Scotland. Plant, Nov. to March. Depth of roots below surface 6 in. Prune in Feb., simply thinning over-crowded branches & shortening straggling ones. Shorten young shoots growing out of front of branches of trees grown against walls to 6 in. in July. Top-dress surface of soil equal to spread of branches with well-decayed manure in Oct. or Nov. Suitable artificial manure: two parts nitrate of soda, one part superphosphate, one part kainit. Apply in Feb. or March at the rate of 4 oz. per square yard. Gather fruit when ready to drop. Spread layer of straw or lawn mowings for fruit to fall upon.

**CULTURE OF OTHER SPECIES:** Soil, ordinary. Position, sunny sheltered shrubberies or singly on lawns. Plant, Oct. to March. Prune as advised for mulberry. Propagate by seeds sown  $\frac{1}{2}$  in. deep in light sandy soil, in temp. 55° to 65° in March, transplanting seedlings outdoors in June or July, or in similar soil & depth outdoors in May; cuttings 6 to 8 in. long, partly of current & partly of two-year-old shoots removed from upper part of tree, & inserted half their depth in light soil in sheltered position outdoors, Sept., Oct., or March; layering shoots in Sept.; grafting in March.

**SPECIES CULTIVATED:** *M. alba* (White Mulberry), 20 to 30 ft., Asia, and its varieties, *heterophylla*, *laciniata*, *latifolia*, *macrophylla* and *pendula* (Weeping Mulberry); *nigra* (Black or Common Mulberry), 20 to 30 ft., East; *rubra* (Red Mulberry), 50 to 60 ft., N. America.

**Moschosma.**—Ord. Labiatæ. Greenhouse perennial flowering plant with nettle-like foliage.

**CULTURE:** Compost, equal parts loam & decayed manure, little

sand. Position, greenhouse, Sept. to June; cold frame, June to Sept. Pot, March. Water freely, March to Oct., moderately afterwards. Apply stimulants occasionally a month after repotting until flowers expand, then cease. Temp., Sept. to March 45° to 55°; March to June 55° to 65°. Cut down shoots to within 3 in. of their base after flowering. Young plants: Insert cuttings 3 in. long of young shoots in light sandy soil in temp. 65° in Feb. or March. When rooted, place singly in 3½ in. pots. Nip off point of main shoots, also of succeeding shoots when 3 in. long. Shift into 5 or 6 in. pots when former pots are filled with roots. Water freely. Apply stimulants occasionally. Place in cold frame, June to Sept. Propagate by cuttings inserted in sandy soil in a temp. 65° in spring.

SPECIES CULTIVATED: *M. riparium*, white and purple, winter, 2 to 3 ft., S. Africa.

**Moss**.—See *Selaginella*.

**Moss Campion** (*Silene acaulis*).—See *Silene*.

**Moss Pink** (*Phlox subulata* and *Silene acaulis*).—See *Phlox* and *Silene*.

**Moss Rose** (*Rosa centifolia muscosa*).—See *Rosa*.

**Mossy Phlox** (*Phlox subulata*).—See *Phlox*.

**Mossy Saxifrage** (*Saxifraga hypnoides*).—See *Saxifraga*.

**Mother o' Millions** (*Linaria cymbalaria*).—See *Linaria*.

**Mother-of-Thousands** (*Linaria cymbalaria* & *Saxifraga sarmentosa*).—See *Linaria* & *Saxifraga*.

**Moth-plant** (*Phalænopsis schilleriana*).—See *Phalænopsis*.

**Mountain Ash** (*Pyrus aucuparia*).—See *Pyrus*.

**Mountain Avens** (*Dryas octopetala*).—See *Dryas*.

**Mountain Bladder Fern** (*Cystopteris montana*).—See *Cystopteris*.

**Mountain Buckler Fern** (*Nephrodium montanum*).—See *Nephrodium*.

**Mountain Centaury** (*Centaurea montana*).—See *Centaurea*.

**Mountain Clematis** (*Clematis montana*).—See *Clematis*.

**Mountain Elm** (*Ulmus montana*).—See *Ulmus*.

**Mountain Flea-bane** (*Erigeron alpinus*).—See *Erigeron*.

**Mountain Forget-me-not** (*Myosotis rupicola*).—See *Myosotis*.

**Mountain-Fringe** (*Adlumia cirrhosa*).—See *Adlumia*.

**Mountain Houseleek** (*Sempervivum montanum*).—See *Sempervivum*.

**Mountain Ixia-Lily** (*Ixiolirion montanum*).—See *Ixiolirion*.

**Mountain Kidney Vetch** (*Anthyllis montana*).—See *Anthyllis*.

**Mountain Mad-wort** (*Alyssum montanum*).—See *Alyssum*.

**Mountain Mint** (*Monarda didyma*).—See *Monarda*.

**Mountain Parsley Fern** (*Cryptogramme crispa*).—See *Cryptogramme*.

**Mountain Pink** (*Dianthus cœsius*).—See *Dianthus*.

**Mountain Sage**.—See *Lantana*.

**Mountain Sandwort** (*Arenaria montana*).—See *Arenaria*.

**Mountain Snow** (*Arabis albida*).—See *Arabis*.

**Mountain Spider-wort** (*Lloydia alpina*).—See *Lloydia*.

**Mountain Spinach** (*Atriplex hortensis*).—See *Atriplex*.

**Mountain Sweet** (*Ceanothus americanus*).—See *Ceanothus*.

**Mountain Tea-plant** (*Gaultheria procumbens*).—See *Gaultheria*.

**Mountain Violet** (*Viola lutea*).—See *Viola*.

**Mount Atlas Cedar** (*Cedrus atlantica*).—See *Cedrus*.

**Mournful Widow** (*Scabiosa atro-purpurea*).—See *Scabiosa*.

**Mourning Iris** (*Iris Susiana*).—See *Iris*.

**Mouse-ear Chickweed** (*Cerastium tomentosum*).—See *Cerastium*.

**Moustache Plant** (*Caryopteris Mastacanthus*).—See *Caryopteris*.

**Mozambique Lily** (*Gloriosa virescens*).—See *Gloriosa*.

**Muhlenbeckia** (Native Ivy of Australia).—Ord. Polygonacæ. Hardy trailing & climbing plants. Evergreen. Plants with fern-like foliage. First introduced 1822.

**CULTURE**: Soil, sandy loam. Position, sunny rockery. Plant, Oct., Nov., March, or April. Protect, Nov. to April by covering of dry litter or fern. Propagate by cuttings inserted in sandy soil in shady position outdoors, June to Sept.

**SPECIES CULTIVATED**: *M. adpressa*, Australia; *complexa*, New Zealand; *complexa nana*, dwarf variety; *varians*, New Zealand.

**Mulberry**.—See *Morus*.

**Mule Fern** (*Hemionitis palmata*).—See *Hemionitis*.

**Mule Pink**.—Hybrid varieties of *Dianthus*.

**Mulgedium**.—See *Lactuca*.

**Mullein** (*Verbascum Thapsus*).—See *Verbascum*.

**Mummy Pea** (*Pisum elatius*).—See *Pisum*.

**Musa** (Banana; Plantain).—Ord. Scitaminacæ. Stove herbaceous perennials. Orn. foliage & edible fruiting. First introduced 1690. Inflorescence, yellow, scarlet, green; Jan. to April; succeeded by oblong pods borne in huge clusters. Leaves, very large, oblong, green.

**CULTURE**: Compost, two parts good loam, one part well-decayed manure & one part sand. Position, pots, tubs or beds in lofty sunny stove. Pot or plant, Jan. to April. Water copiously, Feb. to Oct.; about once fortnightly afterwards. Syringe twice daily, Feb. to Sept.; once daily, Sept. to Feb. Moist atmosphere essential. Apply stimulants twice or three times weekly, March to Oct. Temp., March to Oct. 70° to 85°; Oct. to March 60° to 70°.

**OUTDOOR CULTURE OF M. ENSETE**: Position, sunny sheltered borders or nooks. Place in position first or second week in June, plunging pot or tub to its rim in the ground. Water copiously. Apply stimulants once a week. Lift & replace in stove in Sept. May also be planted in ordinary rich soil in June, freely watered, lifted in Sept. & roots stored close together in temp. 45° to 55° until following June. Propagate by suckers removed from parent plant & placed in pots in temp. 75° to 85° any time of year.

**SPECIES CULTIVATED**: *M. Cavendishii*, 5 to 10 ft., China; *Ensete*, 10 to 20 ft., Abyssinia, kind used for garden decoration in summer; *sapientum* (Banana), 10 to 20 ft., Tropics; *sapientum paradisiaca* (Plantain).

**Muscari** (Grape Hyacinth).—Ord. Liliacæ. Hardy bulbous flowering plants. Deciduous.

**OUTDOOR CULTURE**: Soil, deep sandy loam. Position, sunny beds, borders, or rockeries. Plant, Aug. to Nov. in lines or masses. Depth for planting: Small bulbs 2 in. deep & 1 in. apart; large bulbs

4 in. deep & 3 to 4 in. apart. Mulch with decayed manure, Nov. Lift, divide, & replant every third year.

**POT CULTURE:** Compost, two parts sandy loam, one part leaf-mould or well-decayed cow manure & one part river sand. Pot, Aug. to Nov., placing 18 to 20 small bulbs, 1 in. apart, in a 5-in. pot; or 3 to 5 large-sized bulbs 1 in. deep in similar pots. Position, under layer of cinder ashes from time of potting till growth commences, then in cold frame, cool greenhouse or window till past flowering, afterwards in sunny spot outdoors. Water moderately from time growth commences till foliage fades, then keep dry. Repot annually. Apply weak stimulants once or twice during flowering period. Propagate by seeds sown 1-16 in. deep in light sandy soil in boxes or cold frames, or outdoors in Sept.; offsets from old bulbs removed when lifting & planted as advised for full-sized bulbs. Seedlings flower when 3 to 4 years old.

**SPECIES CULTIVATED:** *M. botryoides*, blue, spring, 6 in., Europe; *botryoides* album, white; *comosum* (Tassel Hyacinth), blue, April, 8 in., Europe; *comosum monstrosum* (Feather Hyacinth), blue, April, 8 in.; *conicum* (Heavenly Blue variety), blue, April, 8 in., Trebizond; *Heldreichii*, blue, May, 8 in., Greece; *moschatum* (Musk Hyacinth), yellow and violet, April, 8 in., Asia Minor; *racemosum* (Starch Hyacinth), blue, April, 6 in., Europe.

**Mushroom.**—See *Agaricus*.

**Musk** (*Mimulus moschatus*).—See *Mimulus*.

**Musk Grape Hyacinth** (*Muscari moschatum*).—See *Muscari*.

**Musk Mallow** (*Malva moschata*).—See *Malva*.

**Musk Orchis** (*Herminium monorchis*).—See *Herminium*.

**Musk-scented Rose** (*Rosa moschata*).—See *Rosa*.

**Mussænda.** — Ord. Rubiaceæ. Stove evergreen flowering shrubs. First introduced 1805.

**CULTURE:** Compost, equal parts peat, loam, leaf-mould & silver sand. Position, well-drained pots in light moist stove. Pot, Feb. to April. Prune moderately after flowering. Temp., Feb. to Oct., 65° to 85°; Oct. to Feb., 55° to 65°. Water freely, April to Sept.; moderately, Sept. to Nov. & Feb. to April; keep somewhat dry, Nov. to Feb. Syringe daily, Feb. to Oct. Propagate by cuttings of young shoots in sandy soil under bell-glass in temp. 70° to 80°, May to July.

**SPECIES CULTIVATED:** *M. erythrophylla*, yellow, bracts crimson, winter, 1 ft., Trop. Africa; *frondosa*, yellow, Aug., 2 to 3 ft., India; *macrophylla*, orange, May, 4 to 6 ft., Nepaul.

**Mustard** (*Salading*).—See *Brassica*.

**Mutisia.** — Ord. Compositæ. Greenhouse or hardy climbing flowering shrubs. Evergreen. First introduced 1823.

**CULTURE OF GREENHOUSE SPECIES:** Compost two parts loam, one part leaf-mould, half-part sand. Position, pots or beds; shoots trained up rafters or round trellises. Pot or plant, Feb. or March. Prune slightly after flowering. Water freely, March to Sept., moderately afterwards. Apply stimulants occasionally, May to Sept. Temp., March to Sept. 55° to 65°; Sept. to March 40° to 50°.

**CULTURE OF HARDY SPECIES:** Soil, ordinary rich. Position, well-drained border against sheltered, partially shaded wall. Plant, Oct., March, or April. Water freely in dry weather. Protect from slugs by placing layer of fine coke or cinders round base of stems. Propagate greenhouse species by cuttings of half-ripened shoots inserted in sand under bell-glass in temp. 55° to 65°, May or June; hardy species by cuttings of similar shoots inserted in sand in shady cold frame or greenhouse in April or May.



GREENHOUSE SPECIES: *M. clematis*, scarlet, summer, 6 to 10 ft., Peru.

HARDY SPECIES: *M. decurrens*, orange, summer, 6 to 10 ft., Chili.

**Myosotidium** (Chatham Islands Forget-me-not).—Ord. Boraginaceæ. Hardy herbaceous perennial. First introduced 1858.

CULTURE: Soil, ordinary. Position, cool & damp sheltered border. Plant, Oct. or March. Water freely in dry weather. Propagate by seeds sown 1-16 in. deep in April where plants are required to grow. This plant should be disturbed as little as possible.

SPECIES CULTIVATED: *M. nobile*, blue and white, spring, 12 to 18 in., Chatham Island.

**Myosotis** (Forget-me-not; Scorpion Grass).—Ord. Boraginaceæ. Hardy perennials.

CULTURE OF *M. ALPESTRIS*: Soil, moist gritty loam. Position, partially shady rockery, surrounded by small pieces of sandstone. Plant, March or April.

CULTURE OF OTHER SPECIES: Soil, ordinary. Position, as edgings to, or in masses in partially shady beds or borders. Plant, Oct., Nov., or March, 4 to 6 in. apart. These are best treated as biennials—namely, raised from seed sown outdoors in April, May or June, transplanted into the beds or borders in Oct. to flower following year. Propagate by seeds sown 1-16 in. deep outdoors in spring or summer; cuttings inserted in sandy soil under hand-light in June or July; division of roots in March or Oct.

SPECIES CULTIVATED: *M. alpestris* (Syn. *M. rupicola*), blue and white, fragrant, June and July, 3 in., Europe; *alpestris elegantissima*, white, rose, and blue; *alpestris stricta*, erect growing, sky blue; *alpestris victoria*, sky-blue, 6 in.; *azorica*, blue, summer, 6 to 10 in., Azores; *azorica alba*, white; *azorica Imperatrice Elisabeth*, bluish purple; *dissitiflora*, sky blue, March to July, 8 to 10 in., Alps; *dissitiflora alba*, white; *palustris*, sky blue, May to July, 6 to 12 in., Britain; *palustris semperflorosa*, long flowering; *palustris Tom Thumb*, sky blue, 3 to 6 in.; *sylvatica*, blue and yellow, summer, 1 to 2 ft., Britain; and its varieties, *grandiflora* and *elegantissima*.

**Myrica** (Candle-berry Myrtle).—Ord. Myricaceæ. Hardy deciduous & evergreen shrubs. Leaves, lance-shaped, green, highly fragrant.

CULTURE: Soil, moist sandy peat. Position, open sheltered borders. Plant, Oct. to March. Prune deciduous species, Nov. to Feb.; evergreen species, April. Propagate by seeds sown  $\frac{1}{2}$  in. deep in ordinary soil in sheltered position outdoors in autumn; cuttings inserted in sandy soil in sheltered position outdoors, Sept. or Oct.; layering shoots in Sept. or Oct.; division of plants, Oct. to March.

SPECIES CULTIVATED: *M. asplenifolia* (Syn. *Comptonia asplenifolia*), brown, April, 3 to 4 ft., N. America; *cerifera* (Candle-berry or Wax Myrtle), brown, May, 15 to 20 ft., America; *Gale* (Sweet Gale), brown, May, 4 ft., N. Europe (Britain).

**Myricaria** (German Tamarisk).—Ord. Tamaricaceæ. Hardy deciduous flowering shrub. First introduced 1582.

CULTURE: Soil, ordinary, sandy. Position, open sunny borders or banks. Plant, Oct. to March. Prune into shape, Nov. to Feb. Propagate by seeds sown 1-16 in. deep in sandy soil in open sunny position outdoors in March or April; cuttings of firm young shoots inserted in sandy soil outdoors, Aug. to Nov.

SPECIES CULTIVATED: *M. germanica* (Syn. *Tamarix germanica*), pink, July, 6 to 8 ft., Europe.

**Myrobalan Plum** (*Prunus cerasifera*).—See *Prunus*.

**Myrrhis** (Sweet Cicely).—Ord. Umbelliferae. Hardy perennial aromatic herb. Orn. foliage. Leaves finely divided, fern-like, fragrant.

**CULTURE:** Soil, ordinary. Position, open sunny borders. Plant, Oct. or March. Propagate by seeds sown  $\frac{1}{2}$  in. deep in ordinary soil outdoors, Sept. or April; division of roots, Oct. or March.

**SPECIES CULTIVATED:** *M. odorata*, white, May, 3 ft., Europe (Britain).

**Myrsiphyllum.**—See Asparagus.

**Myrtle** (*Myrtus communis*).—See Myrtus.

**Myrtle-Flag** (*Acorus calamus*).—See Acorus.

**Myrtus** (*Myrtle*).—Ord. Myrtaceæ. Greenhouse & half-hardy evergreen shrubs. Flowering & orn. foliage. First introduced 1597. Flowers, white, fragrant; May to July. Fruit, oblong or round, purplish black berries; fragrant & edible. Leaves, egg or lance-shaped, green, fragrant.

**CULTURE IN GREENHOUSES:** Compost, two parts sandy loam, one part leaf-mould, half a part sand. Position, well-drained pots or tubs, or in beds with shoots trained to walls, in light sunny airy greenhouses. Place pot plants in sunny position outdoors, June to Sept. Pot, Feb. or March. Prune into shape, Feb. Water copiously, March to Oct.; moderately afterwards. Syringe daily, March to Oct. Apply stimulants once a week, May to Sept., to healthy plants only. Temp., March to Sept., 55° to 65°; Sept. to March, 45° to 50°. May be grown in dwelling rooms or windows under similar treatment.

**OUTDOOR CULTURE:** Soil, ordinary sandy. Position, well-drained borders against sheltered S. walls in S. or S.W. of England only. Plant, Oct. or March. Protect, Oct. to March, in severe winters, with mats or straw. Propagate by seeds sown  $\frac{1}{2}$  in. deep in sandy soil in temp. 60° to 70° in autumn or spring; cuttings of young shoots, 2 in. long, inserted in sandy soil under bell-glass in temp. 65° to 75°, spring and summer; cuttings of firm shoots, 2 to 3 in. long, inserted in sandy soil in cool greenhouse or window, June or July; branches, 5 to 6 in. long, inserted in bottles of water suspended in sunny window or greenhouse, summer.

**SPECIES CULTIVATED:** *M. bullata*, 10 to 15 ft., New Zealand; *communis* (Common Myrtle), 6 to 10 ft., S. Europe, hardy; *communis flore-pleno*, double-flowered; *communis variegata*, variegated; *Luma* (Syn. *Eugenia Luma*), 3 ft., Chili; *Ugni* (Syn. *Eugenia Ugni*), 4 to 6 ft., Chili, hardy; *Ugni variegata*, variegated.

**Nægelia.**—Ord. Gesneriaceæ. Stove tuberous-rooted herbaceous perennials. Flowering & orn. foliage. First introduced 1840. Leaves, heart-shaped, green or crimson, velvety.

**CULTURE:** Compost, two parts fibrous peat, one part loam, one part leaf-mould, with a little decayed manure & silver sand. Position, well-drained pots or pans in shady part of plant stove. Pot, March to flower in summer; May to flower in autumn; June to flower in winter. Place tubers 1 in. deep singly in 5 in. pots, or 1 to 2 in. apart in larger sizes. Water moderately from time growth begins until plants are 3 or 4 in. high, then freely. After flowering, gradually withhold water till foliage dies down, then keep dry till potting time. Apply weak liquid manure once or twice a week when flower buds show. Syringing not required. Temp., March to Sept. 65° to 85°; Sept. to March 55° to 75°. Store when foliage has decayed on their sides under stage till potting time in temp. of 50° to 55°. Propagate by seeds sown on surface of well-drained pots of sandy peat, in temp. 75°, March or April; cuttings of young shoots inserted in pots of sandy peat in temp. 75° to 85° in spring, division of rhizomes at potting time.

**SPECIES CULTIVATED:** *N. cinnabarina*, scarlet, summer, 2 ft., Mexico; multi-

flora (Syn. *Achimenes amabilis*), white, Aug., 2 ft., Mexico; zebрина, yellow and scarlet, Oct., 2 ft., Mexico.

**Nail-wort.**—See *Paronychia*.

**Naked-flowered Azalea** (*Rhododendron nudiflora*).—See *Rhododendron*.

**Naked-flowered Crocus** (*Crocus nudiflorus*).—See *Crocus*.

**Nandina** (Heavenly Bamboo).—Ord. *Berberidaceæ*. Half-hardy evergreen flowering shrubs.

**CULTURE:** Soil, peat & loam. Position, sheltered beds or borders in mild districts only. Plant in May or Sept. Propagate by cuttings inserted in sandy peat in a warm greenhouse in spring or summer.

**SPECIES CULTIVATED:** *N. domestica*, white, summer, 4 to 5 ft., leaves assume reddish tint in autumn, Japan.

**Nankeen Lily** (*Lilium testaceum*).—See *Lilium*.

**Nanodes.**—See *Epidendrum*.

**Narbonne Flax** (*Linum narbonense*).—See *Linum*.

**Narcissus** (Daffodil; Jonquil; Chinese Sacred Lily; Chalice Flower; Lent Lily).—Ord. *Amaryllidaceæ*. Hardy bulbous perennials.

**CLASSIFICATION:** *Narcissi* are divided into three main sections or groups, viz.: I. *Magni-Coronati* (Trumpet Daffodils). II. *Medio-Coronati* (Chalice-cupped Daffodils or Star *Narcissi*). III. *Parvi-Coronati* (Dolly-cup or Poet's *Narcissi*). Group I. have large trumpets; II., short trumpets or cups; III., very short cups or trumpets. To first group belong the following types: Yellow, white & yellow (*Bicolor*), & cream trumpet kinds, *Johnstonii*, *cyclamineus*, *bulbocodium*, *Humei*, *Backhousei*, & *tridymus*; to second group, *incomparabilis*, *Barrii*, *Leedsii*, *montanus*, *Bernardi*, *Machai Nelsoni*, *triandrus*, *juncifolius*, & *odorus*; to third group, *Burbidgei*, *Engleheartii*, *poeticus*, *poetaz*, *tazetta* or *polyanthus*, *biflorus*, and *jonquilla*. The name *Daffodil* usually applies to kinds with long trumpets.

**OUTDOOR CULTURE:** Soil, ordinary for common kinds; sandy loam for *N. bulbocodium* & vars.; peaty soil for *N. cyclamineus*. No manure must be applied. Position, partially or quite shady beds or borders facing N. or N.E. for robust kinds; rockeries sheltered from N. or N.E. winds for choice or dwarf kinds. Plant, June to Oct. Depth for planting, 3 to 4 in. on heavy soils; 6 in. on light soils. Distance apart, 2 to 6 in. Lift *N. bulbocodium* in July & replant in Oct.; other kinds every three or four years in July. Do not remove foliage until quite dead. Manures: 4 oz. of basic slag or 4 oz. of bonemeal for heavy soils; ½ oz. of sulphate of potash for sandy soils. Apply above quantities per square yard before planting.

**CULTURE IN TURF:** Make holes 2 to 3 in. wide, 3 in. deep. Place one bulb in each & cover with soil & turf. Plant, July to Oct. Grass must not be cut until leaves turn yellow.

**INDOOR CULTURE:** Compost, two parts fibrous loam, one part well-decayed manure or leaf-mould, one part sand. Pot, Aug. to Nov., placing 3 large, 6 medium-sized, or 12 small bulbs in a 5-in. pot. Depth for planting: Allow apex to just appear above surface of soil. Position, under cinder ashes outdoors or in frame until growth begins, then remove to greenhouse or window. Water only when growth commences; moderately afterwards. Apply weak stimulants when flowers appear. Temp. for forcing, 55° to 65° After flowering, plant bulbs, except those of *N. bulbocodium* & *N. cyclamineus*, outdoors. Keep soil of the latter dry after flowering.

**CULTURE OF CHINESE SACRED LILY:** Half fill a Japanese bowl with shingle or gravel, & add sufficient water to just cover this. Place bulb on the shingle & surround with pebbles. Put bowl in dark cupboard until growth begins, then remove to light. Change water once a week; use tepid water only. Bulbs usually flower 5 to 6 weeks after being placed in bowls; useless after flowering. Propagate by seeds sown  $\frac{1}{2}$  in. deep in pans of sandy loam in cold frame in autumn, transplanting seedlings following year 1 in. apart in bed of sandy soil in shady position outdoors; by offsets, removed from old bulbs in July or Aug., & replanted at once as advised for parent bulbs. Seedling bulbs flower when three to six years old.

**SPECIES CULTIVATED:** *N. biflorus*, white and yellow, May, 1 ft., Europe; *Bulbocodium* (Hoop-petticoat Daffodil), yellow, April, 6 in., S. Europe, and its varieties, *citrinus* (sulphur-yellow), *conspicuus* (yellow), *Graellii* (sulphur-yellow), and *monophyllus* (white); *cernuus*, white, spring, 1 ft., Pyrenees; *cyclamineus* (Cyclamen-flowered Daffodil), lemon and yellow, spring, 1 ft., Portugal; *gracilis*, yellow, April, 1 ft., France; *incomparabilis* (Chalice-cup Daffodil), yellow, April, 1 ft., Europe; *Johnstonii*, pale sulphur, 1 ft., Portugal; *jonquilla* (Jonquil), yellow, April, 9 in., Spain; *jonquilla flore-pleno*, double; *juncifolius* (Rush-leaved Daffodil), yellow, spring, 1 ft., S. Europe; *MaoLeayii*, cream, March, 6 in., Pyrenees; *major*, yellow, March, 1 ft., Europe; *maximus*, yellow, April, 1 ft., Europe; *minor*, yellow, March, 9 in., Europe; *minor minimus*, sulphur-yellow, 6 in.; *moschatus* (Musk Daffodil), white, April, 1 ft., Pyrenees; *odorus* (Campernel), yellow, May, 1 ft., Spain; *poeticus* (Poet's Daffodil and Pheasant's Eye *Narcissus*), white, May, 1 ft., Mediterranean Region; *Pseudo-narcissus* (Common Daffodil or Lent Lily), yellow, March, 1 ft., Europe (Britain); *pseudo-narcissus bicolor*, white and yellow; *serotinus*, white and yellow, Sept., 1 ft., S. Europe; *Tazetta* (*Polyanthus Narcissus* and Chinese Sacred Lily), white and yellow, March, 1 ft., Mediterranean Region; *triandrus* (Angel's Tears), white, April, 6 to 9 in., Spain; *triandrus calathinus*, sulphur-yellow.

**PRINCIPAL HYBRIDS:** *N. Backhousei*, sulphur and yellow; *Barrii*, sulphur and orange; *Burbidgei*, white, yellow and red; *Humei*, sulphur and lemon-yellow; *Leedsii*, white and sulphur. Numerous varieties of each of above.

**PRINCIPAL DOUBLE-FLOWERED DAFFODILS.**—*Capax plenus*, lemon; *cernuus plenus*, white; *lobularis plenus*, yellow; *minor plenus*, yellow; *Telemonius plenus*, yellow; *Butter and Eggs*, yellow and orange; *Eggs and Bacon*, white and orange; *Codlins and Cream*, white and sulphur; *Queen Anne's Jonquil* (*N. odorus plenus*), yellow; and *Campernelii plenus*, yellow.

**Narthecium** (Common Bog Asphodel).—Ord. Liliaceæ. Hardy herbaceous perennials.

**CULTURE:** Soil, ordinary. Position, moist beds, borders or margins of ponds. Soil, ordinary, or boggy peat. Plant, Oct. or March. Propagate by seeds sown in March or April, where plants are required to grow; division of roots in Oct. or March.

**SPECIES CULTIVATED:** *N. ossifragum*, yellow, July, 6 in., Europe (Britain).

**Nasturtium.**—A term commonly but erroneously applied to *Tropæolum majus*.

**Nasturtium** (Water Cress).—Ord. Cruciferæ. Hardy perennial herb. Aquatic. Leaves, green or brown; largely used for salads.

**CULTURE IN BEDS IN WATER:** Soil, ordinary. Position, open. Dimensions of beds, 3 to 4 ft. wide; 3 to 6 in. deep; no limit as to length. Depth of soil,  $1\frac{1}{2}$  to 3 in. Depth of water  $1\frac{1}{2}$  in. when first planted; 3 in. when growing freely; 6 in. in winter. Water must flow through beds, not be stagnant. Plant, May and June for gathering in Aug. to Feb.; Sept. to Nov. for gathering Feb. to May. Replant beds twice annually. Distance for planting, 6 in. apart in rows, 2 ft. between rows. Soil must be removed each planting. Gather the tops once a week; cut, not break, them off.

**CULTURE IN PANS:** Soil, ordinary. Position, tubs or tanks of water in open air or under glass. Sow seeds 1-16 in. deep in March

or Sept., & partly immerse pan in water; wholly when seedlings appear. Insert cuttings 2 to 3 in. apart in spring or autumn, partly immerse at first, wholly after.

**CULTURE IN TRENCHES:** Soil, ordinary. Position, sunny. Dig trench 2 ft. wide, 1 ft. deep. Put 6 in. decayed manure in & 3 in. of soil on this. Sow seeds thinly  $\frac{1}{2}$  in. deep in April & Aug. Keep well watered. Cress sown in April gather June to Sept.; in Aug., Nov. to May. Propagate for beds by seeds sown on a shady border in April, & kept moist; by division of the plants in May or Aug. Cress marketed by the dozen bunches, each bunch containing as many shoots as one hand will hold. Average price per doz. bunches, 6d., to 1s.

**SPECIES CULTIVATED:** *N. officinale*, white, June, Britain. See *Tropæolum* for garden nasturtiums.

**Natal Lily** (*Clivia miniatum*).—See *Clivia*.

**Native Ivy of Australia** (*Muhlenbeckia adpressa*).—See *Muhlenbeckia*.

**Navel-wort** (*Cotyledon umbilicus*).—See *Cotyledon*.

**Neapolitan Cyclamen** (*Cyclamen neapolitanum*).—See *Cyclamen*.

**Neapolitan Daphne** (*Daphne collina*).—See *Daphne*.

**Neapolitan Violet** (*Viola odorata pallida plena*).—See *Viola*.

**Necklace Poplar** (*Populus deltoidea*).—See *Populus*.

**Nectarine**.—See *Prunus*.

**Neilgherry Lily** (*Lilium neilgherrense*).—See *Lilium*.

**Neillia** (*Nine Bark*).—Ord. *Rosacæ*. Hardy evergreen shrubs. Flowering & orn. foliage. First introduced 1690.

**CULTURE:** Soil, ordinary. Position, open sunny shrubberies or banks. Plant, Oct. to March. Prune flowering species moderately after blooming; variegated variety in Feb. Propagate by seeds sown  $\frac{1}{2}$  in. deep in sandy soil in sheltered position outdoors, autumn or spring; cuttings of firm shoots, 2 to 3 in. long, inserted in sand under bell-glass any time.

**SPECIES CULTIVATED:** *N. amurensis* (Syn. *Spiræa amurensis*), white, summer, 4 to 6 ft., Amur; *opulifolia* (Syn. *Spiræa opulifolia*), white, June, 4 to 7 ft., N. America; *opulifolia lutea*, leaves golden.

**Nelson's Phlox** (*Phlox Nelsoni*).—See *Phlox*.

**Nelumbium** (*Sacred Bean*; *Egyptian Bean*; *Chinese Water Lily*).—Ord. *Nymphacæ*. Greenhouse aquatic rhizomatous-rooted perennials. Orn. foliage & flowering. First introduced 1787. Flowers, fragrant. Leaves, shield-shaped, 1 to 2 ft. in diameter, bluish green.

**CULTURE:** Compost, two parts loam, one part well-decayed manure. Position, in tanks or tubs of water heated to a temp. of 60° to 65°. Plant rhizomes 3 to 4 in. below surface of water in Feb. or March. Temp., March to Oct. 55° to 65°; Oct. to March 45° to 55°. Draw off water from tank in Oct., & keep rhizomes dry till Feb. *N. speciosum* may be grown in tank in sunny position outdoors, June to Sept. Propagate by seeds sown in sandy soil, 2 to 3 in. below surface of water, heated to temp. of 60° to 70° any time of year; division of rhizomes in Feb.

**SPECIES CULTIVATED:** *N. luteum*, yellow, July, S. United States; *speciosum*, white and rose, July, Trop. Asia. The following are varieties of the latter species: *Album grandiflorum*, white; *album plenum*, double white; *album striatum*, white and carmine; *roseum grandiflorum*, rose; and *roseum plenum*, rose, double.

**Nemastylis**.—Ord. *Iridacæ*. Half-hardy flowering bulbs. Deciduous. First introduced 1875.

**OUTDOOR CULTURE:** Soil, light rich sandy. Position, sunny

well-drained border. Plant, Jan., placing bulbs 4 in. deep & 2 in. apart. Lift & replant bulbs annually. Mulch surface of bed in March with cow manure.

**POT CULTURE:** Compost, two parts sandy loam, one part leaf-mould or decayed cow manure. Pots, 4½-in. in diameter, well drained. Place five bulbs 3 in. deep, in each pot in Nov., & cover with cocoanut fibre refuse in cold frame or under cool greenhouse stage until growth commences. Water moderately from time bulbs begin to grow until flowers fade, then gradually cease, keeping bulbs dry till Jan. Temp., Sept. to Mar., 40° to 50°; other times, 50° to 60°. Propagate by offsets treated as advised for bulbs.

**SPECIES CULTIVATED:** *N. celestina*, blue, summer, 6 in., California; *gemiflora*, yellow and black, summer, 6 in., California.

**Nemesia.**—Ord. Scrophulariaceæ. Half-hardy annuals. Nat. S. Africa. First introduced 1774. Flowers, fragrant.

**CULTURE:** Soil, ordinary. Position, sunny beds or rockeries. Propagate by seeds sown in March 1-16 in. deep in well-drained pots or pans, filled with light fibrous loam & little wood ashes. Place in temp. 55° to 65°, transplanting seedlings when they have formed three leaves 1 in. apart in well-drained pots, placing in temp. of 55°, & planting into flowering position outdoors in June; also seeds sown in May 1-16 in. deep in patches outdoors where plants are required to flower, afterwards thinning seedlings to 2 or 3 in. apart.

**SPECIES CULTIVATED:** *N. bicornis*, purple, July, 2 ft.; *strumosa* Suttoni, various colours, summer, 1 ft.

**Nemophila** (Californian Blue-bell). — Ord. Hydrophyllaceæ. Hardy trailing annuals. First introduced 1822.

**OUTDOOR CULTURE:** Soil, ordinary. Position, in masses or in lines as edgings to sunny beds or borders. Sow seeds 1-16 in. deep in March or April for flowering in summer; in Aug. or Sept. for flowering in spring. Thin seedlings to 1 or 2 in. apart when ½ in. high.

**POT CULTURE:** Compost, two parts good ordinary soil, one part leaf-mould or well-decayed manure. Size of pots 4½ in. diameter. Place 1 in. of drainage in pots, cover with moss & fill up to within ¼ in. of rim with above compost pressed firmly. Sow seeds thinly, slightly covering with fine mould, & place pots in cool shady frame or window. Water moderately at first, freely when seedlings appear. Apply weak stimulants once or twice weekly when plants begin to flower. Position when in flower, cold sunny greenhouse, window or frame.

**SPECIES CULTIVATED:** *N. aurita*, purple and violet, summer, 1 ft., California; *insignis*, blue and white, summer, 1 ft., California; *insignis alba*, white; *insignis grandiflora*, white and blue; *maculata*, white and purple, summer, 6 in., California; *Menziesii*, white or blue, summer, 6 in., California.

**Nepaul Laburnum** (*Piptanthus nepalensis*).—See *Piptanthus*.

**Nepaul Poppy** (*Meconopsis nepalensis*).—See *Saxifraga*.

**Nepaul Trumpet-flower** (*Beaumontia grandiflora*).—See *Beaumontia*.

**Nepenthes** (Pitcher-plant). — Ord. Nepenthaceæ. Stove ever green sub-shrubby perennials. Orn. foliage. First introduced 1789. Flowers, greenish, diœcious, insignificant. Leaves, oblong or lance-shaped, terminating in a pitcher-like appendage; green variously mottled with red, brown & crimson.

**CULTURE:** Compost, two parts good brown fibrous peat, one part sphagnum moss. Position in baskets suspended from roof in shady part of stove. Plant, or re-basket, Feb. or March. Temp., March

to Sept. 70° to 85°; Sept. to March 65° to 75°. Water copiously, March to Sept., moderately afterwards. Syringe twice daily all the year round. Moist atmosphere very essential. Shade from sun. Propagate by seeds sown on surface of mixture of fibrous peat & sphagnum moss in well-drained pan covered with bell-glass & placed in a moist frame heated to temp. of 80° to 85°; cuttings of one year old shoots inserted singly in small pots plunged in bottom heat of 85° any time.

**SPECIES CULTIVATED:** *N. albo-marginata*, green, red, and white, Singapore; *bicalcarata*, green, Borneo; *Curtisii*, green, crimson, and purple, Borneo; *northiana*, green and purple, Borneo; *rafflesiana*, green, red, and brown, India; *sanguinea*, blood red, Malaya; *Veitchii*, green, Borneo; *ventricosa*, green, brown, and crimson, Philippines. Numerous pretty hybrids.

**Nepeta** (Cat-mint; Ground Ivy).—Ord. Labiatae. Hardy herbaceous trailing perennials. Leaves, heart-shaped, dark green or variegated with white.

**CULTURE:** Soil, ordinary. Position, sunny beds, borders or rockeries. Plant, Oct. to March. *N. Glechoma variegata* also makes a pretty basket plant for a cool greenhouse or window; or for draping staging in greenhouse. Propagate by seeds sown 1-16 in. deep where plants are required to grow, March to May; division of roots, Oct. to March.

**SPECIES CULTIVATED:** *N. Glechoma variegata* (Variegated Ground Ivy), Syn. *Glechoma hederacea*, leaves silvery, trailing, Europe (Britain); *Mussinii*, blue, summer, 2 ft., Caucasasia.

**Nephrodium** (Buckler Fern).—Ord. Filices. Stove, greenhouse, & hardy ferns.

**CULTURE OF GREENHOUSE SPECIES:** Compost, equal parts loam, leaf-mould, peat & sand. Position, well-drained pots, borders or rockeries, in shade. Pot or plant, Feb., March, or April. Water moderately, Oct. to Feb.; freely afterwards. Temp., Oct. to March, 40° to 50°; March to Oct. 55° to 65°.

**CULTURE OF STOVE SPECIES:** Compost, equal parts loam, leaf-mould, peat & sand. Position, well-drained pots in shady part of stove. Pot, March. Water moderately, Oct. to March, freely afterwards. Temp., Sept. to March 55° to 60°; March to Sept. 65° to 75°.

**CULTURE OF HARDY SPECIES:** Soil, ordinary light rich. Position, shady borders or rockeries. Plant, April. Water freely in dry weather, May to Sept. Top-dress annually with leaf-mould or well-decayed manure. Protect in severe weather with bracken or litter. Do not remove dead fronds until April. Propagate stove and greenhouse species by spores sown on surface of fine sandy peat, under bell-glass, in temp. 75° to 85°, any time; division of plants at potting or planting time; hardy species by spores sown on surface of sandy soil in shady cold frame; division in April.

**STOVE SPECIES:** *N. albo-punctatum*, Mascarene Islands; *dissectum*, Tropics.

**GREENHOUSE SPECIES:** *N. cuspidatum*, Ceylon; *decompositum* (Syn. *Lastrea decomposita*), Australia, etc.; *erythrosom* (Syn. *Lastrea erythroa*), Japan; *hispidum*, New Zealand; *lepidum*, Polynesia; *molle*, and its varieties *corymbiform* and *grandiceps*, Tropics; *Otaria* (Syn. *Lastrea aristata*), Japan; *patens* (Spreading Wood Fern), Tropics; *Richardsii multifidum*, New Caledonia; *Sieboldii* (Syn. *Lastrea Sieboldii*), and its variegated form, Japan.

**HARDY SPECIES:** *N. æmulum* (Syn. *Lastrea recurva*), Hay-scented Buckler Fern, Britain; *cristatum* (Syn. *Aspidum cristatum* and *Lastrea cristata*), Crested Buckler Fern, Britain, and N. America; *Filix-mas* (Syn. *Lastrea Filix-mas*), Male Fern, and its numerous varieties, Britain and the Temperate Zone; *fragrans* (Fragrant Wood Fern), N. America; *goldieanum*, N. America; *hirtipes* (Syn. *Lastrea atrata*), Trop. Asia; *montanum* (Syn. *Lastrea Oreopteris*), Mountain Buck-

ler Fern, and its varieties, Europe (Britain), and N. America; rigidum (Syn. Lastrea rigidum), N. Temperate Zone; spinulosum (Syn. Lastrea dilatatum), Prickly Shield Fern, N. Temperate Zone (Britain); Thelypteris (Syn. Lastrea Thelypteris), Female Buckler Fern, N. Temperate Zone (Britain).

**Nephrolepis** (Ladder Fern).—Ord. Filices. Stove evergreen ferns. First introduced 1793. Fronds, linear, narrow, once divided, plain or crested.

**CULTURE:** Compost, equal parts loam, leaf-mould & sand, two parts lumpy peat. Position, in baskets suspended from roof, or in well-drained pots or beds in shady part of stove. Pot or plant, Feb. or March. Water moderately, Oct. to March; freely afterwards. Temp., Sept. to March 55° to 60°; March to Sept. 65° to 75°. Propagate by spores sown on surface of pans of sandy peat under bell-glass, & placed in temp. 75° to 85°, any time; division of plants, Feb., March, or April; pegging down creeping stems bearing young plants & removing when rooted.

**SPECIES CULTIVATED:** *N. Bausei*, 12 to 18 in., Garden origin; *cordifolia*, 1 to 2 ft., Tropics; *davallioides*, 1 ft., Java; *Duffii*, 1 ft., Australia; *exaltata* (Ladder Fern), 2 to 3 ft., Tropics; *Pluma*, 1 ft., Madagascar; *rufescens*, 2 to 3 ft., Tropics; *tripinnatifida*, 2 to 3 ft., Solomon Islands. Several varieties.

**Nerine** (Guernsey Lily; Scarlet Guernsey Lily).—Ord. Amaryllidaceæ. Greenhouse bulbous plants. Deciduous. First introduced 1680.

**CULTURE:** Compost, two parts sandy loam, one part well-decayed cow manure or leaf-mould, one part coarse sand. Pot, Aug. to Nov., placing one bulb half its depth in a 4½-in. pot, or three in a 6-in. pot; good drainage essential. Position, light cool greenhouse, Sept. to May; cold frame or sunny spot outdoors, May to Sept. Water moderately, Sept. to May, or as soon as flower spikes show; keep quite dry, May to Sept. Apply stimulants occasionally during growth. Top-dress annually with equal parts sandy loam, decayed cow manure & sand in Aug. Repotting only necessary every three or four years. Season of growth, Sept. to May; season of rest, May to Sept.

**CULTURE OUTDOORS:** Soil, light sandy, enriched with decayed cow manure. Position, sunny well-drained borders at base of S. wall. Plant, Aug. to Nov., 2 to 3 in. deep. Protect, Nov. to April, with covering of dry litter. Top-dress annually in Aug. with leaf-mould or decayed cow manure. Lift & replant every four or five years. Propagate by offsets removed when repotting & treated as old bulbs.

**SPECIES CULTIVATED:** *N. appendiculata*, pink, autumn, 1 ft., Natal; *curvifolia*, scarlet, autumn, 1 ft., S. Africa; *curvifolia Fothergillii*, deep scarlet; *filifolia*, red, autumn, 1 ft., S. Africa; *flexuosa*, pink, Sept., 2 ft., S. Africa; *flexuosa angustifolia*, pink, Sept., 2 ft.; *flexuosa pulchella*, pink and red, Sept., 2 ft.; *sarniensis* (Guernsey Lily), salmon, autumn, 2 ft., S. Africa; *sarniensis corusca*, orange scarlet; *sarniensis Plantii*, crimson; *sarniensis rosea*, rose; *sarniensis venusta*, scarlet; *pudica*, white and pink, autumn, 18 in., S. Africa; *Moorei*, scarlet, autumn, 1 ft., S. Africa; *undulata*, pink, May, 1 ft., S. Africa. Numerous hybrids.

**Nerium** (Oleander; Rose-Bay).—Ord. Apocynaceæ. Greenhouse evergreen flowering shrubs. First introduced 1596. Flowers, fragrant.

**CULTURE:** Compost, two parts sandy loam, one part well-decomposed manure, one part leaf-mould & one part sand. Position, pots, tubs or well-drained beds in light sunny greenhouse or window; place pot or tub plants outdoors, June to Sept. Pot or plant, Feb. or March. Prune immediately after flowering, or in Oct., shortening shoots of previous year's growth to within 3 or 4 in. of their base. Temp.,



Sept. to March 45° to 55°; March to June 55° to 65°. Water copiously, March to Sept.; moderately, Sept. to Nov.; keep nearly dry, Nov. to March. Apply stimulants once or twice weekly, May to Sept. Remove young shoots that issue from base of flower trusses as soon as they appear. No shade required. Syringe twice daily, March to June. Propagate by cuttings of firm young shoots, 3 to 6 in. long, inserted in bottles of rain water, suspended in sunny window or greenhouse in summer; or singly in 2-in. pots in a compost of equal parts peat, loam, leaf-mould & sand, placed under bell-glass in temp. 60° to 70, spring or summer.

**SPECIES CULTIVATED:** *N. Oleander* (Oleander or Rose Bay), red, summer, 6 to 12 ft., Orient; and its varieties, *album plenum* (double white); *Henri Mares* (double rosy pink); *Madonna grandiflorum* (double cream); and *splendens* (double red); *variegatum* (leaves variegated).

**Nertera** (Fruiting Duckweed).—Ord. Rubiaceæ. Greenhouse & half-hardy creeping perennial herb. Orn. fruiting. First introduced 1868. Berries round, bright orange red or crimson.

**INDOOR CULTURE:** Compost, two parts sandy loam, one part leaf-mould & sand. Position, small well-drained pots or pans in shady part of greenhouse. Pot, Feb. or March. Water freely, March to Sept.; moderately afterwards. Temp., March to Oct. 50° to 60°; Oct. to March 40° to 50°.

**OUTDOOR CULTURE:** Soil, ordinary light rich. Position, moist sheltered ledges of shady rockery. Plant, March or April. Water in dry weather. Protect in severe weather with bell or hand-glass. Propagate by seeds sown 1-16 in. deep in light sandy soil in temp. 55° to 65° March or April; division of plants in March or April.

**SPECIES CULTIVATED:** *N. depressa*, 1 to 2 in., flowers green, Australasia.

**Net Fern.**—See *Gleichenia*.

**Netted-flowered Toad-flax** (*Linaria reticulata*).—See *Linaria*.

**Nettle Geranium** (*Coleus fruticosus*).—See *Coleus*.

**Nettle-leaved Bell-flower** (*Campanula Trachelium*).—See *Campanula*.

**Nettle Tree** (*Celtis australis*).—See *Celtis*.

**Nevada Lily** (*Lilium washingtonianum*).—See *Lilium*.

**Neviusa** (Alabama Snow Wreath).—Ord. Rosaceæ. Hardy deciduous flowering shrub.

**CULTURE:** Soil, good ordinary. Position, sunny sheltered shrubbery. Plant in autumn. Propagate by cuttings of half-ripened shoots inserted in sandy soil in cold frame in summer; also by layering in autumn.

**SPECIES CULTIVATED:** *N. alabamiensis*, white, May, 6 ft., N. America.

**New Caledonia Pine-tree** (*Araucaria Cookii* & *A. Ruleii*).—See *Araucaria*.

**New England Mayflower** (*Epigæa repens*).—See *Epigæa*.

**New England Star-wort** (*Aster Novæ-Angliæ*).—See *Aster*.

**New Jersey Tea-plant** (*Ceanothus americanus*).—See *Ceanothus*.

**Newman's Cone-flower** (*Rudbeckia speciosa*).—See *Rudbeckia*.

**New Zealand Broad-leaf** (*Grisellina macrophylla*).—See *Grisellina*.

**New Zealand Bur** (*Acæna microphylla*).—See *Acæna*.

**New Zealand Clematis** (*Clematis indivisa lobata*).—See Clematis.

**New Zealand Crow-foot** (*Ranunculus Lyalli*).—See Ranunculus.

**New Zealand Daisy Bush** (*Olearia Haastii*).—See Olearia.

**New Zealand Dragon-plant** (*Cordyline australis*).—See Cordyline.

**New Zealand Flax** (*Phormium tenax* & *P. Colensoi*).—See Phormium.

**New Zealand Glory-Pea** (*Clianthus puniceus*).—See Clianthus.

**New Zealand Holly** (*Osmanthus ilicifolius*).—See Osmanthus.

**New Zealand Laburnum-tree** (*Sophora tetraptera*).—See Sophora.

**New Zealand Palm** (*Rhopalostyle sapida*).—See Rhopalostyle.

**New Zealand Reed** (*Cortadeira conspicua*).—See Cortadeira.

**New Zealand Spinach** (*Tetragonia expansa*).—See Tetragonia.

**New Zealand Tree-fern** (*Dicksonia squarrosa*).—See Dicksonia.

**New Zealand Water-Lily** (*Ranunculus Lyalii*).—See Ranunculus.

**Nicandra** (Apple-of-Peru).—Ord. Solanaceæ. Hardy annual. First introduced 1759.

**CULTURE:** Soil, ordinary. Position, sunny open borders. Propagate by seeds sown  $\frac{1}{2}$  in. deep in pots or boxes of light soil in temp.  $55^{\circ}$  to  $65^{\circ}$  in March, transplanting seedlings 3 ft. apart outdoors in May; or by sowing seed in sunny position outdoors in April, transplanting seedlings in June.

**SPECIES CULTIVATED:** *N. physaloides*, blue and white, summer, 18 in. to 2 ft., Peru.

**Nicotiana** (Tobacco Plant).—Ord. Solanaceæ. Half-hardy annuals. Flowering & orn. foliage. All the species best grown as annuals. First introduced 1570.

**POT CULTURE:** Compost, two parts loam, one part leaf-mould or decayed manure, & one part sand. Position, sunny or shady greenhouse or window. Water freely when in full growth; moderately at other times. Apply stimulants once or twice a week when in flower. Temp., March to Sept.  $55^{\circ}$  to  $65^{\circ}$ ; Sept. to March  $40^{\circ}$  to  $50^{\circ}$ .

**OUTDOOR CULTURE:** Soil, ordinary. Position, sunny beds or borders. Plant in June in groups of three or six. Protect *N. alba* in winter with covering of cinder ashes, tan or decayed manure. Will only survive winter in well-drained soils.

**CULTURE OF TOBACCO PLANT:** Soil, ordinary. Position, sunny beds or borders. Plant, June. Gather leaves of *N. tabacum* in Sept. for drying. Water freely in dry weather. Propagate by seeds sown on the surface of fine light mould in a shallow box or pan in shade, in a temp. of  $65^{\circ}$  to  $75^{\circ}$ , in March or April, also by cuttings of the roots inserted in sandy soil in temp.  $55^{\circ}$  to  $65^{\circ}$  in autumn or spring.

**SPECIES CULTIVATED:** *N. alba* (Syn. *Affinis*), the Sweet-scented Tobacco, white, fragrant, summer, 3 ft., strictly a perennial, Brazil; *sylvestris*, white, summer, 3 to 4 ft., Argentina; *tabacum* (Tobacco Plant), rose, summer, 4 ft., S. America; *tabacum macrophyllum*, red, rose, or purple, summer; *tomentosa* (Syn.

Colossea), pink and white, 10 to 12 ft., S. America; *suavolens*, white, summer, 2 ft., S. America; *wigandioides*, yellow and white, summer, 8 ft., S. America; *Sanderæ*, red, pink, carmine, etc., summer, 2 to 3 ft., hybrid.

**Nierembergia** (Tall Cup-flower; Trailing Cup-flower).—Ord. Solanaceæ. Hardy and half-hardy creeping perennial herbs. First introduced 1831.

**CULTURE OF HARDY SPECIES:** Soil, equal parts sandy loam & leaf-mould. Position, sunny or moist border or ledges of rockery. Plant, Oct., March, or April. Water freely in dry weather. Top-dress annually in March with decayed cow manure. Protect in very severe weather with covering of litter.

**CULTURE OF HALF-HARDY SPECIES:** Compost, two parts sandy loam, one part well-decomposed cow manure & one part sand. Position, well-drained pots or pans in shady part of greenhouse or cold frame all the year round, or outdoors in shady spot, May to Oct. Pot, Feb. or March. Water freely, March to Sept., moderately afterwards. Propagate by seeds sown in light sandy soil in temp. 55° to 65°, Nov. to April; cuttings inserted in sandy soil under bell-glass in shady part of cool greenhouse in Aug., transferring when well rooted singly into 2-in. pots, & placing in light airy position in greenhouse or window.

**HARDY SPECIES:** *N. rivularis* (Cup-flower), white, summer, 6 in., S. America.

**HALF-HARDY SPECIES:** *N. calycina*, yellow, July, 6 in., S. America; *frutescens*, blue, summer, 18 in., S. America; *frutescens atroviolacea*, violet, 1 ft.; *Veitchii*, lilac, summer, 6 in., S. America; *gracilis*, white and purple, summer, 6 to 9 in., S. America.

**Nigella** (Fennel-flower; Devil-in-a-bush; Love-in-a-mist; Love-in-a-puzzle).—Ord. Ranunculaceæ. Hardy annuals. First introduced 1548. Flowers surrounded by a green mossy involucre. Foliage, green, graceful, feathery.

**CULTURE:** Soil, ordinary. Position, sunny open beds or borders. Propagate by seeds sown  $\frac{1}{8}$  in. deep in lines, bands or masses in March or April; thin seedlings out 6 in. apart each way, May or June.

**SPECIES CULTIVATED:** *N. damascena*, blue, summer, 1 to 2 ft., Asia Minor; *damascena flore-pleno*, double, blue; *damascena alba*, white; *N. hispanica*, blue, summer, 1 to 2 ft., Spain.

**Night-blooming Cactus** (*Cereus grandiflorus*).—See *Cereus*.

**Night-scented Stock** (*Hesperis tristis*).—See *Hesperis*.

**Nine Bark.**—See *Neillia*.

**Nipholobolus.**—See *Polypodium*.

**Nipple Cactus** (*Mammillaria bicolor*).—See *Mammillaria*.

**Noble Silver Fir** (*Abies nobilis*).—See *Abies*.

**Noisette Rose** (*Rosa indica noisettiana*).—See *Rosa*.

**Nolana** (Chilian Bell-flower).—Ord. Convolvulaceæ. Hardy annuals. First introduced 1761.

**CULTURE:** Soil, ordinary. Position, open sunny beds, borders or rockeries. Propagate by seeds sown 1-16 in. deep in patches in March or April where plants are required to grow, thinning seedlings to 2 or 3 in. apart in May or June.

**SPECIES CULTIVATED:** *N. atriplicifolia*, blue and white, summer, trailing; Peru; *lancoolata*, blue, white, and green, summer, 6 in., Peru; *paradoxa*, white, summer, 12 to 18 in., Peru; *prostrata*, blue, summer, trailing, Chili; *tenella*, pale blue, trailing, summer, Peru.

**None-so-Pretty** (*Saxifraga umbrosa*).—See *Saxifraga*.

**Nootka Fir** (*Pseudotsuga Douglasii*).—See *Pseudotsuga*.

**Nootka Sound Arbor-vitæ** (*Thuja plicata*).—See *Thuja*.

**Nootka Sound Cypress** (*Cupressus nootkatensis*).—See *Cupressus*.

**Nordman's Fir** (*Abies nordmanniana*).—See *Abies*.

**Norfolk Island Palm** (*Rhopalostyle Baueri*).—See *Rhopalostyle*.

**Norfolk Island Pine-tree** (*Araucaria excelsa*).—See *Araucaria*.

**Norfolk Island Tree-fern** (*Alsophila excelsa*).—See *Alsophila*.

**North American Crab** (*Pyrus coronaria*).—See *Pyrus*.

**North American Ox-eye** (*Heliopsis lævis*).—See *Heliopsis*.

**North American Sunflower** (*Actomeris squarrosa*).—See *Actomeris*.

**Northern Fox Grape** (*Vitis Labrusca*).—See *Vitis*.

**Northern Rock-cress** (*Arabis petræa*).—See *Arabis*.

**Northoscordium**.—See *Bloomeria*.

**Norway Maple** (*Acer platanoides*).—See *Acer*.

**Norway Spruce** (*Picea excelsa*).—See *Picea*.

**Nothochlæna** (Cloak Fern; Gold & Silver Maiden-hair Ferns).—Ord. Filices. Stove & greenhouse ferns. First introduced 1778. Fronds, once or thrice divided, upper surface green, underneath covered with white powder or scales. Ht. 3 to 18 in.

**CULTURE**: Compost, equal parts loam, leaf-mould, peat & sand, with little charcoal & sandstone broken small. Position, pots in shady part of house. Pot, Feb. or March. Water moderately, Oct. to Feb., freely other times. Syringing not required. Temp., stove species, Sept. to March 55° to 65°; March to Sept. 65° to 75°; greenhouse species, Sept. to March 45° to 50°; March to Sept. 55° to 65°. Propagate by spores sown on surface of fine sandy peat in pans under bell-glass in temp. 75° to 85° any time; division at potting time.

**STOVE SPECIES**: *N. flavens* (Syn. *Chrysophylla*), Central America; *nivea* (Silver Maiden-hair Fern), Mexico and Peru; *sinuata*, Trop. America; *trichomanoides*, Jamaica and Cuba.

**GREENHOUSE SPECIES**: *N. dealbata* (Syn. *Cincinnati dealbata*), N. America; *Hookeri* (Syn. *Cincinnati Hookeri*), N. America; *lanuginosa*, S. Europe and Australia; *Marantæ*, S. Europe, N. Africa, etc.; *Newberryi*, California.

**Nuphar** (Yellow Water-Lily; Brandy Bottle).—Ord. Nymphaceæ. Hardy aquatic perennial herbs.

**CULTURE**: Soil, two parts strong rich loam, one part well-decayed manure. Position, sunny shallow streams, ponds or lakes. Depth of water, 6 to 12 in. Plant, March or Oct. **Methods of planting**: (1) Fill a shallow wicker basket with compost, place the plant in it & a few stones on the surface, then lower into the water. (2) Place some compost round the roots, then add a few stones & surround with canvas or matting & lower into the water. Propagate by seeds sown  $\frac{1}{4}$  in. deep in rich soil in a shallow basket immersed in water, Oct. to April; division of the plant in March.

**SPECIES CULTIVATED**: *N. adrena*, yellow, July, N. America; *luteum* (Brandy Bottle or Yellow Water-Lily), yellow, June, N. Europe (Britain); *minimum*, yellow, July, Europe.

**Nutmeg-scented Geranium** (*Pelargonium fragrans*).—See *Pelargonium*.

**Nuttallia** (Oso-berry-tree).—Ord. Rosaceæ. Hardy deciduous flowering shrub. First introduced 1848. Flowers, succeeded by purplish plum-like fruit.

**CULTURE**: Soil, ordinary. Position, shady or sunny shrubberies. Plant, Oct. to Feb. Prune when necessary immediately after flowering. Propagate by seeds sown  $\frac{1}{2}$  in. deep in ordinary soil in shady

position outdoors in spring or autumn; suckers removed from parent plant & planted Oct. or Nov.; cuttings of ripened shoots in cold frame in autumn; layering in autumn.

**SPECIES CULTIVATED:** *N. cerasiformis*, white, spring, 6 to 10 ft., California.

**Nycterinia.**—See *Zaluzianksia*.

**Nymphæa** (Water-Lily).—Ord. Nymphaceæ. Stove & hardy aquatic tuberous-rooted perennials. Evergreen & deciduous.

**CULTURE OF STOVE SPECIES:** Two parts rich turfy loam & one part well-decayed manure. Position, large pots or tubs immersed 8 to 12 in. below surface of water in tanks fully exposed to light. Plant, Feb. to April. Temp. of atmosphere, 65° to 75°, March to Sept.; 50° to 60°, Sept. to March. Temp. of water, 65° to 75°, March to Sept.; 55° to 65°, Sept. to March. Repot annually in Feb. or March.

**CULTURE OF HARDY SPECIES:** Compost, two parts strong rich loam, one part well-decayed manure. Position, open sunny ponds or lakes. Depth of water, 2 to 3 ft. Plant, March to Oct. Methods of planting: (1) Place plant in small wicker basket containing above compost, & lower to the bottom of pond or lake. (2) Inclose roots with soil & large stone in piece of canvas or matting, tie securely & immerse as above. (3) Place large hillock or mound of compost at bottom of pond when dry plant tubers in centre, afterwards submerging with water. Propagate stove species by seeds sown  $\frac{1}{2}$  in. deep in pots of rich soil immersed in water heated to a temp. of 65° to 75°, March or April. Hardy species by seeds sown  $\frac{1}{4}$  in. deep in rich soil in shallow basket & immersed in ponds or lakes in spring; division of tubers or rhizomes, March or April.

**STOVE SPECIES:** *N. ampla*, white, July, W. Indies; *blanda*, white, July, S. America; *gigantea*, blue, summer, Australia; *gracilis*, white, summer, Mexico; *Lotus* (Egyptian Lotus), red or white, summer, Trop. Asia and Africa; *stellata*, blue, summer, Trop. Africa; ; *stellata zanzibarensis*, blue.

**HARDY SPECIES:** *N. alba* (Common White Water-Lily), white, summer, Europe (Britain); *alba candidissima*, white; *alba rosea*, rose; *odorata*, white and red, summer, N. America; *odorata rosea*, pink; *odorata sulphurea*, yellow; *tetragona* (Syn. *Pygmæa*), white, June, Himalayas; *tetragona helveola*, yellow; *tuberosa*, white, July, N. America; *tuberosa plena*, double.

**HARDY HYBRID WATER-LILIES:** *Marliacea alba*, white; *M. carnea*, pink or white; *M. chromatella*, primrose and rose; *M. flammea*, rose and carmine; *M. ignea*, rose and orange-red; *M. rosea*, rosy pink; *Laydekeri lilacea*, pink and crimson; *L. fulgens*, crimson-magenta; *L. lucida*, vermilion; *L. purpurata*, rosy crimson; and *L. rosea*, carmine.

**Nyssa** (Tupelo Tree).—Ord. Cornaceæ. Hardy deciduous trees. Grown for the beauty of their rich scarlet tinted foliage in August.

**CULTURE:** Soil, ordinary. Position, margins of streams, lakes, etc. Plant in autumn. Propagate by layering in autumn.

**SPECIES CULTIVATED:** *N. aquatica*, white, May, 40 to 50 ft., U. States; *syliatica*, white, 30 to 40 ft., N. America.

**Oak** (*Quercus robur*).—See *Quercus*.

**Oak Fern** (*Polypodium dryopteris*).—See *Polypodium*.

**Oak-leaved Geranium** (*Pelargonium quercifolium*).—See *Pelargonium*.

**Ochna.**—Ord. Ochnaceæ. Stove evergreen flowering shrubs. First introduced 1816. Flowers succeeded by black and crimson globular fruits.

**CULTURE:** Compost, equal parts fibrous loam, peat, and sand. Position, well-drained pots in sunny light part of stove. Pot, Feb. or March. Prune into shape, Feb. Water freely March to Oct., mode-

rately afterwards. Syringe daily, Feb. to Oct. Temp., March to Sept. 70° to 75°; Sept. to March 60° to 65°. Propagate by cuttings of firm shoots, 2 to 3 in. long, inserted in sandy peat under bell-glass in temp. 65° to 75° summer.

SPECIES CULTIVATED.—*O. atropurpurea*, purple, spring, 4 ft., S. Africa; *multiflora*, yellow, summer, 6 ft., Trop. Africa.

**Ocimum** (Sweet Basil; Bush Basil).—Ord. Labiatæ. Half-hardy annual aromatic herbs. First introduced 1548. Leaves, egg-shaped, aromatic; used for flavouring stews, soups & salads.

CULTURE: Soil, ordinary light rich. Position, sunny, well-drained border. Plant, 6 in. apart in rows 9 to 12 in. asunder in May. Shade from sun first few days after planting. Water freely in dry weather. Gather leaves and tops when coming into flower, dry & reduce to powder for winter use. Propagate by seeds sown 1-16 in. deep in light soil in shallow box in temp. 55° to 65° in March, transplanting seedlings when three leaves are formed an inch apart in similar soil, & gradually harden off in cold frame.

SPECIES CULTIVATED: *O. Basilicum* (Sweet Basil), white, summer, 1 ft., Trop. Asia; *minimum* (Bush Basil), white, summer, 6 in., Trop. Asia.

**Odontoglossum** (Almond-scented Orchid; Violet-scented Orchid).—Ord. Orchidaceæ. Greenhouse epiphytal & terrestrial orchids. Evergreen. First introduced 1835. Flower spikes produced from base of pseudo-bulbs.

CULTURE: Compost, two parts fibrous peat, one part of equal proportions of sphagnum moss and charcoal. Position, teak-wood baskets or pans suspended from roof, blocks of wood, well-drained pots; partial shade in summer, exposed to full light at other times. Pot, Feb., March or April. Fill pots or pans two-thirds of their depth with potsherds & charcoal. Place layer of moss on drainage, & fill remainder of space with compost to 1 in. above rim. Secure plant on this by means of fine copper wire, and top-dress with layer of sphagnum moss, and secure firmly with copper wire. Water daily April to Sept., twice a week Sept. to Nov. & Feb. to April; keep almost dry during remainder of year. Syringe lightly daily in summer. Keep atmosphere uniformly moist in summer by damping stages, floor, etc., several times daily. Ventilate freely in summer, moderately other times. Temp., May to Sept. 55° to 65°; Sept. to Feb. 45° to 55°; Feb. to May 50° to 60°. Growing period, March to Nov.; resting period, Dec. to Feb. Propagate by division of the pseudo-bulbs at potting time.

SPECIES CULTIVATED: *O. apertum*, white and red, May, 1 ft., Mexico; *Cervantesii*, white and brown, spring, 6 in., Mexico; *cirrhosum*, white and purple, spring, 1 to 2 ft., Ecuador; *citrosimum*, white, rose, and yellow, fragrant, May, 6 to 8 in., Mexico; *crispum* (Syn. *Alexandræ*), white, rose, crimson, etc., spring, 12 to 18 in., Colombia, many beautiful varieties; *Edwardii*, purple and yellow, fragrant, spring, 2 to 3 ft., Ecuador; *gloriosum*, yellow and brown, fragrant, 2 ft., Colombia; *grande*, yellow and red, autumn, 1 ft., Guatemala; *Hallii*, yellow and red, spring, 2 to 3 ft., Peru and Ecuador; *harryanum*, yellow, white, purple, and brown, spring, 1 to 2 ft., Colombia; *luteo-purpureum*, yellow, white, and red, spring, 1 to 2 ft., Colombia; *maculatum*, yellow, brown, and white, spring, 1 to 2 ft., Mexico; *nobile* (Syn. *Pescatorei*), white, purple, yellow and red, spring, 1 to 2 ft., Colombia; *pulchellum*, white and yellow, fragrant, spring, 1 ft., Guatemala; *Rossii*, white and brown, winter, 6 in., Mexico; *triumphans*, yellow, brown and white, spring, 1 to 2 ft., Colombia; *Uroskinneri*, yellow, brown, and rose, spring, 1 to 2 ft., Guatemala. Numerous hybrids.

**Oenothera** (Evening Primrose; Sun-drops; Tree Primrose).—Ord. Onagraceæ. Hardy annuals, biennials, herbaceous & shrubby perennials. First introduced 1629.

CULTURE OF ANNUAL SPECIES: Soil, ordinary. Position, sunny

where plants are to flower, or in boxes of light soil in temp. 55° to 65° in April, transplanting seedlings outdoors in May. Thin seedlings sown outdoors to 6 in. apart in June.

**POT CULTURE:** Compost, two parts good soil, one part leaf-mould, well-decayed manure & sand. Position, well-drained 6 in. pots in cold frame, greenhouse or window. Thin seedlings when 1 in. high to six or eight in each pot. Water moderately at first, freely when in full growth. Apply liquid manure twice a week when plants show flower.

**CULTURE OF BIENNIAL SPECIES:** Soil, ordinary. Position, sunny beds or borders. Sow seeds 1-16 in. deep in shady position outdoors in April, transplanting seedlings when 1 in. high, 3 in. apart each way, in sunny border, again transplanting into flowering position following Sept. or March.

**CULTURE OF PERENNIAL SPECIES:** Soil, light sandy loam. Position, sunny, well-drained borders, beds, or rockeries. Plant, Oct., March or April. Water freely in dry weather. Mulch annually with decayed cow manure. Lift and replant every three or four years. Prune away straggling shoots of shrubby species after flowering. Propagate perennial species by seeds sown in light soil in shallow box or well-drained pans in cold frame or under hand-light in March or April, transplanting outdoors end of May or June; cuttings of young shoots inserted in sandy soil under hand-light in shade in spring or summer; suckers removed with roots attached, spring or autumn; division of roots, March or April.

**ANNUAL SPECIES:** *C. amœna* (Syn. *Godetia rubicunda*, rose and crimson, summer, 1 to 2 ft., California; *amœna rubicunda*, lilac-purple; *bistorta*, yellow and red, summer, 1 ft., California; *tenella*, purple, June, 6 in., California; *Whitneyi* (Syn. *Godetia Whitneyi*), red and crimson, summer, 12 to 18 in., California, parent of the annuals known as *Godetia Lady Albemarle*, *Duke of York*, *Bridesmaid*, etc.; *tetraptera*, white, summer, 1 ft., Mexico.

**BIENNIAL SPECIES:** *C. biennis* (Evening Primrose), yellow, fragrant, June to Oct., N. America; *Drummondii*, yellow, June to Oct., 1 to 2 ft., N. America; *taraxacifolia*, white, summer, 6 in., Ohili.

**PERENNIAL SPECIES:** *C. californica*, white and pink, fragrant, summer, 2 ft., California; *œsпитosa* (Syn. *eximia* and *marginata*), white, fragrant, July, California; *fruticosa* (Sun-drops), golden yellow, summer, 2 to 3 ft., U. States, and its varieties, major and *Youngii*; *glauca*, yellow, summer, 1 to 2 ft., N. America; *linearis*, yellow, summer, 12 to 18 in., U. States; *missouriensis*, yellow and red, summer, trailing, N. America; *rosea*, rose, summer, 1 ft., N. America; *speciosa*, white, summer, 2 to 3 ft., N. America.

**Okra** (*Hibiscus esculentus*).—See *Hibiscus*.

**Old Man** (*Artemisia Abrotanum*).—See *Artemisia*.

**Old Man Cactus** (*Pilocereus senilis*).—See *Pilocereus*.

**Old Man's Beard** (*Clematis vitalba*).—See *Clematis*.

**Old Woman** (*Artemisia argentea*).—See *Artemisia*.

**Olea** (Olive; Oleaster). — Ord. Oleaceæ. Half-hardy evergreen flowering shrub. First introduced 1570.

**CULTURE:** Soil, sandy loam. Position, sheltered sunny borders or against S. or W. walls, S. of England only. Plant, Sept., Oct. or April. Prune when necessary, April. Protect in very severe weather with litter or mats.

**POT CULTURE:** Compost, two parts sandy loam, one part leaf-mould, and sand. Position, cool greenhouse, Sept. to May; outdoors, June to Sept. Temp., Sept. to May, 40° to 50°. Water moderately in winter, freely in summer. Syringe daily, April to Sept. Propagate by seeds sown 1-16 in. deep in sandy peat in greenhouse in spring or autumn; cuttings inserted in sandy soil under bell-glass in shade in greenhouse in summer.

SPECIES CULTIVATED: *O. europæa* (Wild Olive), white, fragrant, summer, 6 to 10 ft., S. Europe.

**Oleander** (*Nerium oleander*).—See *Nerium*.

**Oleander Fern** (*Oleandra articulata*).—See *Oleandra*.

**Oleandra** (Oleander Fern).—Ord. Filices. Stove evergreen ferns. Stems rhizomatous & scandent. Fronds, strap-shaped, green. First introduced 1837.

CULTURE: Compost, two parts peat & one of loam, leaf-mould & sand. Position, hanging baskets, or against pillars and walls covered with layer of peaty soil secured by wire netting. Plant, Feb. or March. Water copiously March to Sept., moderately afterwards. Syringe plants or pillars & walls daily, March to Oct. Temp., March to Sept., 65° to 75°; Sept. to March 55° to 65°. Propagate by spores sown on surface of fine sandy peat under bell-glass in temp. 75° to 85°, any time; division of creeping rhizomes at potting time.

SPECIES CULTIVATED: *O. articulata*, Trop. Africa; *nodosa*, W. Indies.

**Olearia** (New Zealand Daisy Bush; Victorian Snow Bush).—Ord. Compositæ. Hardy evergreen flowering shrubs. First introduced 1793.

OUTDOOR CULTURE: Soil, sandy loam. Position, sunny borders or rockeries for *O. Haastii*, S. or W. walls for *O. dentata*, *O. gunniana* & *O. Forsteri*. Plant Sept. to Nov. or April. Protect those grown against walls during very severe weather by covering of mats or straw. Pruning not required, except to remove dead or unhealthy shoots in April. Not adapted for outdoor culture in N. of England.

POT CULTURE: Compost, two parts sandy loam, one part leaf-mould or peat, one part sand. Position, well-drained pots or in beds with shoots trained up pillars or against walls in cold greenhouses or conservatories. Pot or plant, Sept. to April. Water freely March to Sept., moderately afterwards. Syringe freely in summer, except when in bloom. Place pot plants in sunny position outdoors until they flower. Plunge pots to rim in cinder ashes. Propagate by cuttings of firm young shoots 2 to 3 in. long, inserted in well-drained pots of sandy soil under bell-glass in cold shady frame or greenhouse in summer.

SPECIES CULTIVATED: *O. Haastii* (New Zealand Daisy Bush), white, Aug., 4 to 6 ft., New Zealand; *macro-donta* (*Syn. dentata*), white, summer, 6 ft., New Zealand; *stellulata* (Victorian Snow Bush), *Syn. gunniana*, white, summer, 6 ft., Australia; *Traversii*, white, summer, 10 to 20 ft., New Zealand.

**Oleaster** (*Olea europæa*).—See *Olea*.

**Olive-tree** (*Olea europæa*).—See *Olea*.

**Olympian Mullein** (*Verbascum olympicum*).—See *Verbascum*.

**Omphalodes** (Venus's Navel-wort; Rock Forget-me-not; Creeping Forget-me-not).—Ord. Boraginacæ. Hardy annual & perennial herbs. First introduced 1633.

CULTURE OF ANNUAL SPECIES: Soil, ordinary. Position, partially shaded borders. Sow seeds in masses where required to grow in April to flower in June, June to flower in Sept., & Sept. to flower in spring.

CULTURE OF PERENNIAL SPECIES: Soil, ordinary rich, moist. Position, partially shaded, well-drained borders or rockeries, or in rhododendron beds. Plant, Oct., Nov., March or April. Water copiously in dry weather. Mulch with decayed cow manure annually in spring. Propagate by seeds sown  $\frac{1}{2}$  in. deep in light rich soil in semi-shaded position in April, transplanting seedlings when 1 in. high; division of roots in March or April.



ANNUAL SPECIES: *O. linifolia* (Venus's Navel-wort), white, June, 6 to 9 in., S. Europe.

PERENNIAL SPECIES: *O. Lucilia* (Rock Navel-wort), blue, summer, 6 in., Asia Minor; *verna* (Creeping Forget-me-not), blue, spring, 6 in., Europe; *verna alba*, white.

**Oncidium** (Butterfly Orchid).—Ord. Orchidaceæ. Stove & greenhouse epiphytal orchids. Flowers appear at base of new pseudo-bulb directly latter is fully grown. First introduced 1791.

CULTURE: Compost, two parts fibrous peat, one part of equal proportions of sphagnum moss and charcoal. Position, pots, wood or earthenware baskets, rafts or blocks. Pot, Feb. or March. Fill pots or pans two thirds of their depth with potsherds. Place layer of moss on this, then fill remainder of space with compost to 1 in. above rim. Put plants on this, cover roots with compost & layer of moss, and secure firmly with copper wire. Baskets: Line interior with moss, then fill with compost and place plant on top, securing it firmly with copper wire. Blocks: Place roots next wood, cover with peat and sphagnum moss, and secure firmly with copper wire. Water plants on blocks twice daily in summer, once a day other times; those in pots & baskets once a day April to Sept., twice a week Sept. to Nov. and Feb. to April, once a week afterwards. Syringe lightly daily in summer. Moist atmosphere highly essential. Shade from bright sunshine only. Ventilate freely in summer. Temp. for stove species, Nov. to April 60° to 70°; April to Nov. 70° to 85°; for greenhouse species, May to Oct. 65° to 75°; Oct. to May 55° to 65°. Growing period, March to Sept.; resting period, Oct. to Feb. Propagate by division of pseudo-bulbs at potting time.

STOVE SPECIES: *O. ampliatum*, yellow, red, and brown, March to May, 12 to 16 in., Central America; *jonesianum*, white, brown, and red, Oct. to Feb., 1 ft., Paraguay; *kramerianum*, red, brown, and yellow, March to Oct., 8 to 10 in., Ecuador; *lanceanum*, yellow, rose, purple, and brown, summer, 18 in., Guiana; *Papilio* (Butterfly Orchid), red, crimson, and yellow, March to Oct., 8 to 10 in., W. Indies.

GREENHOUSE SPECIES: *O. concolor*, yellow, May, 6 in., Brazil; *crispum*, red, brown, and yellow, June to Feb., 1 ft., Brazil; *Forbesii*, red, and yellow, autumn, 2 to 3 ft., Brazil; *incurvum*, white and yellow, fragrant, autumn, 1 ft., Mexico; *maoranthum*, yellow, brown, white, and purple, spring, 18 in., Trop. America; *marshallianum*, yellow and brown, summer, 1 ft., Brazil; *ornithorynchum*, rose, lilac, and yellow, 1 ft., Mexico; *phalænopsis*, white, purple and violet, spring, 1 to 2 ft., Ecuador; *sarcodes*, yellow and brown, spring, 1 ft., Brazil; *sphacelatum*, brown and yellow, spring, 2 ft., Mexico; *splendidum*, yellow and brown, winter, 1 ft., Guatemala; *superbiens*, yellow, brown, and purple, spring, 1 ft., Colombia; *tigrinum*, yellow and brown, violet scented, autumn and winter, 1 ft., Mexico; *varicosum*, yellow and brown, winter, 1 ft., Brazil; *varicosum Rogersii*, superior variety.

**Onion.**—See Allium.

**Onion-plant** (*Ornithogalum longibracteatum*).—See Ornithogalum.

**Onclea** (Sensitive Fern; Ostrich Fern).—Ord. Filices. Hardy deciduous fern. First introduced 1799. Fronds, barren ones, broad, once divided, green; fertile ones, narrow, contracted, once divided, brown.

OUTDOOR CULTURE: Soil, two parts good loam, one part leaf-mould. Position, semi-shaded cool moist border or margin of ponds. Plant, April.

POT CULTURE: Compost, two parts fibrous loam, one part leaf-mould, one part sand. Position, well-drained pots in shady cold frame or greenhouse. Pot, March or April. Water copiously, April to Sept.; moderately Sept. to Nov.; keep nearly dry Nov. to March. Repot

annually. Propagate by spores gathered just before the cases burst & sown on surface of well-drained pan of sandy peat & leaf-mould with square of glass, & kept moderately moist in shady position in cold frame or greenhouse; division of plants, March or April.

SPECIES CULTIVATED: *O. germanica* (Syn. *Struthiopteris germanica*), the Ostrich Fern, 2 to 3 ft., N. Temperate Zone; *sensibilis* (Sensitive Fern), 2 to 3 ft., N. America and N. Asia.

**Ononis** (Rest-harrow).—Ord. Leguminosæ. Hardy herbaceous perennials & deciduous shrubs. First introduced 1570.

CULTURE OF PERENNIAL SPECIES: Soil, ordinary. Position, sunny borders, banks or rockeries. Plant, Oct., Nov., March or April. Cut down flower stems, Oct. Mulch with manure, March. Lift & replant in fresh soil every four or five years.

CULTURE OF SHRUBBY SPECIES: Soil, ordinary. Position, sunny borders or banks. Plant, Oct. to Feb. Prune into shape, Jan. to Feb. Propagate by seeds sown 1-16 in. deep in ordinary soil in semi-shady position outdoors, March or April; or in shallow boxes or pans in cold frame or greenhouse in March; perennials by division of roots, Oct. to March.

PERENNIAL SPECIES: *O. arvensis* (Rest-harrow), rose and white, summer, 6 in., Europe (Britain); *Natrix* (Goat Root), yellow and red, summer, 1 to 2 ft., S. Europe.

SHRUBBY SPECIES: *O. fruticosa*, purple, summer, 2 ft., Europe.

**Onopordum** (Cotton Thistle; Scotch Thistle).—Ord. Compositæ. Hardy biennial & perennial herbs. Orn. foliage.

CULTURE OF BIENNIAL SPECIES: Sow seeds  $\frac{1}{2}$  in. deep in ordinary soil in sunny position outdoors, March or April. Transplant seedlings following Sept. to where required to flower.

CULTURE OF PERENNIAL SPECIES: Soil, ordinary rich. Position, well-drained sunny borders. Plant, Oct. or March, singly in groups of three. Propagate by seeds sown  $\frac{1}{2}$  in. deep in ordinary soil in sunny position outdoors March or April, transplanting seedlings to flowering position Sept. or Oct.

BIENNIAL SPECIES: *O. arabicum*, 8 to 10 ft., S. Europe; *illyricum*, 6 ft., S. Europe.

PERENNIAL SPECIES: *O. Acanthium* (Scotch Thistle), 5 ft., Europe (Britain).

**Onosma** (Golden Drop).—Ord. Boraginaceæ. Hardy perennial herbs. First introduced 1683.

CULTURE: Soil, two parts sandy loam, one part grit or small stones. Position, sunny rockery, where roots can descend close to cool moist stones and shoots trail over edge. Plant, March or April. Place a few small stones on surface of soil around plant. Water occasionally in dry weather. Mulch annually with decayed cow manure in March or April. Propagate by seeds sown 1-16 in. deep in sandy loam & grit in shallow pans in shady cold frame or cool greenhouse in March, planting outdoors in May; cuttings of shoots inserted in sandy soil in close shady frame or under hand-light in July or Aug.

SPECIES CULTIVATED: *O. albo-roseum*, white and rose, summer, 6 in., Asia Minor; *Bourgaei*, yellow, summer, 6 in., Armenia; *echioides* (Golden Drop), yellow, May, 1 ft., Europe; *stellatum*, yellow and white, May, 6 in., Europe.

**Onychium**.—Ord. Filices. Stove & greenhouse evergreen ferns. Fronds, four times divided, light and graceful, green.

CULTURE: Compost, two parts peat and loam, leaf-mould & sand in equal parts. Position, well-drained pots, beds, or rockeries in shade. Pot or plant, Feb. or March. Water copiously March to Sept., moderately afterwards. Moist atmosphere essential. Temp. for stove species, March to Sept. 65° to 75°, Sept. to March 55° to 65°; for green-

house species, March to Sept. 55° to 65°; Sept. to March 40° to 50°. Propagate by spores sown on surface of fine sandy peat in well-drained pans in shade & temp. 70° to 80° any time; division of plants at potting time.

STOVE SPECIES: *O. auratum*, 1 ft., Malaya.

GREENHOUSE SPECIES: *O. japonicum*, 1 ft., Japan and Himalayas.

**Ophioglossum** (Adder's Tongue Fern; Adder's Spear).—Ord. Filices. Hardy deciduous ferns. Fronds, barren, egg-shaped, pale green; fertile, contracted, spike-like.

OUTDOOR CULTURE: Soil, moist loamy. Position, in tufts of grass on partially shaded rockery. Plant, April to Aug. Lift plants growing wild with large sod attached & plant in same. Water freely in dry weather.

POT CULTURE: Compost, sandy loam & leaf-mould in equal parts. Position, shallow pans, well drained, in cold, shady frame. Plant, April to Aug. Water freely March to Sept., keep just moist afterwards. Propagate by spores gathered when ripe in July, & sown on surface of pans of above soil, covered with a sheet of glass & placed in a cool, moist frame or greenhouse; division of plants in April.

SPECIES CULTIVATED: *O. vulgatum*, 4 to 6 in., Britain, in moist meadows.

**Ophiopogon** (Snake's-beard).—Ord. Hæmodoracæ. Hardy perennial herbs. Flowering & orn. foliage. First introduced 1784. Leaves, long, narrow, green & variegated with yellow or creamy white.

OUTDOOR CULTURE: Soil, sandy loam. Position, edgings to or groups in sunny borders. Plant, Oct. or March. Lift, divide & replant every four or five years.

POT CULTURE: Compost, two parts sandy loam, one part leaf-mould or decayed manure & one part sand. Position, well-drained pots or in small beds in cold or heated greenhouses, conservatories, ferneries or windows. Adapted for sun or shade. Pot or plant, Feb. or March. Water copiously March to Oct.; moderately afterwards. Apply stimulants once or twice weekly, April to Sept. Propagate by division of plants in Feb. or March.

SPECIES CULTIVATED: *O. intermedius argenteo-marginatus*, lilac, summer, 1 ft., leaves margined with white, Himalayas; *Jaburan variegatus*, white, July, 1 ft., leaves striped with green and white, Japan; *japonicus variegatus*, white, summer, 1 ft., leaves striped with creamy white, Japan. See also *Liriope spicata*.

**Ophrys** (Bee Orchis; Fly Orchis; Spider Orchis).—Ord. Orchidacæ. Hardy terrestrial orchids. Deciduous.

OUTDOOR CULTURE: Soil, sandy loam mixed with pieces of chalk or broken limestone. Position, dry sunny rockeries. Plant, Aug. to Nov. Cover surface of soil between plants with pieces of chalk or limestone, or mulch with layer of cocoanut-fibre refuse.

POT CULTURE: Compost, two parts sandy loam, one part pieces of broken limestone or chalk. Position, small, well-drained pots or pans in cold sunny frame or greenhouse. Pot, Aug. to Nov., placing tubers 1 in. below surface & pressing soil firmly. Place five tubers in 6 in. pot. Plunge pots to rims in cocoanut-fibre refuse or ashes during growing period. Water freely from time growth begins till foliage dies down, then keep nearly dry. Repot every two or three years. Propagate by division of tuberous roots in March or April.

SPECIES CULTIVATED: *O. apifera* (Bee Orchis), purple, orange, and yellow, April to June, 1 ft., Europe (Britain); *aranifera* (Spider Orchis), brown and yellow, April to June, 6 in., Europe (Britain); *muscifera* (Fly Orchis), brown, blue, and yellow, May, 6 in., Europe (Britain); *insectifera*, green, white, purple, and blue, May and June, 8 in., Europe; *tenthredinifera* (Sawfly Orchis), green, brown, and yellow, May and June, 1 ft., Europe.

**Opium Poppy** (*Papaver somniferum*).—See Papaver.

**Opismenus** (Variegated Panicum).—Ord. Gramineæ. Greenhouse perennial, trailing grass. Orn. foliage. First introduced 1867. Flowers insignificant. Stems, small, wiry, trailing. Leaves, green, variegated with white and pink.

**CULTURE:** Compost, equal parts peat, loam, leaf-mould, & sand. Position, small pots with shoots draping front of staging, or in baskets suspended from roof; sun or shade. Pot, March. Water freely March to Oct., moderately afterwards. Apply stimulants occasionally in summer. Temp., March to Sept. 60° to 75°; Sept. to March 55° to 65°. Propagate by cuttings of young shoots inserted in light sandy soil in small pots under bell-glass or hand-light in temp. 65° to 75° at any time.

**SPECIES CULTIVATED:** *O. Burmannii variegatus* (Syn. *Panicum variegatum*), trailing, Tropics.

**Opuntia** (Indian Fig; Prickly Pear; Cactus; Barbary Fig).—Ord. Cactaceæ. Greenhouse & hardy succulent plants. First introduced 1596. Stems, fleshy, flat, bristly. Leaves, small, unimportant, fugacious.

**CULTURE OF GREENHOUSE SPECIES:** Compost, two parts sandy loam, one part powdered brick rubbish & old mortar. Position, sunny airy greenhouse or window. Pot, March or April in pots filled  $\frac{1}{2}$  of depth with potsherds, & just large enough to accommodate roots. Repot every three or four years only. Water moderately March to Sept.; once a fortnight Sept. to Nov.; none afterwards. Apply stimulants to healthy plants, June to Sept. Ventilate freely in summer. Temp., March to Sept. 60° to 70°; Sept. to March 50° to 55°.

**CULTURE OF HARDY SPECIES:** Soil, sandy loam, freely interspersed with powdered brick or old mortar. Position, sunny, well-drained rockeries. Plant, March or April. Cover surface of soil between plants with small pieces of stone. Sprinkle soot freely between plants occasionally to keep away slugs. Apply weak liquid manure occasionally during summer to healthy plants only. Propagate by seeds sown  $\frac{1}{2}$  in. deep in well-drained pots or pans of sandy soil in temp. 75° in March. Keep soil moderately moist; cuttings of portions of stems exposed for a few days, then inserted in small, well-drained pots of lime & brick dust in temp. 65° to 75° summer; delicate species by grafting on robust kinds in April.

**GREENHOUSE SPECIES:** *O. arborescens*, purple, June, 5 ft., U. States; *Bigelovii*, flowers not known, 10 ft., California; *brasiliensis*, yellow, June, 10 to 15 ft., Brazil; *cylindrica*, scarlet, summer, 4 to 6 ft., Peru; and its crested variety *cristata*; *decumana*, orange, summer, 10 to 15 ft., S. America; *echinocarpa*, green, summer, 18 in., U. States; *Emoryi*, yellow and purple, Aug. and Sept., 18 in., Mexico; *ficus-indica* (Indian Fig), yellow, May, 2 ft., Trop. America; *filipendula*, purple, May and June, 2 ft., Texas; *leucotricha*, yellow, June, Mexico; *monacantha variegata*, variegated, 1 ft., S. America; *rosea*, rose, June, Mexico; *tuna*, reddish orange, July, 10 to 20 ft., S. America; *Whipplei*, red, June, U. States.

**HARDY SPECIES:** *O. Engelmanni*, yellow, May and June, 6 in., S.U. States; *mesacantha* (Syn. *vulgaris*), the Prickly Pear, yellow, June, 2 ft., U. States; *mesacantha Raffenescuii*, yellow and red, June, 1 ft.; *missouriensis*, yellow, May and June, 6 in., N. America, etc.

**Orach.**—See *Atriplex*.

**Orange** (*Citrus aurantium*).—See Citrus.

**Orange-ball Tree** (*Buddleia globosa*).—See *Buddleia*.

**Orange Daisy** (*Erigeron aurantiacus*).—See *Erigeron*.

**Orange Lily** (*Lilium croceum*).—See *Lilium*.

**Orange Monkey-flower** (*Mimulus glutinosus*).—See *Mimulus*.

**Orange Poppy** (*Papaver lateritium*).—See *Papaver*.

**Orange Stone-crop** (*Sedum kamtschaticum*).—See *Sedum*.

**Orchis**.—Ord. *Orchidaceæ*. Hardy terrestrial orchids. Deciduous.

**OUTDOOR CULTURE**: Soil, rich loam. Position, sunny, deep, well-drained borders or rockeries. Plant, Aug. to Nov., placing tubers 2 in. below surface. Water freely during growing period. Mulch with decayed manure annually in March or April. Lift and replant when unhealthy only. Apply weak stimulants occasionally during summer.

**POT CULTURE**: Compost, equal parts good loam, sandy peat, leaf-mould, charcoal, broken chalk & silver sand. Position, well-drained pots in cold, shady frame. Pot, Aug. to Nov., placing tubers 1 in. below surface, & three to five in a 6 in. pot. Make compost firm. Plunge pots to rims in cinder ashes or cocoanut-fibre refuse. Water copiously from time growth begins till foliage fades; then keep nearly dry. Apply weak stimulants from April till flowers fade. Remove flower spikes when blooms fade. Repot very two or three years. Protect from Dec. to Feb. by covering of cocoanut-fibre refuse or cinder ashes. Propagate by division of tubers, Aug. to Nov.

**SPECIES CULTIVATED**: *O. foliosa* (Madeira Orchis), purple, May, 2 ft., Madeira; *latifolia* (Marsh Orchis), purple, June, 1 ft., Europe (Britain); *laxiflora* (Guernsey Orchis), purple, May and June, 1 ft., Europe (Channel Islands); *maculata* (Spotted Orchis), purple and white, June, 1 ft., Europe (Britain); *pyramidalis* (Pyramidal Orchis), rosy purple, summer, 1 ft., Britain; *purpurea* (Lady Orchis), purple and rose, May, 1 ft., Europe (Britain); *spectabilis* (North American Orchis), purple and white, May, 6 in., N. America.

**Oregon Cypress** (*Cupressus lawsoniana*).—See *Cupressus*.

**Oregon White Cedar** (*Cupressus lawsoniana*).—See *Cupressus*.

**Oriental Goat's-Rue** (*Galega orientalis*).—See *Galega*.

**Oriental Hellebore** (*Helleborus orientalis*).—See *Helleborus*.

**Oriental Plane-tree** (*Platanus orientalis*).—See *Platanus*.

**Oriental Poppy** (*Papaver orientale*).—See *Papaver*.

**Oriental Strawberry-tree** (*Arbutus Andrachne*).—See *Arbutus*.

**Origanum** (Sweet Marjoram; Pot Marjoram; Dittany of Crete).—Ord. *Labiataæ*. Hardy herbaceous shrubby plants & aromatic herbs. First introduced 1573.

**CULTURE OF COMMON POT AND WINTER MARJORAM**: Soil, ordinary rich. Position, sunny borders. Plant, Feb. or March, 10 in. apart in rows 15 in. asunder. Top-dress annually in March with decayed manure. Lift, divide & replant every three or four years.

**CULTURE OF SWEET MARJORAM**: Soil, ordinary rich. Position, sunny borders. Sow seeds 1-16 in. deep in light soil in shallow boxes in temp. 55° to 65° in March, transplanting seedlings when 2 in. high, 6 in. apart in rows 9 in. asunder in April outdoors, thinning seedlings to one in each group when 1 to 2 in. high. Gather shoots when coming into flower, dry in shade, and store away for winter use.

**CULTURE OF DITTANY OF CRETE**.—Compost, two parts sandy loam, one part leaf-mould & sand. Position, well-drained pots in sunny window or greenhouse. Pot, Feb. or March. Water freely March to Sept., moderately afterwards. Suitable for suspending in pots or baskets. Apply stimulant occasionally during summer. Propagate common pot or winter marjoram by seeds sown  $\frac{1}{8}$  in. deep in ordinary soil in sunny position outdoors in March or April; division of roots, March or April; shrubby species by cuttings of young shoots inserted in sandy soil under bell-glass in greenhouse or window in summer.

**SPECIES CULTIVATED:** *O. dictamnus* (Dittany of Crete), pink, summer, 1 ft., Crete; Marjoran (Sweet Marjoram), purple or white, summer, 2 ft., N. Africa; *Onites* (Pot Marjoram), white, summer, 1 ft., S. Europe.

**Ornithogalum** (Star of Bethlehem; Onion Plant).—Ord. Liliacæ. Hardy and greenhouse bulbous plants.

**OUTDOOR CULTURE.**—Soil, rich ordinary, sandy. Position, sunny borders, rockeries or turf. Plant, Aug. to Nov., placing small bulbs 3 in., & large bulbs 4 to 6 in. below surface, & 2 to 3 in. apart. Mulch annually in March with decayed manure. Apply weak stimulants occasionally in summer.

**INDOOR CULTURE:** Compost, two parts sandy loam, one part equal proportions leaf-mould, peat & sand. Position, pots in sunny greenhouse or window. Pot, Sept. to Feb., placing several small or one large bulb in a 5 or 6 in. pot. Good drainage essential. Water moderately when growth begins, freely when in full growth, gradually withholding when foliage turns yellow, & keeping dry till new growth begins. Apply stimulants occasionally whilst in full growth. Repot annually. Temp., March to Sept. 55° to 65°; Sept. to March 40° to 50°.

**CULTURE OF ONION PLANT:** Compost, two parts sandy loam, one part leaf-mould & well-decayed manure & little sand. Position, sunny window or outdoors June to Sept. Pot, Feb. or March. Good drainage & firm potting essential. Water moderately Feb. to May, freely May to Sept., moderately Sept. to Nov., keep quite dry Nov. to Feb. Apply stimulants once a week May to Sept. Propagate by offsets removed from old bulbs & repotted, Sept. to Feb.

**GREENHOUSE SPECIES:** *O. arabicum*, white, fragrant, summer, 2 ft., S. Europe; *biflorum*, white, April, 1 ft., Chili and Peru; *longibracteatum* (Onion Plant), white, May, 1 to 2 ft., S. Africa; and its variety *variegatum*.

**HARDY SPECIES:** *O. nutans*, white, spring, 1 ft., Europe (Britain); *nutans, boucheanum*, a superior form; *pyrenaicum*, yellow and green, June, 2 ft., S. Europe; *umbellatum* (Star of Bethlehem), white, May, 1 ft., Europe, and its varieties *Leichtlinii* and *splendens*.

**Orbus.**—See *Vicia*.

**Orontium** (Golden Club).—Ord. Aroideæ. Hardy aquatic perennial. First introduced 1775.

**CULTURE:** Soil, boggy. Position, margins of shallow ponds or rivulets. Plant, Oct. to March, placing roots 6 to 12 in. below surface of water. Propagate by division of root stock in Oct. or March.

**SPECIES CULTIVATED:** *O. aquaticum*, green, May, 6 in., N. America.

**Orris-root** (*Iris florentina*).—See *Iris*.

**Osage Orange** (*Maclura aurantiaca*).—See *Maclura*.

**Osier.**—See *Salix*.

**Osier Willow** (*Salix viminalis*).—See *Salix*.

**Osmanthus** (Fragrant Olive; Holly-leaved Olive).—Hardy ever-green flowering shrubs. First introduced 1771.

**CULTURE:** Soil, loamy. Position, sheltered sunny borders, or against S. or W. walls. Plant, Sept., Oct. or April. Prune when necessary, April.

**POT CULTURE:** Compost, two parts sandy loam, one part leaf-mould, & sand. Position, cold sunny greenhouse, Sept. to June; outdoors, June to Sept. Pot, Sept. or Oct. Water freely April to Oct., moderately other times. Temp., Sept. to May 40° to 50°. Propagate by seeds sown 1-16 in. deep in sandy peat in cold frame in spring or autumn; by cuttings of firm young shoots inserted in sandy soil under hand-light outdoors, or in frame in summer.

**SPECIES CULTIVATED:** *O. Aquifolium*, white, Aug., 4 ft., Japan; and its

varieties *illicifolius* (small-leaved), *latifolius* (broad-leaved), *latifolius variegatus* (variegated), *purpureus* (purple-leaved), and *myrtifolius* (myrtle-leaved); *fragrans* (Syn. *Olea fragrans*), white, fragrant, June to Aug., 6 to 10 ft., China and Japan.

**Osmunda** (Royal Fern; Flowering Fern).—Ord. Filices. Greenhouse and hardy evergreen & deciduous ferns. Fronds, feather-shaped, plain or crested; fertile portions contracted.

**CULTURE OF GREENHOUSE SPECIES:** Compost, equal parts turfy loam and peat, little sand. Position, pots or beds in moist shady part of greenhouse or fernery. Pot or plant, March or April. Water copiously April to Oct., moderately afterwards. Temp., 55° to 65° April to Sept., 45° to 55° Sept. to April.

**CULTURE OF HARDY SPECIES:** Soil, one part each loam, leaf mould & sand, two parts peat. Position, bases of sheltered moist rockeries or margins of ponds in shade or partial shade. Plant, April. Top-dress annually in April with compost of peat, leaf-mould & loam. Remove dead fronds in March. Water plants growing otherwise than on the margins of ponds copiously in dry weather. Propagate by spores sown on surface of sandy peat & leaf-mould in well-drained pans, covered with sheet of glass or hand-light in shady part of cool greenhouse at any time; offsets from established plants in April.

**GREENHOUSE SPECIES:** *O. bipinnata*, 2 ft., Hong Kong; *javanicum*, 2 to 4 ft., Java.

**HARDY SPECIES:** *O. cinnamomea*, 2 to 4 ft., N. America, West Indies, etc.; *Claytoniana*, 2 to 3 ft., N. America and Himalayas; *regalis* (Royal Fern), 3 to 6 ft., Britain, etc., and its varieties *corymbifera*, *cristata*, *palustris*, and *purpurascens*.

**Oso-berry-tree** (*Nuttallia cerasiformis*).—See *Nuttallia*.

**Ostrich Fern** (*Onoclea germanica*).—See *Onoclea*.

**Ostrya** (Hop Hornbeam).—Ord. Cupuliferæ. Hardy deciduous trees. Flowers, greenish white, hop-like; May. First introduced 1622.

**CULTURE:** Soil, ordinary moist. Position, by the side of streams, lakes, or in shrubberies in damp situations. Plant, Oct. to Feb. Propagate by seeds placed in a heap outdoors till spring, then sown in sandy soil outdoors; by cuttings inserted outdoors in autumn; by layering in summer; by grafting on the Hornbeam (*Carpinus betulus*) in March.

**SPECIES CULTIVATED:** *O. carpinifolia* (Hop Hornbeam), 20 ft., S. Europe; *virginica* (Ironwood), 20 ft., N. America.

**Oswego Tea-plant** (*Monarda didyma*).—See *Monarda*.

**Othonna** (African Rag-wort).—Ord. Compositæ. Greenhouse trailing herbs. First introduced 1752.

**CULTURE:** Compost two parts sandy loam, one part leaf-mould & one part sand. Position, small well-drained pots or baskets suspended from roof. Pot, March or April. Water freely April to Oct., moderately afterwards. Apply stimulants to healthy plants occasionally during summer. Full exposure to light & sun essential. Propagate by cuttings of shoots inserted in sandy soil in cool greenhouse or frame in summer; division of plants in April.

**SPECIES CULTIVATED:** *O. crassifolia*, yellow, summer, trailing, S. Africa.

**Ourisia**.—Ord. Scrophulariaceæ. Hardy perennial creeping herbs. First introduced 1862.

**CULTURE:** Soil, moist loamy. Position, partially shaded rockery, with its roots placed close to a lump of soft porous stone. Plant, March or April. Water freely in dry weather. Must not be exposed to sunshine. Propagate by division of roots in March or April.

**SPECIES CULTIVATED:** *O. cæspitosa*, white, summer, 6 in., New Zealand; *coccinea*, scarlet, summer, 8 in., Chiloe; *Pearcel*, crimson, summer, 8 in.

**Our Lady's Thistle** (*Silybum Marianum*).—See *Silybum*.

**Ouvirandra** (Lattice or Lace-leaf Plant).—Ord. Naiadaceæ. Stove aquatic perennials. Orn. foliage. First introduced 1855. Leaves, broad, oblong, lace-like.

**CULTURE:** Compost equal parts loam and leaf-mould. Position, in small pot immersed in tub or tank of water 12 to 18 in. deep. Pot, Feb. or March. Temp. of water, 65° to 75°. Change water occasionally. Temp., March to Sept. 65° to 75°; Sept. to March 55° to 65°. Propagate by seed sown  $\frac{1}{2}$  in. deep in above compost in small pot immersed in water heated to temp. 75°, any time; division of roots, Feb. to March.

**SPECIES CULTIVATED:** *O. fenestralis*, white, Aug., Madagascar.

**Oxalis** (Wood Sorrel; French Sorrel).—Ord. Geraniaceæ. Greenhouse & hardy annuals, herbaceous perennials, and bulbous rooted plants.

**CULTURE OF GREENHOUSE SPECIES:** Compost, as above. Position, well-drained pots in sunny greenhouse or window. Pot autumn-flowering kinds in Aug., winter-flowering kinds in Sept. or Oct., spring-flowering kinds, Jan. or Feb., & summer-flowering kinds, March or April. Put bulbs  $\frac{1}{2}$  in. deep and  $\frac{1}{2}$  in. apart in 5 in. pots. After potting, place in warm part of greenhouse or window. Water moderately till leaves appear, then freely. Apply stimulants occasionally when flowers form. Gradually withhold water when flowers fade, & keep quite dry & cool till growth begins. Repot annually.

**CULTURE OF HARDY SPECIES:** Soil, sandy loam. Position, edgings to sunny borders or on rockeries. Plant bulbous species, Aug. to Nov., placing bulbs 2 in. below surface, & 6 to 12 in. apart; herbaceous perennials in March or April. Lift bulbs of choice species in Sept. or Oct. Store in sand in cool, frost-proof place till March, then plant out. Propagate by seeds sown 1-16 in. deep in light sandy soil in temp. 55° to 65° in spring; division of roots or offsets at potting or planting time.

**GREENHOUSE SPECIES:** *O. carnosa*, yellow, autumn, 6 in., Chili; *cernua* (Bermuda Butter-cup), yellow, spring, 6 in., S. Africa; *cernua flore-pleno*, double; *Deppei*, red, March, 4 to 6 in., S. America; *floribunda*, rose, March, 1 ft., Brazil; *hirta*, red, summer, 3 in., S. Africa; *pentaphylla*, lilac and yellow, summer, 6 in., S. Africa; *rosea*, rose, spring, 6 to 8 in., Chili; *tetraphylla*, red, summer, 6 in., Mexico; *variabilis*, red, white, or crimson, autumn, 3 in., S. Africa. The following are bulbous-rooted: *cernua*, *floribunda*, *Deppei*, and *tetraphylla*.

**HARDY SPECIES:** *O. Acetosella* (Wood Sorrel), white, spring, 2 to 3 in., Britain; *corniculata rubra*, yellow, summer, 6 in., leaves purple, Britain; *elegans*, purple, summer, 6 in., Peru; *enneaphylla*, rose, white, June, 4 in., Falkland Isles; *purpurata* (Syn. *doweana*), purple, Oct., 3 in., S. Africa.

**Oxeye.**—See *Bupthalmum* and *Adonis*.

**Ox-eye Chamomile** (*Anthemis tinctoria*).—See *Anthemis*.

**Oxeye Daisy** (*Chrysanthemum leucanthemum*).—See *Chrysanthemum*.

**Oxlip** (*Primula elatior*).—See *Primula*.

**Oxycoccus** (Common Cranberry; American Cranberry).—Ord. Vacciniaceæ. Hardy evergreen trailing shrubs. Edible fruiting. Berries, globular, deep red; ripe summer.

**CULTURE:** Soil, peat or bog. Position, open moist beds near ponds or streamlets. Excavate soil to depth of 6 in. below surrounding surface, & place 9 in. of peat or bog soil & loose stones in, and allow water to percolate to within 3 in. of surface. Plant, Sept. or March, 2 ft. apart each way.



**CULTURE IN SMALL PONDS:** Soil, peat or bog. Position, slightly drained pots immersed in water to within 2 in. of rim. Pot, Sept. to Oct. Syringe or sprinkle foliage every evening in summer. Propagate by cuttings of shoots inserted in sandy moist peat under hand-light in shade in summer; layering shoots in autumn; division of plants in Sept. or March.

**SPECIES CULTIVATED:** *O. macrocarpus* (American Cranberry), pink, spring, creeping, N. America; *palustris* (Common Cranberry), pink, May, creeping, Britain.

**Oxypetalum.**—Ord. Asclepiadææ. Stove and warm greenhouse evergreen climbers. First introduced 1823.

**CULTURE:** Compost, equal parts fibrous peat, loam, & sand. Position, well-drained pots; shoots trained up roof. Pot, March or April. Water freely in summer, moderately autumn & winter. Syringe morning & evening in spring time. Prune into shape Feb. Repot, March. Temp., March to Sept. 65° to 75°; Sept. to March 55° to 65°. Propagate by seeds sown in sandy peat, in a temp. of 75° in spring, or by cuttings placed in sand under a bell-glass over bottom heat in spring.

**SPECIES CULTIVATED:** *O. cæruleum* (Syn. *Tweedia cærulea*), blue, summer, fragrant, 3 ft., Argentina; *solanoïdes*, blue, rose, orange and purple, fragrant, summer, 6 ft., Brazil.

**Oxytropis** (Oxytrope).—Ord. Leguminosæ. Hardy perennial herbs.

**CULTURE:** Soil, dry, gravelly, or sandy loam. Position, open sunny rockeries. Plant, March or April. Lift & replant only when unhealthy. Propagate by seeds sown  $\frac{1}{2}$  in. deep in April or May where required to grow; division of roots in March.

**SPECIES CULTIVATED:** *O. cyanea*, purple and blue, summer, 6 in., Caucasus; *Lambertii*, white, blue and purple, summer, 1 ft., N. America; *pyrenaica*, purple and lilac, summer, 6 in., Pyrenees; *uralensis*, purple, summer, 4 in., Europe.

**Ozothamnus.**—Ord. Compositæ. Hardy evergreen flowering shrub. Nat. Australia. First introduced 1827.

**CULTURE:** Soil, ordinary. Position, sunny sheltered borders or against S. or W. walls, S. or W. of England only. Plant, Sept., Oct. or April. Prune when necessary in April. Propagate by cuttings of firm young shoots inserted in sandy soil under hand-light in shady position in summer.

**SPECIES CULTIVATED:** *O. rosmarinifolius*, white, July and Aug., 6 to 10 ft., leaves fragrant, Australia.

**Pachystoma.**—Ord. Orchidaceæ. Stove terrestrial orchids. First introduced 1866.

**CULTURE:** Compost, good fibry peat. Position, pots or hanging baskets, well drained. Water freely from time new growth commences until leaves fall off, very little other times. Temp., March to Sept. 65° to 85°; Sept. to March 60° to 70°. Propagate by division of plant at potting time.

**SPECIES CULTIVATED:** *P. thomsonianum*, white and purple, 6 in., Trop. Africa.

**Pæonia** (Pæony; Peony; Piony).—Ord. Ranunculaceæ. Hardy herbaceous & shrubby perennials. First introduced 1548.

**CULTURE OF TREE PÆONIES OUTDOORS:** Soil, two parts loam, one part decomposed cow manure. Position, sheltered nooks & sunny shrubberies or borders. Plant, Sept., Oct. or March., in beds of above compost, 18 in. deep and 2 ft. wide, well drained. Bury point of union between stock and scion 3 in. below surface. Mulch in spring with thick layer of cow manure. Protect in severe weather with covering of litter. Plants flower three years after planting.

**CULTURE IN POTS:** Compost, two parts loam, one part decayed cow manure and sand. Pot, Oct. or Nov. Place in cold frame till March, then remove to greenhouse. Stand in sunny position outdoors, June to Oct. Water freely March to Sept., moderately in winter. Apply weak manure water occasionally, March to Sept. Plants flower once in three years only. Temp. for forcing, 55° to 65°.

**CULTURE OF HERBACEOUS SPECIES:** Soil, moist loam well enriched with cow manure & trenched 3 ft. deep. Position, sunny or shady borders. Plant, Oct. to April, 4 ft. apart each way. Top-dress annually with well-decayed manure lightly forked into surface in Oct. or Nov. Mulch on dry soils in April. Apply liquid or artificial manures occasionally, April to Aug. Water copiously in dry weather. Shade blooms required for exhibition from sun. Propagate herbaceous species by seeds sown  $\frac{1}{2}$  in. deep in boxes, pots or pans of sandy soil in cold frame in Sept.; also by division of roots in March or April. Tree species by grafting on the fleshy roots of *P. albiflora* & *P. officinalis* in Aug.; layering in Sept. or Oct.; division of roots, March or April.

**SPECIES CULTIVATED:** *P. albiflora*, white and pink, May, 3 ft., Siberia; *Corallina*, crimson, May, 3 ft., Europe (Britain); *Moutan* (Tree Pæony), rose, May 3 ft., China; *officinalis* (Common Herbaceous Pæony), crimson, May, 2 to 3 ft., Europe; *tenuifolia*, crimson, May, 2 ft., Europe; *wittmanniana*, yellow, May, 2 ft., Orient. Many garden varieties.

**Pæony** (*Pæonia officinalis*).—See *Pæonia*.

**Pæony Poppy** (*Papaver somniferum*).—See *Papaver*.

**Painted Cup**.—See *Castilleja*.

**Palaua**.—Ord. Malvaceæ. Half-hardy annuals. First introduced 1830. Formerly called *Palava*.

**CULTURE:** Soil, ordinary. Position, sunny borders or rockeries. Sow seeds 1-16 in. deep in pots or boxes of light sandy soil in temp. 55° to 65° in March or April. Transplant seedlings outdoors in May or June.

**SPECIES CULTIVATED:** *P. dissecta*, mauve, summer, 6 to 9 in., Peru.

**Paliurus**.—Ord. Rhamnaceæ. Hardy deciduous flowering shrubs. First introduced 1596. Branches, spiny. Fruit, ornamental.

**CULTURE:** Soil, ordinary. Position, shrubberies or walls. Plant, Oct. to Feb. Propagate by seeds sown  $\frac{1}{2}$  in. deep in ordinary soil outdoors, Oct. to Nov.; cuttings of roots planted 3 in. deep & 6 in. apart, Oct. to Feb.; layering shoots, Sept. to Nov.; removing suckers with roots attached, Sept. to Dec.

**SPECIES CULTIVATED:**—*P. australis*, green and yellow, June, 4 to 6 ft., S. Europe.

**Palma-Christi** (*Ricinus communis*).—See *Ricinus*.

**Palm Lily** (*Cordyline indivisa*).—See *Cordyline*.

**Pampas Grass** (*Cortaderia argentea*).—See *Cortaderia*.

**Panax**.—Ord. Araliaceæ. Stove evergreen shrubs. Orn. foliage. First introduced 1740. Leaves, coarsely & finely divided, green & variegated with white. Pretty plants for table decoration.

**CULTURE:** Compost, equal parts loam, peaty leaf-mould, charcoal & sand. Pot, Feb. to March. Water freely March to Oct., moderately afterwards. Temp., March to Sept. 70° to 80°; Sept. to March 60° to 70°. Propagate by grafting in heat in spring; inserting portions of roots in light soil in temp. 80° in April.

**SPECIES CULTIVATED:** *P. fruticosum* Guilfoylei, leaves green and creamy white, 4 to 6 ft., Trop. Asia; *fruticosum* Victorise, leaves green and white, 4 to 6 ft.

**Pancratium** (Mediterranean Lily; Sea Daffodil).—Ord. Amaryll-

lidaceæ. Stove & hardy, evergreen & deciduous bulbous plants. First introduced 1596.

**CULTURE OF STOVE SPECIES:** Compost, two parts sandy loam, one part decayed manure & half a part silver sand. Position, well-drained pots in sunny part of stove. Pot, March. Repotting necessary every three or four years only. Water abundantly, April to Sept.; moderately, Sept. to Dec.; keep quite dry, Dec. to March. Apply liquid manure once a week, May to Sept. Temp., 70° to 80° March to Sept., 55° to 65° Sept to March.

**CULTURE OF HARDY SPECIES:** Soil, three parts sandy loam, one part leaf-mould. Position, warm exposed well-drained borders. Plant bulbs 3 to 4 in. deep, Oct., Nov., or March. Protect in winter by layer of decayed manure, cocoanut-fibre refuse or cinder ashes. Mulch after growth commences with decayed cow manure. Apply weak stimulants occasionally during summer. Lift, divide & transplant every three years. Propagate greenhouse & stove species by offsets removed from old bulbs in March; hardy kinds similarly when replanting.

**STOVE SPECIES:** *P. canariense*, white, Oct. and Nov., 18 in., fragrant, Canary Isles.

**HARDY SPECIES:** *P. illyricum*, white, summer, 1 ft., S. Europe; *maritimum* (Mediterranean Lily or Sea Daffodil), white, June, 18 in., Mediterranean Region.

**Pandanus** (Screw Pine).—Ord. Pandanaceæ. Stove evergreen shrubs. Orn. foliage. First introduced 1771. Leaves, narrow, strap-like, serrated, green or variegated with white.

**CULTURE:** Compost, two parts sandy loam, one part equal proportions leaf-mould, charcoal & sand. Pot, Jan. to April. Position, sunny moist part of stove. Water moderately Oct. to Feb., freely afterwards. Syringe twice daily, March to Sept. Temp., March to Sept. 65° to 85°; Sept. to March 55° to 65°. Propagate by offsets, Feb. to April.

**SPECIES CULTIVATED:** *P. Baptistii*, leaves yellow and green, 4 to 6 ft., New Caledonia; *candelabrum*, leaves green, 20 ft., Trop. Africa; *javanicus variegatus*, leaves green and white, 2 to 3 ft.; *Sanderi*, leaves green, white, and yellow, 3 ft.; *Veitchii*, leaves green and white, 3 ft., Polynesia.

**Panicum** (Panick Grass).—Ord. Gramineæ. Hardy and half-hardy annual & perennial grasses. Inflorescence, light, feathery, graceful. Leaves, green.

**CULTURE OF HARDY ANNUALS:** Soil, ordinary. Position, sunny borders. Sow seeds  $\frac{1}{4}$  in. deep in patches where required to flower in March or April. Thin seedlings when 1 in. high to 2 in. apart. Gather inflorescence in July or Aug. & dry for winter use.

**CULTURE OF HARDY PERENNIALS:** Soil, good ordinary. Position, sunny borders. Plant, Oct. or April. Lift, divide & replant every two or three years. Propagate stove species by division; hardy kinds of seeds sown outdoors in April or May, & by division of roots in Oct. or March.

**ANNUAL SPECIES:** *P. capillare*, 2 ft., W. Hemisphere.

**PERENNIAL SPECIES:** *P. altissimum*, 3 to 5 ft., Central America; *bulbosum*, 5 ft., Mexico; *virgatum*, 3 to 4 ft., N. America. See also the genus *Oplismenus*.

**Pansy** (*Viola tricolor*).—See *Viola*.

**Pantaloons Polyanthus**.—See *Primula*.

**Panther Lily** (*Lilium pardalinum*).—See *Lilium*.

**Papaver** (Poppy).—Ord. Papaveraceæ. Hardy annual & perennial herbs.

**CULTURE OF ANNUAL SPECIES:** Soil, good ordinary. Position, sunny beds or borders. Sow seeds 1-16 in. deep in patches where re-

quired to grow; in April for flowering in summer; Sept. for flowering in spring. Thin seedlings to 1 or 2 in. apart when  $\frac{1}{2}$  in. high.

**CULTURE OF PERENNIAL SPECIES:** Soil, deep sandy loam. Position, sunny borders for tall species as *P. orientalis*; rockeries for dwarf species as *P. alpinum* & *P. nudicaule*. Plant, Oct., March or April. Top-dress with decayed manure in March or April. *P. nudicaule* best raised from seeds annually. Propagate annual species by seeds as above; perennial species by seeds sown in sunny place outdoors in March or April; division of roots in March or April.

**ANNUAL SPECIES.**—*P. arenarium*, crimson and black, summer, 9 in., Caucasus; glaucum (Tulip Poppy), crimson, summer, 18 in., Syria; lævigatum, scarlet, black and white, summer, 2 ft., Greece; pavoninum (Peacock Poppy), scarlet and black, 18 in., Afghanistan; Rhaas (Corn or Shirley Poppy), various colours, 18 in., Britain; somniferum (Opium Poppy), various colours, summer, 3 ft., China.

**PERENNIAL SPECIES:** *P. nudicaule* (Iceland Poppy), yellow, orange and white, summer, 1 ft., Arctic Regions; alpinum (Alpine Poppy), yellow, orange, salmon, and white, summer, 6 in., Europe; orientale (Oriental Poppy), orange-scarlet, June, 3 ft., Asia Minor; pilosum, orange, summer, 2 ft., Greece; rupifragum (Spanish Poppy), terracotta, summer, 2 ft., Spain; rupiorenis, cerise-scarlet, summer, 2 ft., hybrid. Alpinum and nudicaule best grown as biennials.

**Paper Birch** (*Betula papyrifera*).—See *Betula*.

**Paper Mulberry** (*Broussonettia papyrifera*).—See *Broussonettia*.

**Pappoose-root** (*Caulophyllum thalictroides*).—See *Caulophyllum*.

**Paradisea** (St. Bruno's Lily).—Ord. Liliaceæ. Hardy herbaceous perennials.

**CULTURE:** Soil, ordinary well enriched with leaf-mould and decayed manure. Position, partially shady borders. Plant, Oct. or March. Increased by division of roots in Oct. or March; seeds sown in cold frame or greenhouse in spring.

**SPECIES CULTIVATED:** *P. Liliastrum*, white, fragrant, May and June, 1 to 2 ft., Alps; *Liliastrum major*, 4 to 5 ft., larger flowers than the parent. Formerly known as *Anthericum Liliastrum*.

**Paradise Apple** (*Pyrus malus præcox*).—See *Pyrus*.

**Paraguay Tea** (*Ilex paraguayensis*).—See *Ilex*.

**Parasol Fig-tree** (*Sciadopitys verticillata*).—See *Sciadopitys*.

**Parchment Bark** (*Pittosporium crassifolium*).—See *Pittosporium*.

**Pardanthus**.—See *Belamacanda*.

**Paris** (Herb Paris).—Ord. Liliaceæ. Hardy perennial herbs.

**CULTURE:** Soil, sandy loam. Position, shady borders, woods, or shrubberies. Plant, Oct. to March. Propagate by seeds sown in moist position outdoors in autumn; division of roots, Oct. or March.

**SPECIES CULTIVATED:** *P. quadrifolia* (Herb Paris), green and yellow, summer, 6 in., Britain.

**Paris Daisy** (*Chrysanthemum frutescens*).—See *Chrysanthemum*.

**Parkinson's Chequered Meadow-Saffron** (*Colchicum Parkinsoni*).—See *Colchicum*.

**Parlour Ivy** (*Mikania scandens*).—See *Mikania*.

**Parlour Palm** (*Aspidistra lurida*).—See *Aspidistra*.

**Parnassia** (Grass of Parnassus).—Ord. Saxifragaceæ. Hardy perennial herbs.

**CULTURE:** Soil, peaty or boggy. Position, moist shady borders, bogs or margins of streams or ponds. Plant, Oct., Nov., March or April. Propagate by seeds sown in moist boggy peat in shady position outdoors in autumn or spring; division of roots in March or April.

**SPECIES CULTIVATED:** *P. caroliniana*, white, summer, 6 in., N. America; *palustris* (Grass of Parnassus), white and green, summer, 6 in., Britain.

**Parochetus** (Blue-flowered Shamrock; Shamrock Pea).—Ord. Leguminosæ. Hardy trailing herbaceous perennial. First introduced 1820.

**CULTURE:** Soil, ordinary. Position, margins of sunny borders or on rockeries. Plant, Oct., March or April. Propagate by seeds sown 1-16 in. deep in light sandy soil in cold frame in March; division of plants in March.

**SPECIES CULTIVATED:** *P. communis*, blue, March to June, 1 ft., Himalayas.

**Paronychia** (Nail-wort; Whitlow-wort).—Ord. Illecebracæ. Dwarf-creeping perennial herbs. First introduced 1879. Flowers, white, surrounded by silvery bracts.

**CULTURE:** Soil, ordinary. Position, dry sunny banks or rockeries or for carpeting surfaces of beds. Plant, March to June. Propagate by seeds sown in sunny spot outdoors in March or April; division of plants, Oct. or March.

**SPECIES CULTIVATED:** *P. argentea*, 9 in., S. Europe; *capitata*, 9 in., S. Europe.

**Paroo Lily** (*Dianella cærulea*).—See *Dianella*.

**Parottia** (Persian Iron-wood).—Ord. Hamamelidacæ. Hardy deciduous trees & shrubs. Orn. foliage. First introduced 1848. Leaves, ovate, green in summer, rich crimson with shades of orange & yellow in autumn.

**CULTURE:** Soil, good ordinary. Position, warm sheltered shrub-berries, S. of England; against S. walls in colder districts. Plant, Oct. to Feb. Prune shoots of trees grown against walls to within an inch of base annually in Feb. Propagate by seeds sown  $\frac{1}{2}$  in. deep in well-drained pots of sandy soil in cold frame in autumn or spring; layering shoots in autumn.

**SPECIES CULTIVATED:** *P. jacquemontiana*, 10 ft., Himalayas; *persica*, 15 ft., Persia.

**Parrot-beak-plant** (*Clianthus puniceus*).—See *Clianthus*.

**Parrot Tulip** (*Tulipa gesneriana laciniata*).—See *Tulipa*.

**Parrot's-bill of New Zealand** (*Clianthus puniceus*).—See *Clianthus*.

**Parry's Lily** (*Lilium Parryi*).—See *Lilium*.

**Parsley** (*Carum petroselinum*).—See *Carum*.

**Parsley Fern** (*Cryptogramme crispa*).—See *Cryptogramme*.

**Parsley-leaved Elder** (*Sambucus nigra laciniata*).—See *Sambucus*

**Parsnip** (*Peucedanum sativum*).—See *Peucedanum*.

**Partridge-berry**.—See *Gaultheria* and *Mitchellia*.

**Partridge-breast Aloe** (*Aloe variegata*).—See *Aloe*.

**Pasque-flower** (*Anemone pulsatilla*).—See *Anemone*.

**Passiflora** (Passion-flower).—Ord. Passifloracæ. Stove greenhouse & hardy climbing plants. First introduced 1699.

**CULTURE OF STOVE SPECIES:** Compost, equal parts fibrous loam & peat, one-fourth silver sand. Pot, Feb. or March. Prune, Feb., thinning out weak shoots & shortening strong ones one-third. Position, well-drained tubs or pots, or beds 18 in. deep & 2 ft. wide; shoots trained up rafters or walls; sunny. Water copiously March to Sept., moderately afterwards. Syringe twice daily April to Sept. Apply stimulants occasionally to healthy plants when in flower only. Temp., March to Oct. 65° to 75°; Oct. to March 55° to 65°.

**CULTURE OF GREENHOUSE SPECIES:** Compost, as for stove species. Position, grown in pots, tubs or beds & shoots trained up rafters. Prune, pot, & water as advised for stove species. Temp., March to Oct. 55° to 65°; Oct. to March 45° to 50°.

**CULTURE OF HARDY SPECIES:** Soil, good ordinary, mixed with a little decayed manure. Position, south or south-west walls. Plant, Oct. or March. Prune in Feb., shortening small shoots to 3 & 6 in., and strong ones to 2 & 3 ft. Water freely in dry weather. Apply liquid manure to healthy plants once a month in summer. Propagate stove species by seeds sown  $\frac{1}{2}$  in. deep in pots of sandy soil in temp. 65° to 75° at any time; by cuttings of young shoots 4 to 6 in. long inserted in sandy soil under bell-glass in temp. 65°, April to Sept. Hardy species, by similar cuttings inserted in cold frame in summer; layering young shoots in summer.

**STOVE SPECIES:** *P. alata*, crimson, white and purple, summer, 15 to 20 ft., Peru; *edulis* (*Granadilla*), white and purple, summer, 20 ft., Brazil; *quadrangularis*, red, violet, and white, fragrant, summer, 20 ft., Trop. America; *racemosa*, scarlet, summer, 20 ft., Brazil.

**GREENHOUSE SPECIES:** *P. incarnata*, flesh, summer, 15 to 20 ft., Trop. America.

**HARDY SPECIES:** *P. cœrulea*, white, blue and purple, summer, 20 to 25 ft., Brazil, and its white variety, *Lady Constance Elliot*.

**Passion-flower.**—See *Passiflora* and *Tacsonia*.

**Paternoster Pea** (*Abrus precatorius*).—See *Abrus*.

**Paullinia.**—Ord. Sapindaceæ. Stove evergreen twining plants. First cultivated 1816. Leaves, finely divided, green, downy.

**CULTURE:** Compost, two parts loam, two parts leaf-mould & sand. Position, well-drained pots with shoots trained round wire trellis or up rafters of roof. Pot, March. Prune slightly in Jan. & Feb. Water moderately Oct. to Feb., freely afterwards. Syringe twice daily, March to Sept. Propagate by cuttings of firm shoots, 2 to 3 in. long, inserted in small pots of sandy soil under bell-glass in temp. 75° to 85° any time.

**SPECIES CULTIVATED:** *P. Cupania*, white, June, 15 to 20 ft., Venezuela; *thaliotrifolia*, pink, Sept., 10 to 15 ft., S. America.

**Paulownia.**—Ord. Scrophulariaceæ. Hardy deciduous tree. Orn. foliage & flowering. First introduced 1840. Leaves, large, soft & downy.

**CULTURE:** Soil, sandy loam. Position, sunny sheltered shrubberies or lawns. Plant, Oct. to Feb. Prune shoots annually in Feb. to within two or three inches of their base if only foliage is desired; leave unpruned for flowering. Propagate by seeds sown  $\frac{1}{2}$  in. deep in sandy loam in cold frame in spring or autumn; by cuttings of firm young shoots inserted in sandy soil in frame in summer.

**SPECIES CULTIVATED:** *P. imperialis*, violet, June, 15 to 20 ft., Japan.

**Pavetta** (*Wild Jasmine*).—Ord. Rubiaceæ. Stove evergreen shrubs. Orn. foliage. Leaves, oblong lance-shaped, dark olive-green, spotted with white, salmon-red mid-ribs.

**CULTURE:** Compost, two parts good fibrous peat, one part fibrous loam & silver sand. Position, shady part of stove whilst growing, light situation when at rest. Pot, Feb. or March; good drainage indispensable. Prune into shape in Feb. Water freely from March to Sept.; moderately afterwards. Syringe twice daily, March to Aug. Apply liquid manure once or twice a week to healthy plants in flower. Temp., March to Sept. 75° to 85°; Sept. to March 55° to 65°. Propagate by cuttings of firm young shoots 2 to 3 in. long, inserted singly in small pots in sandy peat under bell-glass in temp. 75° to 85°, March to May.

**SPECIES CULTIVATED:** *P. borbonica*, 3 to 4 ft., Bourbon.

**Pavia.**—See *Æsculus*.

**Pavonia.**—Ord. Malvaceæ. Stove evergreen plants. First introduced 1778.

**CULTURE:** Compost, two parts loam, one part peat & sand. Pot, March. Position, pots in shade. Water freely March to Sept., moderately afterwards. Syringe daily in summer. Temp., March to Sept. 65° to 75°; Sept. to March 55° to 65°. Propagate by cuttings inserted in fine sand under bell-glass in temp. 75° at any time.

**SPECIES CULTIVATED:** *P. coccinea*, scarlet, summer, 1 to 2 ft., Brazil; multiflora, purple, autumn, 1 to 2 ft., Brazil.

**Pea** (*Pisum sativum*).—See *Pisum*.

**Pea, Sweet.**—See *Lathyrus*.

**Peach** (*Prunus persica*).—See *Prunus*.

**Peach-leaved Bell-flower** (*Campanula persicifolia*).—See *Campanula*.

**Peach Trumpet-flower** (*Solantra grandiflora*).—See *Solantra*.

**Peacock Anemone** (*Anemone Pavonia*).—See *Anemone*.

**Peacock-flower** (*Cæsalpinia pulcherrima*).—See *Cæsalpinia*.

**Peacock Iris** (*Iris Pavonia*).—See *Iris*.

**Peacock Treasure-flower** (*Gazania Pavonia*).—See *Gazania*.

**Pear** (*Pyrus communis*).—See *Pyrus*.

**Pearl-berry** (*Margyricarpus setosus*).—See *Margyricarpus*.

**Pearl-bush** (*Exochorda grandiflora*).—See *Exochorda*.

**Pearl Cud-weed** (*Anaphalis margaritacea*).—See *Anaphalis*.

**Pearl-grass** (*Briza maxima*).—See *Briza*.

**Pearl-wort** (*Sagina glabra*).—See *Sagina*.

**Pearly Everlasting** (*Anaphalis margaritacea*).—See *Anaphalis*.

**Pedilanthus** (Slipper Spurge; Jew-bush).—Ord. Euphorbiaceæ. Stove succulent shrub. First introduced 1874.

**CULTURE:** Compost, two parts sandy loam, one part brick rubbish, half a part decayed cow manure & silver sand. Pot, March or April. Position, dry sunny part of stove. Temp., Sept to March 60° to 70°; March to Sept. 60° to 80°. Water once in three weeks from Sept. to March; once a week afterwards. No syringing or stimulants required. Propagate by cuttings of shoots, 2 to 3 in. long, exposed to sun for one or two days, then inserted singly in sand in 2 in. pots, & placed on a shelf near the glass, any time during summer.

**SPECIES CULTIVATED:** *P. tithymaloïdes*, stems fleshy, 6 ft., S. America.

**Peerless Daffodil** (*Narcissus incomparabilis*).—See *Narcissus*.

**Pelargonium.**—Ord. Geraniaceæ. Greenhouse & hardy herbaceous, evergreen, shrubby, & tuberous-rooted perennials. Flowering & orn. foliage. Popularly known as "Geraniums." *P. grandiflorum* first introduced 1794; *P. peltatum*, 1701; *P. zonale*, 1710.

**CLASSIFICATION OF TYPES:** (1) Zonal.—Leaves roundish, cordate, lobed, pubescent, green, with or without horse-shoe mark near margin of upper surface. Sub-classes: Bicolor.—Leaves green, edged with white, or white, edged with green. Tricolor.—Leaves, green, white, yellow, & crimson. Bronze.—Yellow with bronze zone. (2) Show: Leaves, palmately lobed, toothed margins, wrinkled, green; flowers large, with smooth or wrinkled edges. Sub-class: Regal.—Flowers semi-double. (3) Fancy: Leaves similar to show kinds; flowers

smaller, spotted or blotched. (4) Ivy-leaved: Leaves ivy-shaped, fleshy, five-angled, green or variegated; stems trailing or climbing. (5) Scented-leaved: Leaves variously shaped; scented.

**CULTURE OF HARDY HERBACEOUS SPECIES:** Soil, sandy loam. Position, sunny well-drained rockery or border. Plant, March or April. Protect in winter with covering of cocconut-fibre refuse.

**CULTURE OF ZONAL PELARGONIUMS:** For Summer Flowering: Insert cuttings in Aug. or Sept. singly in 2 in. pots. Place in temp. 45° till March, then transfer to 4 in. size. Nip off point of main shoot in Feb. or March, also of side shoots when 2 in. long. Transfer to 6 in. pots when roots reach side of 5 in. sizes. Pot firmly. Compost for first potting, two parts yellow fibrous loam, half a part well-decayed manure, half a part leaf-mould, one part coarse sand & tablespoonful of superphosphate, or a quarter of a pint of bone-meal to each bushel; for final potting, same proportion of loam, manure & leaf-mould, quarter part each of coarse sand & charcoal, tablespoonful of superphosphate or pint of bone-meal to each bushel. Remove flower buds until fortnight after final potting. Water moderately first ten days after potting; freely afterwards. Apply stimulants month after final potting. Shade from sun when in bloom. Temp., Aug. to March 40° to 50°; March to May 55° to 60°; ordinary cool greenhouse or window afterwards. After flowering, shorten shoots & keep soil just moist, repotting following spring to make large plants. For Winter Flowering: Insert cuttings singly in 2 in. pots in Feb. or March in temp. 55° to 65°. Transfer when well rooted into 4 in. & again into 6 in. in June. Nip off point of main shoot in April, & of side shoots in May or June. Pinch off flower buds appearing before Sept. Stand in sunny cold frame, or plunge to rim of pots in cinder ashes in open position, June to Sept. Remove into greenhouse in Sept. Water freely outdoors, moderately indoors. Apply stimulants twice a week, June to Sept., once a week afterwards. Compost, as above. Temp., Sept. to March 50° to 55°. Dry atmosphere essential to prevent damping of blooms. After flowering, shorten shoots, keep moderately moist, & repot. Zonals, Bicolors & Tricolors for Bedding: Insert cuttings in Aug. or Sept., several in 5 in. pots, or 2 in. apart in shallow boxes. Keep thus until Feb., then transfer singly to 3 in. pots, place in temp. 55° until April, then remove to cold frame, and plant outdoors in June. Lift plants in Sept., placing bicolors, tricolors, and bronzes singly in 3 in. pots; zonals singly in similar pots, three in a 4 or 5 in. pot, or a few inches apart in shallow boxes, & storing in temp., 40° to 45°, in greenhouse, room or cellar. Specimen Zonals: Insert cuttings in Aug. or Sept., growing in 2 in. pots until March, then transfer to 4 in. sizes. Compost as above: Nip off points of main shoot in March, also of side shoots when 3 in. long. Tie these firmly to wire fixed to rim of pot, & allow young shoots to form in centre. Remove all blooms first year. Transfer to 6 in. pot in May or June. Grow in greenhouse near glass. Water freely during summer, moderately in winter. Apply stimulants, June to Sept. Shorten shoots two thirds in Jan. When new shoots form repot. Nip off points of shoots where necessary to ensure good shape. Compost as above. Stimulants for Zonals: Liquid horse, cow, sheep or deer dung, diluted with two-thirds water, & applied twice a week in summer, once a week in winter; nitrate of soda, ¼ oz. to a gallon of water, applied once a week, when soil is moist only, for



three or four weeks, then cease; sulphate of ammonia, same as nitrate of soda; soot-water (one peck each of sheep & cow dung, &  $\frac{1}{2}$  peck of soot to 36 gall. of water), diluted with half water, applied twice a week.

**CULTURE OF SHOW AND FANCY PELARGONIUMS:** Insert cuttings of firm shoots, 2 to 3 in. long, in July or Aug. singly in 2 in. pots in cold frame or greenhouse. Sandy soil. When rooted, transfer to 4 in. pots, and place on a shelf close to glass in temp. 45° to 50. Nip off point of main shoot just before potting. When new shoots are 3 in. long nip off points. Transfer to 5 in. pots in Jan. Keep near glass. When flowers show apply liquid manure twice a week. Water moderately until March, then freely until June, when give less. Temp., Sept. to March 45° to 50°; March to May 50° to 55°. After flowering stand in sunny place outdoors. Prune shoots to within 1 in. of base in July. When new shoots form turn plants out of pots, remove loose soil, & repot in 4 or 5 in. pots. Replace in greenhouse in Sept. Transfer to 6 or 8 in. pots in Dec. or Jan. Compost, three parts good fibrous loam, one part decayed horse or cow dung, half a part coarse sand, & a tablespoonful of superphosphate to each bushel. Good drainage and firm potting essential. Stimulants as above.

**CULTURE OF IVY-LEAVED PELARGONIUMS:** Insert cuttings singly in 2 in. pots, or three or four in a 4 in. pot in Aug. or Sept. Grow in greenhouse near glass until Feb. or March, then transfer to 4 in. pots. Nip off points of main shoots in Feb. or March. Repot in 5 in. pots in April or May. Train shoots to stakes or place plants in suspended baskets, & let them droop over sides. Water moderately Sept. to April, freely April to Sept. Apply stimulants, May to Sept. Temp., Sept. to March 40° to 50°; March to Sept. 50° to 60°. Plant outdoors, June. Prune old plants, Feb. or March. Compost & stimulants same as for zonals.

**CULTURE OF FRAGRANT-LEAVED PELARGONIUMS:** Compost, two parts loam, half a part each of decayed manure and leaf-mould, quarter part sand. Pot and treat as advised for zonals.

**PROPAGATE** by seeds sown 1-16 in. deep in a well-drained pot or pan, filled with light sandy soil, in temp. 55° to 65°, Feb. to April; cuttings inserted as above directed in each section; grafting on common kinds in close frame or under bell-glass in temp. 55° to 65° in spring; tuberous-rooted kinds by division in spring.

**HARDY HERBACEOUS SPECIES:** *P. endlicherianum*, rose, summer, 2 ft., Orient.

**FRAGRANT-LEAVED SPECIES:** *P. capitatum* (Rose-scented), rose and purple, summer, 2 to 3 ft., S. Africa; *citriodorum* (Citron-scented), white, summer, 2 to 3 ft., S. Africa; *crispum* (Lemon-scented), purple, Sept., 2 to 3 ft., S. Africa; *denticulatum flicifolium* (Fern-leaved), purple, summer, 3 to 4 ft., S. Africa; *fragrans* (Nutmeg-scented), white and red, summer, 2 to 3 ft.; *quercifolium* (Oak-leaved), pink, purple, May, 3 to 4 ft., S. Africa; *radula* (Balsam-scented), purple, summer, 3 to 4 ft., S. Africa; *tomentosum* (Peppermint-scented), white, summer, 3 ft., S. Africa.

**OTHER SPECIES:** *P. inquinans* (parent of the Scarlet Geraniums), scarlet, rose, and white, summer, 2 ft., S. Africa; *peltatum* (Syn. *hederæfolium*), parent of the Ivy-leaved Geraniums, white or red, summer, S. Africa; *grandiflorum* (parent of the Show, Fancy, and Regal Pelargoniums), white and red, summer, 2 ft., S. Africa; *zonale* (Horseshoe or Zonal Geranium), parent of the zonal, bicolor and tricolor geraniums, various colours, summer, 2 ft., S. Africa.

**Pelecyphora** (Hatchet Cactus).—Ord. Cactaceæ. Greenhouse succulent perennial. First introduced 1843.

**CULTURE:** Compost, equal parts sandy loam, rough old mortar & pounded bricks. Position, sunny airy greenhouse or windows. Pot,

March or April in well-drained pots just large enough to accommodate roots. Repot every third or fourth year only. Water moderately March to Sept., once a fortnight Sept. to Dec., none afterwards. Syringe on evenings of warm days, June to Sept. Apply soot-water to healthy plants, June to Sept. Ventilate freely in summer. Temp., March to Sept. 60° to 70°; Sept. to March 50° to 55°. Propagate by seeds sown  $\frac{1}{8}$  in. deep in well-drained pans or pots of sandy soil in temp. 75° in March, keeping soil moderately moist; by cuttings of the tops of the plants inserted in small pots of sandy gritty compost in spring.

SPECIES CULTIVATED: *P. asseliformis*, white and rose, June, 4 in., Mexico.

**Pelexia**.—Ord. Orchidaceæ. Stove terrestrial orchids. First introduced 1823.

CULTURE: Compost, two parts fibrous peat, one part loam & sand. Position, well-drained pots or shallow pans in shady part of stove. Temp., 65° to 75° March to Sept.; Sept. to March 55° to 65°. Propagate by cuttings of shoots removed with roots attached, inserted singly in small pots of peaty compost under bell-glass in temp. 45° to 55° in spring.

SPECIES CULTIVATED: *P. maculata*, green and pink, summer, 1 to 2 ft.; *rosco-alba*, white, summer, 1 ft., Brazil.

**Pellæa** (Cliff Brake-Fern).—Ord. Filices. Greenhouse evergreen & deciduous ferns. First introduced 1770. Fronds, hand-shaped or once or twice divided; green.

CULTURE: Compost, equal parts loam, leaf-mould, peat & sand, with a little charcoal & sandstone. Pot or plant, March. Position, well-drained pots in shady part of greenhouse or in beds or rockeries in shade. Water moderately Oct. to Feb., freely afterwards. Temp., Sept. to March 45° to 55°; March to Sept. 60° to 65°. *P. atropurpurea* is sufficiently hardy to grow outdoors in sheltered rockeries if protected with litter or hand-light in winter. Propagate by spores sown on surface of sandy peat in shallow pan in temp. 70° to 80°, any time; division of plants in Feb. to April.

SPECIES CULTIVATED: *P. adiantoides* (Syn. *Platyloma adiantoides*), W. Indies; *atropurpurea*, N. America; *Breweri*, N. America; *calomelanos*, Cape Colony; *cordata*, Mexico; *cordata flexuosa* (Syn. *Platyloma flexuosa*), W.S. America; *falcata*, Tropics, Australia, New Zealand; *hastata* (Syn. *Pteris hastata*), S. Africa; *mucronata*, California; *ternifolia*, Trop. America.

**Pellionia**.—Ord. Urticaceæ. Stove creeping herb. Orn. foliage. First introduced 1880. Leaves, roundish, oval or heart-shaped; olive-green with violet & white markings.

CULTURE: Compost, two parts sandy loam, one part leaf-mould & sand. Pot or plant, March or April. Position, shallow pans or on surface of beds or rockeries or under staging. Water moderately Oct. to Feb.; freely afterwards. Temp., Sept. to April 55° to 65°; April to Sept. 65° to 75°. Propagate by cuttings of creeping shoots inserted in sandy soil in small pots under bell-glass in temp. 75° to 85° in spring; division of plants in March or April.

SPECIES CULTIVATED: *P. daveauana*, Cochin China; *pulehra*, Cochin China.

**Peltandra** (Arrow-Arum).—Ord. Aroideæ. Hardy perennial herb. Orn. foliage. First introduced 1759. Leaves, spear-head shaped, broad, deep green.

CULTURE: Soil, rich boggy or muddy. Position, moist bog or shallow pond. Plant, March or April, enclosing roots & small quantity of soil in piece of canvas or sacking & drop the whole into the water.

Propagate by inserting portions of creeping stems in muddy soil in ponds where required to grow.

SPECIES CULTIVATED: *P. virginica*, 1 ft., N. America.

**Peltaria**.—Ord. Cruciferae. Hardy herbaceous perennial herb. First introduced 1601. Plant, garlic-scented.

CULTURE: Soil, ordinary. Position, sunny borders, beds or rockeries. Plant, Oct., March or April. Propagate by seeds sown  $\frac{1}{2}$  in. deep outdoors, March or April, where plants are required to grow; division of plants in March or April.

SPECIES CULTIVATED: *P. alliacea*, white, summer, 1 ft., E. Europe.

**Pennisetum**.—Ord. Gramineae. Hardy perennial grasses. Flowering & orn. foliage. Inflorescence very graceful and useful for cutting and drying for winter decoration.

CULTURE OF *P. LATIFOLIUM*: Soil, sandy loam. Position, sheltered, well-drained borders in warm parts of the kingdom only. Plant, April. Protect in severe weather with covering of mats, or lift in Nov., place in large pots or tubs & remove to greenhouse, replanting outdoors in April or May.

CULTURE OF *P. LONGISTYLUM*: Soil, ordinary. Position, sunny borders. Sow seeds 1-16 in. deep in patches a foot or more in diameter in March or April, where plants are to flower. Gather inflorescence for winter use, end of July. This species is best treated as an annual. Propagate *P. latifolium* by seed sown 1-16 in. deep in sandy soil in shallow boxes or pans in temp. 60° to 65°, March or April, transplanting seedlings outdoors in May or June; division of root in April.

SPECIES CULTIVATED: *P. latifolium* (Syn. *Gymnothrix latifolia*), 5 to 8 ft., perennial, Argentina; *longistylum*, 12 to 18 in., annual, Abyssinia.

**Pennyroyal** (*Mentha pulegium*).—See *Mentha*.

**Pentas**.—Ord. Rubiaceae. Stove evergreen flowering shrubs. First introduced 1842.

CULTURE: Compost, equal parts fibrous peat & leaf-mould, half-part each light loam & sand. Pot, Feb. to April. Position, well-drained pots in light part of stove. Water moderately Sept. to April, freely at other times. Syringe daily April to Sept. Prune plants into shape immediately after flowering. Nip off points of young shoots occasionally during May, June & July to induce bushy habit of growth. Temp., Sept to April 50° to 60°; April to Sept. 60° to 75°. Propagate by cuttings of young shoots, 2 to 3 in. long, inserted singly in 2-in. pots filled with sandy compost & placed under bell-glass in temp. of 75°, spring or summer.

SPECIES CULTIVATED: *P. carnea*, pink, winter, 18 in., Trop. Africa; *carnea kermesina*, rose and violet; *carnea, quartiniiana*, pink.

**Pentstemon** (Beard Tongue).—Ord. Scrophulariaceae. Hardy perennials. First introduced 1794.

CULTURE: Soil, two parts rich loam, one part decayed manure or leaf-mould. Plant, March or April. Position, sunny beds or borders, well drained. Apply stimulants once or twice a week in summer. Suitable stimulants: Liquid cow or horse manure; superphosphate at the rate of a tablespoonful to each plant forked into surface of soil in May; nitrate of soda  $\frac{1}{4}$  oz. to a gall. of water once a week; Peruvian guano  $\frac{1}{2}$  oz. to gall. of water twice a week. Propagate by seeds sown 1-16 in. deep in a well-drained pot or pan of light soil in temp. 55° to 65° in Feb. or March, transplanting seedlings outdoors in May; cuttings of young shoots 3 in. long inserted in sandy soil in boxes or a bed under hand-light, or in cold frame in Aug., allowing them to remain there until April; division in April.

**SPECIES CULTIVATED:** *P. azureus*, blue, Aug., 1 ft., N. America; *barbatus* (Syn. *Chelone barbata*), scarlet, summer, 3 ft., U. States; *Cobæa*, purple and white, Aug., 1 ft., U. States; *confertus carulea-purpureus*, purple and blue, 1 ft., summer, Rocky Mountains; *glaber*, purple, summer, 1 ft., U. States; *gentianoides*, summer, 3 ft., Mexico; *Hartwegii*, scarlet, summer, 2 ft., Mexico; *Menziesii*, lilac, red and purple, June, 6 in., N.W. America. The kinds grown so largely in gardens were originally derived from hybrids between *P. Cobæa* and *P. Hartwegii*.

**Peony** (*Pæonia officinalis*).—See *Pæonia*.

**Peperomia** (Pepper-Elder).—Ord. Piperacæ. Stove herbaceous perennials; creeping & erect; orn. foliage. First introduced 1815. Leaves, roundish or egg-shaped; green, variegated with white.

**CULTURE:** Compost, equal parts fibrous loam & peat with half a part sand. Pot, March or April. Position, small well-drained pots for erect species, shallow pans or beds for creeping species. Shade from sun. Water moderately in winter, freely in summer. Syringe daily, April to Sept. Temp., April to Sept. 60° to 75°; Sept. to April 55° to 65°. Propagate by cuttings of shoots or single joints with leaf attached inserted in sandy peat & plunged in bottom heat in temp. 65° to 75° in spring.

**SPECIES CULTIVATED:** *P. argyrea*, leaves green and grey, S. America; *mar-morata*, leaves, green and white, Brazil; *metallica*, leaves green, Peru; *nummulariæfolia*, round green leaves; *Sandersii*, leaves, green and white.

**Pepper Elder.**—See *Peperomia*.

**Peppermint** (*Mentha piperita*).—See *Mentha*.

**Peppermint-scented Geranium** (*Pelargonium tomentosum*).—See *Pelargonium*.

**Pepper-plant.**—See *Piper*.

**Perennial Candytuft.**—See *Iberis*.

**Perennial Flax** (*Linum perenne*).—See *Linum*.

**Perennial Honesty** (*Lunaria rediviva*).—See *Lunaria*.

**Perennial Sun-flower** (*Helianthus multiflorus*).—See *Helianthus*.

**Pereskia** (Barbados Gooseberry).—Ord. Cactacæ. Stove succulent perennials. First introduced 1696.

**CULTURE:** Compost, equal parts loam, peat & leaf-mould, one-fourth sand. Pot, March. Position, small, well-drained pots in light, dry part of stove, or in beds with shoots trained to dry wall. Water moderately Sept. to April, freely afterwards. Temp., Sept. to March 50° to 60°; March to Sept. 65° to 75°. *P. aculeata* and *P. Bleo* grown chiefly for stocks for grafting epiphyllums on. Propagate by cuttings of stem inserted in 2-in. pots filled with sandy soil & placed on a light, dry shelf in temp. 65° to 75° in spring. Allow one shoot only to grow for forming a stock, & train this to a stake fixed in soil until high enough, then graft.

**SPECIES CULTIVATED:** *P. aculeata*, 5 to 7 ft., W. Indies; *Bleo*, 8 to 10 ft., Mexico.

**Perilla.**—Ord. Labiatæ. Half-hardy orn.-foliated annual. First introduced 1770. Leaves, egg-shaped, pointed; green or dark bronzy purple, with fimbriated edges.

**CULTURE:** Sow seeds 1-16 in. deep in shallow boxes or pans filled with ordinary light soil placed in temp. of 65° to 75° in Feb. or March. Transplant seedlings when three leaves have formed singly into 2-in. pots, or 2 in. apart in shallow boxes. Keep in temp. 55° to 65° till May, then transfer to cold frame; gradually harden off & plant outdoors in June. Adapted for masses in borders or for lines in, or edgings to, beds.

**SPECIES CULTIVATED:** *P. nankinensis*, leaves bronzy purple, 1 to 3 ft., China; *nankinensis macrophylla crispa*, leaves with crisped edges.

**Periploca** (Silk-vine).—Ord. Asclepiadaceæ. Hardy deciduous twiner. First introduced 1597.

**CULTURE:** Soil, ordinary. Position, walls, arbours, summer-house or trellises in any aspect. Plant, Oct., Nov., Feb. or March. Prune away very weak or old distorted shoots only in March. Apply liquid manure occasionally during the flowering season. Propagate by cuttings inserted under bell-glass or hand-light outdoors, July to Oct.; layering shoots, Sept. or Oct.

**SPECIES CULTIVATED:** *P. græca*, green and brown, July, 10 to 15 ft., S.E. Europe.

**Peristeria** (Dove-Flower; Dove-Orchid).—Ord. Orchidaceæ. Stove evergreen orchids. First introduced 1826.

**CULTURE:** Compost, equal parts loam, leaf-mould, & fine crocks. Pot, March or when new growth begins. Position, well-drained pots or teak baskets. Water freely April to Sept.; keep nearly dry afterwards. Temp., Oct. to April 60° to 65°; April to Oct. 65° to 75°. Apply weak stimulants occasionally when plants are growing freely. Growing period, March to Oct. Resting period, Oct. to March. Flowers appear at base of new pseudo-bulb after resting. Propagate by division of pseudo-bulbs, March.

**SPECIES CULTIVATED:** *P. cerina*, yellow, fragrant, summer, Venezuela; *elata* (Dove Orchid), white and purple, fragrant, summer, Central America; *Lindenii*, green and purple, spring; *pendula*, yellow and white, fragrant, summer, British Guiana.

**Periwinkle.**—See *Vinca*.

**Pernettya** (Prickly Heath).—Ord. Ericaceæ. Hardy evergreen berry-bearing shrubs. First introduced 1825. Berries, crimson, blue, black, rose, cream; autumn.

**OUTDOOR CULTURE:** Soil, peaty. Position, moist rockeries or margins of open or shady shrubberies & beds. Plant, Sept. to Nov., or March to May.

**POT CULTURE:** Compost, two parts peat, one part leaf-mould & sand. Position, cold or cool greenhouses, or dwelling-rooms. Pot, Oct. or Nov. Water moderately. When berries shrivel or fall off, plants no further use for pot culture; plant outdoors.

**WINDOW BOXES:** Soil, ordinary. Position, sunny or shady. Plant, Sept. to Jan. Remove when berries shrivel. Propagate by seeds sown  $\frac{1}{2}$  in. deep in bed of peaty soil outdoors in autumn; layering shoots in March or April.

**SPECIES CULTIVATED:** *P. mucronata*, white, spring, 3 to 6 ft., Magellan Islands.

**Persea** (Avocado or Alligator Pear).—Ord. Laurineæ. Stove evergreen shrub. Fruit, pear-shaped, purplish when ripe, & edible. First introduced 1739.

**CULTURE:** Compost, equal parts loam & peat, & a little sand. Position, moist stove in pots. Pot in March. Water freely in summer, little in winter. Syringe daily in spring & summer. Temp., March to Sept. 75° to 85°; Sept. to March 55° to 65°. Propagate by seeds sown in above compost in a temp. of 85°; by cuttings in sand under bell-glass in a similar temperature in spring.

**SPECIES CULTIVATED:** *P. gratissima*, green, summer, 10 ft., W. Indies.

**Persian Cyclamen** (*Cyclamen persicum*).—See *Cyclamen*.

**Persian Iron-wood** (*Parottia persica*).—See *Parottia*.

**Persian Lilac** (*Syringa persica*).—See *Syringa*.

**Persian Lily** (*Fritillaria persica*).—See *Fritillaria*.

**Persian Tulip** (*Tulipa clusiana*).—See *Tulipa*.

**Peruvian Daffodil** (*Hymenocallis Amancœs*). — See *Hymenocallis*.

**Peruvian Heliotrope** (*Heliotropium peruvianum*). — See *Heliotropium*.

**Peruvian Nasturtium** (*Tropæolum tuberosum*).—See *Tropæolum*.

**Peruvian Swamp Lily** (*Zephyranthes candida*).—See *Zephyranthes*.

**Peruvian Trumpet-flower** (*Datura suaveolens*). — See *Datura*.

**Petasites** (Winter Heliotrope).—Ord. Compositæ. Hardy perennial herbs. Flowering & orn. foliage. Leaves, kidney or heartshaped, large, downy beneath, green.

**CULTURE**: Soil, ordinary. Position, shrubberies or woodland, partially shaded borders. Plant, Oct. or Nov. Propagate by division, Oct. or Nov.

**SPECIES CULTIVATED**: *P. fragrans*, white, fragrant, Feb., 6 in., Mediterranean Region.

**Petrea** (Purple Wreath).—Ord. Verbenacæ. Stove-flowering climber; deciduous. First introduced 1733.

**CULTURE**: Compost, equal parts loam, leaf-mould, peat & sand; little charcoal. Position, well-drained pot, bed, or border, with shoots trained up rafters or trellis in shady part of stove. Pot or plant, Feb. or March. Prune slightly, Feb. Water freely, March to Sept., moderately afterwards. Syringe daily March to Sept. Temp., March to Sept. 65° to 75°; Sept. to March 55° to 60°. Propagate by cuttings of firm young shoots inserted in sandy soil in well-drained pot under bell-glass in temp. 65° to 75°, spring & summer.

**SPECIES CULTIVATED**: *P. arborea*, violet, blue, summer, 12 ft., Colombia; *volubilis* (Purple Wreath), purple, summer, 12 ft., Trop. America.

**Petty Whin** (*Genista anglica*).—See *Genista*.

**Petunia**.—Ord. Solanacæ. Half-hardy herbaceous perennials first introduced 1823.

**INDOOR CULTURE**: Compost, two parts decayed turfy loam, one part well-rotted manure, quarter part silver sand. Position, sunny greenhouse or window. Shade only from bright sun. Pot, Feb. to June, moderately firm. Size of pots, 3, 5 & 6 in. Pinch out point of young shoots occasionally in spring to induce bushy growth. Prune shoots of old plants moderately close in Feb. or March. Water moderately Sept. to April, freely afterwards. No syringing required. Apply stimulants to established plants when flower buds form. Train shoots to stakes. Suitable liquid manures:  $\frac{1}{2}$  oz. nitrate of soda or sulphate of ammonia to 1 gallon of water, applied three or four successive times only;  $\frac{1}{2}$  oz. guano to a gallon of water applied twice a week; one-fourth liquid cow, horse, sheep, or deer dung to three-fourths water applied as advised for guano. Temp., March to Oct. 55° to 65°; Oct. to March. 40° to 50°.

**OUTDOOR CULTURE**: Soil, ordinary rich. Position, sunny beds, borders, vases, or trellises. Plant, June. Lift, Sept., & store in pots in greenhouse to furnish cuttings in spring. Water freely in dry weather. Place in cold frame in May to harden before planting out. Apply stimulants as above. Propagate by seeds sown on surface of a compost of equal parts good soil, leaf-mould & sand in a well-drained

pot or pan, in temp. 65° to 75° in Feb., March, or April; by cuttings of young shoots inserted in light sandy soil in pots, pans, or boxes in temp. 55° to 65° any time in spring.

**SPECIES CULTIVATED:** *P. nyctaginiflora*, white, Aug., 2 ft., annual, Argentina; *violacea*, purple, summer, perennial, Argentina. Last named parent of varieties grown in gardens.

**Peucedanum** (Parsnip; Dill).—Ord. Umbelliferae. Hardy biennial esculent-rooted vegetable.

**CULTURE:** Soil, rich ordinary previously trenched three spits deep, & not recently manured. Position, open & sunny. First Method: Draw drills 1 in. deep & 15 in. apart. Sow seeds in groups of three or four 12 in. apart, March or April. Thin seedlings when 2 in. high to one in each group. Second Method: Dig out a trench 30 in. wide, 18 in. deep. Put 3 in. decayed manure in bottom, then 6 in. of soil mixed with a little manure, & filled up with fine friable soil. Sow two or three seeds in groups a foot apart down centre of the trench. Reduce the seedlings when 2 in. high to one in each group. Third Method: Make holes 3 ft. deep, 8 in. in diameter at top & 15 in. apart each way. Fill the lower six inches of the hole with a compost of fine soil, decayed manure, & a pinch of superphosphate. The remaining space fill with similar material, but with the addition of soot & a pinch of salt. Sow the seeds in groups of three or four, & thin to one plant when 2 in. high. Suitable Artificial Manures: 2½ lb. kainit, 1 lb. sulphate of ammonia, 2½ lb. guano per square rod, to be applied half before sowing and remainder after crop is thinned. Lift & store roots only in event of bad weather; they retain their flavour better lifted as wanted from the ground. Seed retains its vegetative powers for one year only. Quantity required for a row 50 ft. long, 1 oz. Crop reaches maturity in 24 to 27 weeks. Seed take 15 to 20 days to germinate.

**MARKET CULTURE:** Soil, loam, deeply worked. Plough or trench deeply in autumn, but add no stable manure. Harrow surface over in Feb. Manures: 3 cwt. kainit per acre applied in autumn, & 4 cwt. superphosphate at sowing time. Sow in Feb. or March 1½ in. deep in rows 18 in. asunder. Seed required per acre, 9 lb. Thin seedlings to 9 in. apart. Lift as required after November. Market by the tally (60 roots). Cost of cultivation: "Singleing" or thinning, 5s. per acre; lifting, 26s. per acre. Average yield per acre, 500 to 600 bushels. Average returns per acre, £50 to £80.

**CULTURE OF DILL:** Soil, ordinary. Sow seeds 1 in. deep in drills 9 in. apart in March. Thin seedlings to 8 in. apart. Gather leaves as required for use.

**SPECIES CULTIVATED:** *P. graveolens* (Dill), yellow, July, 3 ft., India; *sativum* (Parsnip), yellow, July and Aug., 1 ft., Europe.

**Phacelia.**—Ord. Hydrophyllaceae. Hardy annuals. Good bee flowers. First introduced 1826.

**CULTURE:** Soil, ordinary rich. Position, sunny or partially shaded beds or borders. Sow seeds in patches or lines where required to grow in April. Thin seedlings 2 to 3 in. apart in June.

**SPECIES CULTIVATED:** *P. campanularia*, blue, summer, 8 in., California; Parryi, violet, summer, 1 ft., California; *tanacetifolia*, blue and pink, July, 2 ft., California; *Whitlavia* (Syn. *Whitlavia grandiflora*), blue, Sept., 1 ft., California.

**Phædranassa** (Queen Lily).—Ord. Amaryllidaceae. Stove and greenhouse flowering bulbous plants. First introduced 1800.

**CULTURE:** Compost, two parts sandy loam, one part leaf-mould & half a part sand. Position, well-drained pots near the glass March to Oct.; in dry place under stage Oct. to March. Pot, Feb. or March.

Water moderately March to May; freely May to Oct.; keep nearly dry Oct. to March. Apply stimulants, May to Aug. only. Temp. for stove species, 60° to 70° March to Sept.; Sept. to March 50° to 55°; for greenhouse species, 55° to 65° March to Sept.; 40° to 50° Sept. to March. Repot annually, removing old soil away from bulbs. Place in small pots first, shift into larger sizes later on. No shade required. Propagate by seeds sown  $\frac{1}{2}$  in. deep in well-drained pots or pans of sandy soil in temp. of 65° to 75° in spring; offsets removed & treated as old bulbs at potting time.

STOVE SPECIES: *P. Carmioli*, red and green, summer, 2 ft., Costa Rica; Lehmanni, scarlet, summer, 2 ft., Colombia.

GREENHOUSE SPECIES: *P. chloracea*, purple, rose, and green, summer, 18 in., Ecuador.

**Phænocoma.**—Ord. Compositæ. Greenhouse evergreen flowering shrub. First introduced 1789.

CULTURE: Compost, two parts good brown fibrous peat, one part silver sand & little charcoal. Position, well-drained pots in light part of greenhouse; no shade. Pot, March or April. Firm potting most essential. Prune straggling shoots only, moderately in Feb. or March. Water moderately Sept. to April, freely afterwards. No syringing required. Admit air freely in summer. Shoots can be trained round stakes or trellis. Propagate by cuttings of firm young shoots, inserted in well-drained pots of sandy peat under bell-glass in temp. of 55° to 65°, summer.

SPECIES CULTIVATED: *P. prolifera*, crimson, rose, and purple, May to Sept., 3 to 4 ft., S. Africa; *prolifera* *Barnesii*, superior form.

**Phaius.**—Ord. Orchidacæ. Stove terrestrial orchids. First introduced 1778.

CULTURE: Compost, equal parts leaf-mould, loam, & decayed cow manure. Pot, March or April. Position, well-drained pots in warm, moist part of stove during growing period; cool and dry part during resting period. Cover drainage with layer of moss, & do not allow compost to be higher than half-an-inch below rim. Water freely April to Sept.; moderately Sept. to Jan.; keep nearly dry Jan. to March. Temp., March to Sept. 65° to 85°; Sept. to Jan. 60° to 70°; Jan. to March 55° to 65°. Growing period: March to Oct. Resting period: Oct. to March. Flowers appear at base of new bulb soon after growth is completed. Propagate by division of pseudo-bulbs, March or April.

SPECIES CULTIVATED: *P. bicolor*, red, white, rose, and yellow, summer, 18 in., Ceylon; *Blumei*, brown, white, crimson, and yellow, spring, 2 ft., Java; *grandiflorus*, yellow, brown, rose, and purple, spring, 2½ ft., Trop. Asia and Australia; *Humboldtii*, rose, purple, brown, white, crimson, and yellow, summer, 18 in., Madagascar; *maculatus*, yellow and brown, spring, 2½ ft., N. India; *simulans*, white, rose, purple, yellow, and crimson, winter, 1 ft., Madagascar; *tuberosus*, yellow and purple, winter, 2 ft., Madagascar; *Wallichii*, white, orange, purple, and yellow, winter, 2 ft., India.

**Phalænopsis** (Moth Orchid; Indian Butterfly-plant). — Ord. Orchidacæ. Stove evergreen epiphytal orchids. First introduced 1836.

CULTURE: Compost, equal parts sphagnum moss, fibrous peat with fine particles removed, charcoal & clean potsherds. Position, shallow pans, small teak baskets or fixed to blocks of wood, suspended from roof of stove. Plant in pans or baskets or fix to blocks, Feb. to March. In fastening plants to blocks, first place layer of moss, then roots of plant, then another layer of moss, & secure firmly with copper wire. Pans to be well drained. Water daily, March to April; baskets or blocks by dipping in tepid water, once or twice a week, Oct to March. Moist atmosphere very essential in summer. Shade from sun. Temp.,



65° to 80° March to Oct.; Oct. to March 60° to 65°. Growing period, March to Oct.; resting period, Oct. to March. Flowers appear in axil of leaf. Admit moderate amount of air in summer. Propagate by division or by offsets removed from flowering stems when well rooted.

**SPECIES CULTIVATED:** *P. amabilis*, white and yellow, March to Oct., Malaya; *esmeralda*, rosy purple, summer, 6 in., Cochin China; *Lowii*, white and purple, summer, 4 in., Moulmein; *lueddemanniana*, white and purple, various periods, 8 in., Philippines; *sanderiana*, rose, purple, white, and yellow, winter, 8 in., Philippines; *schilleriana*, mauve, white, yellow, and red, spring, 1 ft., Philippines; *speciosa*, purple, orange and white, winter, 8 in., Andamans; *stuartiana*, white, purple and yellow, winter, 2 to 3 ft., Philippines; *violacea*, violet, rose and purple, summer, 8 in., Malaya. Numerous hybrids.

**Phalaris** (Gardener's Garters; Lady's Garters; Ribbon Grass; Silver Grass).—Ord. Gramineæ. Hardy annual & perennial flowering & ornamental grasses. Flowers, white, green, purple, borne in panicles; July. Leaves, green or variegated with white.

**CULTURE OF ANNUAL SPECIES:** Sow seeds  $\frac{1}{2}$  in. deep in April where required to grow. Soil, ordinary. Position, sunny.

**CULTURE OF PERENNIAL SPECIES:** Soil, ordinary. Position, sunny or shady borders. Plant, Oct. to April. Lift, divide, & replant every two or three years. Propagate perennials by seeds sown outdoors in April, transplanting seedlings following Oct.; division of plants, Oct. to April.

**ANNUAL SPECIES:** *P. canariensis* (Canary Grass), 18 in., S. Europe.

**PERENNIAL SPECIES:** *P. arundinacea variegata*, leaves striped with silvery white, 3 to 4 ft., N. Regions.

**Phaseolus** (Kidney Bean; Scarlet Runner; Haricot Bean; French Bean).—Ord. Leguminosæ. Stove and hardy perennials and annuals. Kidney or French Bean first introduced 1509; Runner Bean 1663.

**CULTURE OF SNAIL FLOWER:** Compost, equal parts loam & peat, little sand. Position, well-drained pots, shoots twining round trellis, posts, or pillars. Pot, Feb. Water moderately in winter; freely in summer. Temp., Sept. to March 50° to 55°; March to Sept. 55° to 65°. Propagate by seeds sown in light soil in temp. 65° in March; cuttings inserted in sandy soil under bell-glass in temp. 65° in April.

**CULTURE OF KIDNEY OR FRENCH BEAN:** Soil, light, rich, well manured & dryish. Position, open, sunny. Draw drills 3 in. deep & 18 in. apart. Sow seeds 4 in. apart end of April, middle of May, beginning of June & end of July. Thin seedlings when three leaves appear to 12 in. apart, replanting thinnings to form another row or rows. Water the drills thoroughly if soil be dry before sowing the seeds. Mulch with manure when seedlings appear. Water freely in dry weather. Apply stimulants when pods form. Plants bear earlier if sown along centre of early celery ridges than if sown in open garden.

**POT CULTURE:** Compost, two parts good soil, one part decayed manure. Size of pots, 8 in. Put 1 in. of crocks in bottom, next a layer of half-decayed tree leaves or fresh horse droppings, then enough compost to half fill the pot. Dibble seeds  $\frac{1}{2}$  in. deep, 2 in. apart. Moisten with tepid water. Water moderately when seeds sprout; freely when 1 in. high. Top-dress with equal parts soil & manure when plants reach rim of pot. Apply stimulants after top-dressing has been done a fortnight. Temp., 55° to 65°. Support shoots with small twigs. No shade required. Keep close to glass.

**CULTURE OF RUNNER BEANS:** Soil, light, deep, well manured. Position, sunny or partially shady garden, arbour, trellis, or fences; former best. Sow seeds first week in May 4 in. apart, and 3 in. deep

in drills 6 ft. asunder; in double rows 9 in. apart & 8 ft. asunder; in trenches 9 in. wide, 12 in. deep, containing 3 in. manure & 6 in. soil, seeds being dibbled 2 in. deep, 4 in. apart in two rows 6 in. asunder. Support plants with long stakes, or trellises, or strands of twine when 6 in. high, or nip off point of main shoot when 2 ft. high, and subsequent shoots when 6 in. long to ensure dwarf habit. Mould up those sown in drills. Mulch with manure. Water freely in dry weather, otherwise flowers will fall off. Apply stimulants freely when pods form. Suitable artificial manures: (1) 3 lb. salt; 1½ lb. each of nitrate of soda & superphosphate; 1 lb. kainit, half this to be applied to a square rod before sowing, remainder in June. (2) 2 lb. kainit; 5 lb. nitrate of soda; 9 lb. superphosphate; 1 lb. sulphate of iron per square rod, to be applied when the plants are 3 in. high. Liquid manures: ¼ oz. nitrate of soda to a gallon; 1 oz. guano to a gallon; one-third horse or cow manure diluted with two-thirds water, to be applied when pods form. Quantity of seed required for a row 50 ft. long: ½ pint of kidney beans; 1 pint of runner beans. Seeds retain their vegetative powers for three years, and germinate in 10 to 12 days. French beans reach maturity 14 weeks after sowing, and runner beans 16 weeks afterwards.

**MARKET CULTURE:** Soil, light, rich loam, deeply dug or ploughed and well manured the previous autumn. Position, sheltered fields. Sow kidney beans in April & May, 2 in. deep and 6 in. apart in rows 2½ ft. asunder; runner beans in May, 3 in. deep, 6 in. apart, in rows 3½ ft. asunder if to be grown dwarf; 5 ft. apart if to be staked. Quantity of seed to sow an acre: Kidney beans, 1 peck; runner beans, 3 bushels at 3½ ft., 2 bushels at 5 ft. Manures (per acre): 30 tons of farm-yard manure ploughed in in autumn; or 10 cwt. basic slag applied in autumn, 5 cwt. superphosphate applied in March, and 1 cwt. nitrate of soda four weeks after sowing seeds. Average yield per acre: 300 bushels (40 lb.) Average returns per acre, £30 to £40. Average price for picking per bushel, 5d. to 6d.

**STOVE SPECIES:** *P. caracella* (Snail Flower), lilac, summer, climbing perennial, India.

**HARDY SPECIES:** *P. multiflorus* (Scarlet Runner Bean), scarlet and white, summer, 8 to 12 ft., Mexico, perennial; *vulgaris* (Kidney, French, and Haricot Bean), white and lilac, summer, 2 to 3 ft., S. America, annual.

**Pheasant's-eye** (*Adonis autumnalis*).—See *Adonis*.

**Pheasant's-eye Narcissus** (*Narcissus poeticus*).—See *Narcissus*.

**Pheasant's-eye Pink** (*Dianthus plumarius annulatus*).—See *Dianthus*.

**Pheasant's-tail Grass** (*Apera arundinacea*).—See *Apera*.

**Phegopteris**.—See *Polypodium*.

**Philadelphus** (*Syringa*; Mock-orange). — Ord. Saxifragaceæ. Hardy deciduous flowering shrubs. First introduced 1596.

**CULTURE:** Soil, ordinary good. Position, sunny borders or forecourts. Plant, Oct. to Feb. Prune immediately after flowering, thinning out shoots that have bloomed only. Apply soap suds or liquid manure occasionally to old-established shrubs in summer.

**POT CULTURE:** Compost, two parts sandy loam, one part leaf-mould, & sand. Repot annually after flowering. Position, cold greenhouse, Dec. to May, or warm greenhouse, Dec. to April; outdoors afterwards in sunny spot; pots plunged to rim in coal ashes or soil. Water moderately indoors, freely outside. Propagate by cuttings of

young shoots inserted in sandy soil in temp. 55° in April, or in close cold frame outdoors in May; suckers or layers in spring.

**SPECIES CULTIVATED:** *P. coronarius* (Mock Orange), white, June, 10 ft., S. Europe; and its varieties, *foliis aureis* (golden-leaved), *argenteo-variegatis* (silver-leaved), *flore pleno* (double), and *nanus* (dwarf); *microphyllus*, white, summer, 3 ft., Colorado; *grandiflorus*, white, June, 6 ft., U. States; *gordonianus*, white, June, 10 ft., N.W. America; *Lemoinei*, white, June, 3 ft., hybrid.

**Philesia.**—Ord. Liliacæ. Half-hardy evergreen flowering shrubs. First introduced 1853.

**CULTURE:** Compost, equal parts peat, loam, & coarse silver sand. Position, against walls, or in pots, in cold or cool greenhouse; against walls or in sheltered nooks outdoors, S.W. of England or Ireland. Pot or plant, Feb. to April. Water freely, March to Oct., moderately afterwards. Syringe foliage daily in greenhouse, March to Oct. Prune directly after blooming. Apply weak stimulants once a week, May to Sept. Propagate by cuttings inserted in sandy peat under bell-glass in greenhouse in summer; suckers in spring.

**SPECIES CULTIVATED:** *P. buxifolia*, pink, June, 3 ft., Valdivia.

**Phillyrea** (Jasmine Box; Mock Privet).—Ord. Oleaceæ. Hardy evergreen shrubs. Flowering & ornamental foliage. First introduced 1597. Leaves, lance or egg-shaped, dark green.

**CULTURE:** Soil, ordinary. Position, sunny borders; sheltered corners N. England. Plant, Sept. to April. Prune straggly shoots only in April. Propagate by cuttings of firm shoots inserted in sandy soil in cold frame in Sept.; grafting on common privet in March.

**SPECIES CULTIVATED:** *P. angustifolia*, white, May, 8 to 10 ft., Mediterranean Region; *angustifolia rosmarinifolia*, rosemary-leaved; *decora*, white, May, 8 to 10 ft., Lazistan; *latifolia*, white, May, 20 ft., Mediterranean Region; *latifolia ilicifolia*, holly-leaved; *latifolia rotundifolia*, round leaved; *media*, white, May, 10 to 15 ft., Mediterranean Region; *media buxifolia*, box-leaved; *media olesefolia*, olive-leaved.

**Philodendron.**—Ord. Aroideæ. Stove evergreen dwarf or climbing plants. Orn. foliage. First introduced 1759. Leaves, heart, egg, or arrow-shaped, oblong; green.

**CULTURE:** Compost, equal parts peat, leaf-mould, loam, & silver sand. Pot or plant, Jan. to April. Position, dwarf kinds in pots; tall ones in beds or borders, with shoots trained up walls or pillars. Water freely all the year round. Syringe daily. Temp., March to Sept. 65° to 75°; Sept. to March 55° to 65°. Propagate by cuttings of stems inserted in light soil in temp. 75° at any time.

**SPECIES CULTIVATED:** *P. andreaunum*, climber, spathe black, purple, and creamy white, Brazil; *verrucosum* (Syn. *Lindenii*), dwarf, Colombia. Many other species of little interest.

**Phlebodium.**—See Polypodium.

**Phlomis** (Jerusalem Sage).—Ord. Labiatæ. Hardy perennials & evergreen shrubs. First introduced 1596.

**CULTURE OF PERENNIAL SPECIES:** Soil, ordinary. Position, sunny beds, borders, rockeries, or banks. Plant, Oct. to April. Lift, divide, & replant every three years.

**CULTURE OF SHRUBBY SPECIES:** Soil, good ordinary or sandy loam. Position, sunny well-drained borders or rockeries. Plant, Oct. to April. Mulch with decayed manure in March. Propagate by seeds sown in light soil in warm greenhouse in March, or sunny spot outdoors in April; herbaceous kinds also by division, Oct. or March; shrubs by cuttings inserted in cold frame in Aug.

**PERENNIAL SPECIES:** *P. cashmeriana*, lilac, July, 2 ft., Himalayas; *Herbaventi*, purple and violet, summer, 12 to 18 in., S. Europe.

SHRUBBY SPECIES: *P. fruticosa* (Jerusalem Sage), yellow, June, 3 to 4 ft., S. Europe.

**Phlox.**—Ord. Polemoniaceæ. Hardy & half-hardy annual and perennial herbs. First introduced 1725. Phloxes for garden cultivation are divided into four classes, viz., Alpines, Early-flowering or Tall, Late-flowering (tall), and Annual.

CULTURE OF ALPINE SPECIES: Soil, deep, rich sandy loam, containing a little leaf-mould or peat. Position, masses on, or as edgings to, sunny borders, or on ledges of rockeries. Plant, March to May. Lift & divide only when grown too large for the position they occupy; March.

POT CULTURE OF ALPINES: Compost, two parts sandy loam, one part leaf-mould, & half a part sand. Pot, March. Position, cold frame or greenhouse. Water moderately, Oct. to April; freely other times. Admit air freely always.

CULTURE OF EARLY AND LATE-FLOWERING KINDS: Soil, deep rich moderately heavy loam; light soils not suitable. Position, sunny or partially-shaded borders, former preferable. Plant, Oct., Nov., Feb., or March. Mulch liberally with decayed manure in March or April. Apply liquid manure frequently, May to Sept. Water freely in dry weather. Cut down stems in Oct. Lift, divide, & replant in fresh rich soil triennially.

POT CULTURE: Compost, two parts turfy loam, one part leaf-mould or rotten cow manure, & one part coarse sand. Position, cold partially-shaded greenhouse in summer; cold frame in winter. Pot, March. Water, freely, April to Oct., very little afterwards. Apply stimulants once a week, May to Sept.

CULTURE OF ANNUAL SPECIES: Sow seeds 1-16 in. deep in light soil in box, pan, or pot, in temp. 55° to 65°, March. Transplant seedlings 2 in. apart in boxes or pots, gradually harden off & plant outdoors, 6 in. apart, in rich soil, in sunny position, in June. Nip off point of main shoot after planting to induce bushy growth. Water freely in dry weather. Mulch with manure or cocoanut-fibre refuse.

POT CULTURE: Compost, two parts loam, one part decayed manure or leaf-mould & little sand. Plant four seedlings in 5-in. pot in April. Keep in temp. 55° until June, then place in cold frame or on outside window sill. Water freely. Apply stimulants when 3 in. high. Nip off points of shoots when 3 in. high. No repotting required. Propagate early & late kinds by seeds sown 1-16 in. deep in sandy soil in temp. 55° in autumn or spring; by cuttings of shoots obtained from base of old plants inserted in sandy soil in temp. 55° in March; by division of plants in Oct. or March; by cuttings of shoots covered  $\frac{1}{2}$  in. of soil in temp. 55° in March or April. Alpines by cuttings of shoots inserted in sandy soil in cold frame in July; division in March or April.

ALPINE SPECIES: *P. amoena*, rose, Jan., 6 in., N. America; *divaricata*, blue, May, 1 ft., N. America, and its varieties *alba* (white), *canadensis* (blue); *ovata*, rose, 1 ft., May, N. America; *procumbens*, lilac-blue, June, 6 in., hybrid; *reptans*, rosy purple, May, 3 in., N. America; *Stellaria*, white, June, 6 in., Illinois; *subulata* (Moss Pink), purple or white, May, 6 in., U. States. *Frondosa* (pink), *Nelsonii* (white), and *setacea* (rosy pink) are varieties of the last species.

TALL PERENNIAL SPECIES: *P. glaberrima*, red, July, 1 to 2 ft., N. America; and its variety *suffruticosa*, rose, spring, 1 to 2 ft., U. States, parent of the early-flowering phloxes; *maculata* (Wild Sweet William), purple, July, fragrant, 2 ft., N. America, one of the parents of late flowering phloxes; *paniculata*, purple and white, August, fragrant, 3 to 4 ft., U. States, another parent of late-flowering phloxes.

ANNUAL SPECIES: *P. Drummondii*, various colours, summer, 1 ft., Texas; and its varieties *cuspidata* (pointed petals), *fimbriata* (fringed petals), *flore pleno* (double), *grandiflora* (large flowered), and *nana* (dwarf).

**Phoenix** (Date Palm).—Ord. Palmaceæ. Stove palms. Ornamental foliage. First introduced 1597. Leaves, feather-shaped, green.

**CULTURE**: Compost, three parts good fibrous loam, one part old cow manure, & a little coarse sand. Position, well-drained pots or tubs in sunny part of stove. Pot, Feb. or March. Water moderately, Oct. to March; copiously, March to Oct. Syringe foliage morning & evening daily, April to Sept.; morning only, Sept. to April. Apply weak stimulants occasionally, May to Sept. Place a lump of sulphate of iron on surface of soil occasionally to keep foliage of a rich, healthy green hue. Temp., March to Sept. 65° to 75°; Sept. to March 55° to 65°. Propagate by seeds sown 1 in. deep in light sandy soil under bell-glass or in propagator in temp. 75°; March or April.

**SPECIES CULTIVATED**: *P. acaulis*, 8 to 12 ft., India; *canariensis*, 6 to 10 ft., Canary Isles; *dactylifera* (Date Palm), 80 to 100 ft., N. Africa; *humilis*, 3 to 6 ft., India; *reclinata*, 40 to 50 ft., S. Africa; *rupicola*, 15 to 20 ft., Himalayas; *sylvestris*, 30 to 40 ft., India.

**Phormium** (Common Flax Lily; New Zealand Flax). — Ord. Liliaceæ. Half-hardy evergreen perennial herbs. First introduced 1798. Leaves, green or variegated with purple, yellow, or white.

**INDOOR CULTURE**: Compost, two parts turfy loam, one part each of leaf-mould & sand. Position, pots, tubs, or beds in cold or warm greenhouse, conservatory, balcony, or dwelling-room. Pot, Feb. to April. Water copiously, April to Oct., moderately afterwards. May be stood outdoors in sunny position, June to Sept.

**OUTDOOR CULTURE**: Soil, light, deep loam. Position, margins of ponds or streams, isolated specimens on lawns, or in beds or borders S. & S.W. of England & Ireland only. In other districts plants must be put out in May, lifted in Oct., and stored in greenhouse until following May. Plant permanently in April or May. Water freely in dry weather. Protect those left outdoors all winter with straw or dried fern. Propagate by seeds sown  $\frac{1}{2}$  in. deep in pots of sandy soil in greenhouse or frame in March; by division of roots in April.

**SPECIES CULTIVATED**: *P. cookianum* (Syn. *P. Colensoi*), yellow and green, summer, 4 to 6 ft., New Zealand; *Hookeri*, green, summer, 5 ft., New Zealand; *tenax*, yellow, summer, 4 to 6 ft., New Zealand; and its varieties *purpureum* (leaves purple), *variegatum* (leaves yellow, green, and white), and *Veitchii* (leaves creamy white).

**Photinia** (Chinese Hawthorn; Californian May Bush). — Ord. Rosaceæ. Half-hardy evergreen flowering shrubs.

**INDOOR CULTURE**: Soil, two parts sandy loam, one part leaf-mould. Position, beds against back wall of cold or slightly heated sunny greenhouse. Plant, Oct. or April. Water moderately, Sept. to April, freely afterwards. Syringe daily, May to Sept. Prune straggling shoots in April. Propagate by seeds sown  $\frac{1}{2}$  in. deep in pots of light soil in cold greenhouse or frame, spring or autumn; cuttings of firm shoots inserted in sandy soil in cold frame or greenhouse, Aug.; layering in Oct.; grafting on common quince in March; budding on hawthorn in July.

**OUTDOOR CULTURE**: Soil, light deep loam. Position, against south walls S. & S.W. of England & Ireland only. Plant, Sept. to Nov., April, or May. Prune, April. Protect in severe weather with mats or straw hurdles.

**SPECIES CULTIVATED:** *P. arbutifolia* (Californian Maybush), white, July, 10 to 20 ft., California; *serrulata* (Chinese Hawthorn), white, spring, 15 ft., China. See also the genus *Eriobotrya*.

**Phrynium.**—Ord. Scitamineæ. Stove & herbaceous perennials. Orn. foliage. First introduced 1807. Leaves, green or variegated.

**CULTURE:** Compost, two parts fibrous peat, one part rich loam, one part sand. Position, well-drained pots in shady part of stove. Pot, Feb. or March. Water abundantly, March to Sept.; moderately, Sept. to Dec.; keep nearly dry afterwards. Syringe daily, March to Sept. Apply weak stimulants occasionally during summer. Temp., Feb. to Oct., 65° to 75°; Oct. to Feb., 55° to 65° Repot annually. Propagate by division of rhizomes in Feb. or March.

**SPECIES CULTIVATED:** *P. capitatum*, leaves green, 1 to 2 ft., India; *Griffithii*, leaves green, 2 ft., Malacca. See also the genus *Maranta*.

**Phygelis** (Cape Fig-wort).—Ord. Scrophulariaceæ. Half-hardy herbaceous perennial. First introduced 1855.

**CULTURE:** Soil, light rich ordinary. Position, sunny well-drained border at base of south wall S. & W. of England & Ireland only. Plant, March or April. Protect in winter by covering of ashes or dry fern fronds placed around base of stem. Lift, divide, & replant every three or four years. Propagate by seeds sown 1-16 in. deep in shallow pans or boxes filled with light rich soil & placed in a temp. of 55° to 65°, Feb. or March, transplanting seedlings outdoors, May or June; by cuttings of ripened shoots inserted in pots in propagator in greenhouse or cold frame in July or Aug.; division of roots, March or April.

**SPECIES CULTIVATED:** *P. capensis*, scarlet, summer, 3 ft., S. Africa.

**Phyllanthus.**—Ord. Euphorbiaceæ. Stove orn, foliaged plants. First introduced 1699. Leaves, oval or oblong, small, variegated with purple, white, yellow.

**CULTURE:** Compost, equal parts sandy loam & fibry peat, one part equal proportions of charcoal, dried cow manure, powdered brick, & coarse silver sand. Position, well-drained pots in shady part of stove. Pot, Feb. or March. Water moderately, Oct. to March, freely afterwards. Syringe morning & evening, April to Sept. Prune into shape, Jan. Temp., Sept. to March 55° to 65°; March to Sept. 65° to 75°. Propagate by cuttings of firm shoots, 2 to 3 in. long, inserted singly in small pots of sandy soil under propagator or bell-glass in temp. 75°, spring or summer.

**SPECIES CULTIVATED:** *P. atropurpureus*, leaves purplish, Commoro Isles, 6 to 8 ft.; *glaucescens*, leaves pinnate and green; *pulcher* (Syn. *Reidia glaucescens*), leaves green, Malaya, 3 to 4 ft. Last-named a pretty table plant.

**Phyllocactus.**—Ord. Cactaceæ. Greenhouse fleshy-stemmed plants with no leaves. First introduced 1710.

**CULTURE:** Compost, two parts light fibrous loam, one part of equal proportions of dried cow dung, leaf-mould, brick rubble, & silver sand. Position, well-drained pots close to glass in warm greenhouse or sunny window, Sept. to July; outdoors fully exposed to the sun, July to Sept. Pot, April. Repot every three years only. Firm potting & good drainage essential. Water freely, May to Oct.; keep nearly dry, Oct. to May. Apply weak stimulants to plants that have been potted a year once a-week, May to Sept. Syringe plants daily, May to Sept. Shade from sun for a few weeks after repotting, also for a short time after removal to open air. Temp., Oct. to April, 50° to 55°; April to Oct. 60° to 75°. Propagate by seeds sown 1-16 in. deep in light soil in pan or shallow box placed in temp. 65° to 75° in spring; by cuttings of stems dried in the sun for a day or two, then

inserted singly in 2-in. pots filled with light sandy soil, & placed on sunny shelf in greenhouse, April to Sept.

**SPECIES CULTIVATED:** *P. Ackermannii*, crimson, summer, 3 to 4 ft., Mexico; *anguliger*, yellow, fragrant, autumn, 1 to 2 ft., Mexico; *crenatus*, white, fragrant, summer, Honduras; *grandis*, white, fragrant, 2 to 3 ft., Honduras; *Hookeri*, white, fragrant, summer, 2 to 3 ft., Brazil; *latifrons*, creamy white, summer, 6 to 8 ft., Mexico; *phyllanthoides*, rose and white, summer, 1 to 2 ft., Mexico. Also numerous hybrids and seedlings.

**Phyllostachys** (Whangee Cane).—Ord. Gramineæ. Half-hardy orn.-foliated grasses. Nat. China, Japan. Ht. 4 to 12 ft. Inflorescence borne in panicles; summer. Foliage, narrow, lance-shaped, green. Habit of growth, graceful.

**CULTURE:** Soil, rich deep sandy loam. Position, moist sheltered borders S. & W. of England & Ireland only. Protect in winter with thick covering of dry fern fronds or litter in autumn. Plant, April or May. Propagate by division of plants in March or April.

**SPECIES CULTIVATED:** *P. aurea* (Syn. *Bambusa aurea*), leaves yellow and green; *Castillonis* (Syn. *Bambusa Castillonis*), leaves green and white; *fastuosa* (Syn. *Bambusa fastuosa*), leaves green; *marliacea* (Syn. *Bambusa marliacea*), leaves green; *mitis* (Syn. *Bambusa mitis*), leaves green; *nigra* (Syn. *Bambusa nigra*), leaves green; *viridi-glaucescens* (Syn. *Bambusa viridi-glaucescens*), leaves green.

**Phyllotæmium.**—See *Xanthosoma*.

**Phymatodes.**—See *Polypodium*.

**Physalis** (Ground or Winter Cherry; Red Winter Cherry; Cape Gooseberry; Peruvian Cape Gooseberry).—Ord. Solanaceæ. Greenhouse & hardy perennial herbs. Fruit of Cape Gooseberry edible, a globular berry inclosed in an inflated calyx.

**CULTURE OF HARDY SPECIES:** Soil, rich. Position, sunny well-drained border. Plant, March or April. Lift, divide, & replant in fresh soil every third year. Gather stems bearing fruits in Sept., & dry for winter decorations.

**CULTURE OF GREENHOUSE SPECIES:** Soil, two parts loam, one part well-decayed manure or leaf-mould & little sand. Position, singly in 5 or 6-in. pots, with shoots trained to sticks & placed close to front of sunny greenhouse, or planted in small beds, & shoots trained up back wall. Pot or plant Feb. or March. Water freely, April to Sept.; moderately afterwards. Apply weak stimulants, once or twice a week, May to Sept. Gather fruit when ripe & fully coloured. Propagate hardy species by seeds sown in sunny spot outdoors in April; by division of roots in March or April. Greenhouse species by seeds sown 1-16 in. deep in shallow pots or pans of light soil & placed in temp. 65° to 75°, Feb. or March; cuttings inserted singly in pots of light sandy soil placed in propagator or under bell-glass in temp. 65° to 75°, Jan. to April.

**HARDY SPECIES:** *P. Alkekengi* (Bladder Herb or Winter Cherry), white, summer, fruit scarlet, 1 ft., Europe; *Franchetii*, white, summer, fruit red, 18 in., Japan.

**GREENHOUSE SPECIES:** *P. peruviana* (Cape Gooseberry), white, summer, fruit purplish, 3 ft., Tropics; and its varieties *edulis* (fruit yellow), and *violacea* (fruit violet).

**Phyostegia** (False Dragon-head).—Ord. Labiatae. Hardy herbaceous perennials. First introduced 1683.

**CULTURE:** Soil, light ordinary. Position, cool partially-shaded borders. Plant, Oct., Nov., March, or April. Propagate by seeds sown  $\frac{1}{2}$  in. deep in light sandy soil outdoors in April; cuttings of young shoots inserted in light sandy soil under hand-light or in cold frame, April or May; division of roots, Oct., Nov., or May.

SPECIES CULTIVATED: *P. virginiana*, purple or flesh, June to Sept., 1 to 4 ft., N. America.

**Phyteuma** (Horned Rampion).—Ord. Campanulacææ. Hardy perennial herbs.

CULTURE: Soil, deep rich loam mixed with limestone grit & old mortar & leaf-mould or peat. Position, sunny rockeries for dwarf species; sunny borders for tall kinds. Plant, March or April. Lift, divide, & replant only when overgrown. Top-dress dwarf species with a mixture of peat, leaf-mould, lime, & a little old mortar annually in Feb. or March. Water freely in dry weather. Propagate by seeds sown in light sandy soil in shallow boxes in cold frame, Sept. or Oct.; transplanting seedlings in permanent positions, April or May; division of plants in March or April.

SPECIES CULTIVATED: *P. orbiculare* (Horned Rampion), blue, July, 6 to 12 in., Europe (Britain); *Michelii*, blue, summer, 1 to 2 ft., Europe; *Sieberi*, blue, summer, 6 to 8 in., Europe.

**Phytolacca** (Virginian Poke; Red-ink Plant; Pigeon-berry).—Ord. Phytolaccææ. Hardy herbaceous perennials. First introduced 1768. Flowers succeeded by deep purple berries in autumn. Leaves, broad, ovate, dark green, changing to rich purple in autumn.

CULTURE: Soil, good ordinary. Position, sunny or shady borders in woodlands, banks, or ferneries. Plant, Oct., Nov., March, or April. Propagate by seed sown  $\frac{1}{2}$  in. deep in sandy soil outdoors in spring or autumn; division of plants in Oct. or March.

SPECIES CULTIVATED: *P. acinosa* (Indian Poke), white, summer, 5 ft., Himalayas; *decandra* (Virginian Poke), white, summer, 5 ft., N. America.

**Picea** (Norway Spruce; Black Spruce).—Ord. Coniferæ. Hardy evergreen trees. Orn. foliage. Leaves, needle-shaped, spirally scattered. Cones, erect, cylindrical, thin-scaled. Timber, white, soft, fine-grained, used for sleepers, pit wood, headings for barrels, packing cases, etc. Average price per cubic foot, 6d. to 9d. Trees matured for felling at 80 years of age.

CULTURE: Soil, deep rich sandy loam. Position, high, dry, open lawns or shrubberies away from sea coast; Norway Spruce as a shelter hedge for fruit plantations, or as nurses to larch and forest trees. Plant, Oct. to April. No pruning required. Propagate by seeds sown  $\frac{1}{2}$  in. deep in sandy loam in temp. of 55° in March, or outdoors in April; cuttings inserted in sandy soil in cold frame or in pots under bell-glass or hand-light outdoors, Aug. or Sept.; layering shoots or branches in autumn; inarching or grafting in March. Quantity of seeds to sow bed 100 ft. square, 3 $\frac{1}{2}$  oz. Average price of seedlings, 3s. to 5s. per 1,000.

SPECIES CULTIVATED: *P. ajanensis*, 70 to 80 ft., Japan; *alba* (Syn. *Amies* *alba* and *canadensis*), 40 ft., N.E. America; *alcockiana*, 90 to 100 ft., Japan; *Engelmannii*, 80 to 100 ft., British Columbia; *excelsa* (Syn. *Abies excelsa*), Norway Spruce Fir, 80 to 100 ft., N. Europe; *morinda* (Syn. *Abies smithiana*), 80 to 100 ft., Himalayas; *nigra* (Black Spruce), 50 to 70 ft., N.E. America; *orientalis* (Syn. *Abies orientalis*), Caucasus; *pungens* (Syn. *Abies Menziesii*), Blue Spruce, 70 to 80 ft., California.

**Pickereel-weed** (*Pontedeira cordata*).—See *Pontedeira*.

**Picotee** (*Dianthus caryophyllus*).—See *Dianthus*.

**Piedmont Garlic** (*Allium pedemontana*).—See *Allium*.

**Piedmont Primrose** (*Primula pedemontana*).—See *Primula*.

**Pieris**.—Ord. Ericacææ. Hardy evergreen flowering shrubs. First introduced 1736.

OUTDOOR CULTURE: Soil, equal parts peat, leaf-mould, or silver



sand. Position, open sheltered borders, rockeries or bogs. Plant, Sept. to Nov., or March. Prune straggling shoots only moderately after flowering. Water freely in dry positions during summer.

**POT CULTURE:** Soil, equal parts peat, leaf-mould, & fine silver sand. Position, well-drained pots in cold greenhouse, Nov. to June; in shady position outdoors, June to Nov. Pot, Oct. or Nov. Water moderately, Nov. to March, freely afterwards. Propagate by seeds sown 1-16 in. deep in sandy peat in cold frame, Nov. or March; layering shoots in Sept.; division of plants, Oct. or Nov.

**SPECIES CULTIVATED:** *P. floribunda*, white, spring, 4 to 6 ft., Virginia; *formosa*, white, spring, 3 to 6 ft., Himalayas and China; *japonica*, white, spring, 3 ft., Japan; *japonica variegata*, variegated. The species above mentioned formerly belonged to the genera *Andromeda* and *Zenobia*.

**Pigeon-berry** (*Phytolacca decandra*).—See *Phytolacca*.

**Pigmy Daffodil** (*Narcissus minimus*).—See *Narcissus*.

**Pigmy Laburnum-tree** (*Cytisus Ardoini*).—See *Cytisus*.

**Pigmy Sun-flower** (*Actinella grandiflora*).—See *Actinella*.

**Pigmy Water Lily** (*Nymphæa pygmæa*).—See *Nymphæa*.

**Pilea** (Artillery or Pistol Plant; Stingless Nettle).—Ord. Urticaceæ. Stove perennial herbs. Orn. foliage. First introduced 1793. Flowers, insignificant; unexpanded buds burst when in contact with moisture & discharge pollen. Leaves, minute. Habit, graceful, fern-like.

**CULTURE:** Compost, equal parts loam, leaf-mould, & silver sand. Position, small pots in partially-shaded part of stove. Pot, Feb. to April. Water freely, April to Sept., moderately afterwards. Temp., Sept. to March 55° to 65°; March to Sept. 70° to 80°. Propagate by seeds sown on surface of light sandy soil, slightly covered with fine mould & placed in temp. 65° to 75° in spring; cuttings inserted singly in small well-drained pots of sandy soil in temp. 65° to 75°, Jan. to May; division of plants, Feb. or March.

**SPECIES CULTIVATED:** *P. muscosa*, 4 to 6 in., W. Indies.

**Pilumma**.—See *Tricophila*.

**Pimelea** (Rice-flower).—Ord. Thymelacææ. Greenhouse evergreen flowering shrubs. First introduced 1793.

**CULTURE:** Compost, three parts fibrous peat, one part turfy loam, half a part silver sand. Position, well-drained pots in light airy greenhouse. Prune moderately close immediately after flowering. Pot soon as new growth commences. Firm potting essential. Nip off points of shoots of young plants occasionally to induce bushy growth. Water freely, April to Oct., moderately afterwards. Grow in a moist atmosphere for a few weeks after potting, then gradually harden off & place in an airy greenhouse. Temp., Sept. to March, 40° to 50°; March to Sept., 55° to 65°. Propagate by seeds sown 1-16 in. deep in light sandy soil under bell-glass in temp. 55° to 65°, Feb. to May; cuttings of young shoots, 2 in. long, inserted in compost of one part peat, two parts silver sand, under bell-glass in temp. 55° to 65°, March or April.

**SPECIES CULTIVATED:** *P. ferruginea* (Syn. *P. decussata*), rose, May, 2 ft., Australia; *rosea*, pink, June, 3 ft., Australia; *spectabilis*, white and pink, May, 4 ft., Australia.

**Pimenta** (Allspice; Wild Clove; Pimento Bush).—Ord. Myrtaceæ. Stove evergreen flowering trees. First introduced 1759. Leaves, oval, coriaceous, hairy, aromatic. Berries, aromatic.

**CULTURE:** Compost, two parts sandy loam, one part leaf-mould, &

one part sand. Position, well-drained pots or beds with branches trained to wall. Pot, Feb. or March. Water moderately, Oct. to April, freely afterwards. Syringe, April to Aug. Prune straggling shoots moderately in March. Temp., Sept. to March 55° to 60°; March to Sept. 65° to 75°. Propagate by cuttings of firm shoots inserted in sandy soil under bell-glass in temp. 65° to 75° in summer.

SPECIES CULTIVATED: *P. acris* (Wild Clove), white and pink, May, 20 to 30 ft., W. Indies; *officinalis* (Allspice), white, summer, 10 to 20 ft., W. Indies.

**Pimento Bush** (*Pimento officinalis*).—See Pimento.

**Pimpernel**.—See *Anagallis*.

**Pinanga**.—Ord. Palmaceæ. Stove palms. Orn. foliage. First introduced 1848. Leaves, feather-shaped, green.

CULTURE: Compost, one part loam, two parts peat, half a part silver sand. Position, well-drained pots in shady lofty stove. Pot, Feb. or March. Water copiously, March to Oct.; moderately afterwards. Syringe twice daily, March to Sept.; once daily afterwards. Place few crystals of sulphate of iron on surface of soil occasionally to insure deep green foliage. Temp. March to Oct. 75° to 85°; Oct. to March 55° to 65°. Propagate by seeds sown  $\frac{1}{2}$  in. deep singly in 2-in. pots of sandy loam & peat under bell-glass in temp. 75° to 85° in spring.

SPECIES CULTIVATED: *P. coronata*, 15 ft., Celebes; *Dicksonii*, 12 to 16 ft., India; *disticha*, 6 ft., Malaya; *gracilis*, 10 to 15 ft., India; *maculata*, 10 to 12 ft., Philippines; *sanderiana*, 10 ft.

**Pincushion-flower** (*Scabiosa atropurpurea*).—See *Scabiosa*.

**Pine Apple** (*Ananas sativa*).—See *Ananas*.

**Pine Apple-flower** (*Eucomis punctata*).—See *Eucomis*.

**Pine Apple-scented Sage** (*Salvia rutilans*).—See *Salvia*.

**Pine Barren Beauty** (*Pyxidantha barbulata*).—See *Pyxidantha*.

**Pine Strawberry** (*Fragaria chilensis*).—See *Fragaria*.

**Pine-tree**.—See *Pinus*.

**Pinguicula** (Butter-wort; Bog Violet).—Ord. Lentibulariaceæ. Greenhouse & hardy perennial herbs. Plants belonging to the insectivorous class.

CULTURE OF GREENHOUSE SPECIES: Compost, equal parts fibrous peat, sphagnum moss, & clean crocks. Position, well-drained pots or shallow pans placed on inverted pots in saucer of water under bell-glass or hand-light in shade. Pot, March or April. Water freely, April to Sept., moderately afterwards. Admit air for a few minutes daily every morning by tilting bell-glass or hand-light. Temp. March to Oct. 55° to 65°; Oct. to March 45° to 55°.

CULTURE OF HARDY SPECIES: Soil, rich loam for *P. grandiflora*; peat & rough gravel for *P. alpina*; moist peat or peaty loam for *P. vulgaris*. Plant, March or April. Water freely in dry positions in summer. Mulch with thick layer of cocoanut-fibre refuse in May. Propagate by seeds sown on surface of shallow pans filled with equal parts of sphagnum moss, peat, & sand, placed under bell-glass & kept moist in temp. of 55° to 65°, Feb., March, or April; division of plants at potting or planting time.

GREENHOUSE SPECIES: *P. caudata*, carmine, autumn, 6 in., Mexico.

HARDY SPECIES: *P. alpina*, white and yellow, May, 4 in., Europe (Britain); *grandiflora*, blue and violet, summer, 4 in., Europe (Britain); *vulgaris* (Bog Violet), violet, summer, 4 to 6 in., Britain.

**Pink** (*Dianthus plumarius*).—See *Dianthus*.

**Pinus** (Fir; Deal; Pine Tree).—Ord. Coniferæ. Hardy orn.-leaved trees. Evergreen. Habit, free and picturesque. Leaves, needle-like, two to five in a whorl. Cones, conical and erect.

**CULTURE:** Soil and position, *P. austriaca*, *laricio*, *montana*, & *Pinaster* suitable for seaside gardens & ordinary soil; *P. austriaca* a good town tree; *P. austriaca*, *cembra*, *excelsa*, *Laricio*, *Pinaster*, *strobis*, & *sylvestris* suitable for chalky soils; *P. austriaca*, *halepensis*, *laricio*, *Pinaster*, *pumilo*, & *sylvestris* adapted for gravelly or sandy soils; others in good ordinary soil; *P. austriaca* good shelter tree. *P. sylvestris* will grow in the poorest soils, and on rocky slopes. Plant, Sept. to Nov. For shelter purposes plant 10 to 15 ft. apart.

Propagate by seeds sown  $\frac{1}{2}$  in. deep in pots filled with sandy loam, placed in cold greenhouse or frame in April, transplanting seedlings outdoors following spring; or  $\frac{1}{4}$  in. deep outdoors in April in bed of moist sandy soil, transplanting seedlings the next year; grafting on common species in April.

**USEFUL FACTS:** Average age, 200 years. Timber reaches maturity at 80 years. Average price per cubic foot, 6d. to 8d. Weight per cubic ft., 30 lb. Number of cubic ft. per ton, 74. Average price of trees: Two-year old, 3s. 6d.; three-year old, 4s. to 5s.; four-year-old, 8s. to 10s. per 1,000. Timber, close-grained and resinous, used in young state for props, staves, etc.; when matured for deal flooring, etc. Seeds ripe in Nov. Number of seeds per pound, 70,000. One pound of seed will yield 8,000 plants.

**SPECIES CULTIVATED:** *P. bungeana* (Lace Bark Pine), 70 ft., N. China; *cembra* (Stone Pine), 100 to 150 ft., Central Europe; *Coulteri*, 50 to 70 ft., California; *excelsa* (Bhotan Pine), 100 to 150 ft., Himalayas; *halepensis* (Jerusalem Pine), 50 ft., Mediterranean Region; *insignis* (Monterey Pine), 80 to 100 ft., California; *Laricio* (Corsican Pine), 100 to 150 ft., S. Europe; *Laricio nigricans* (Syn. *P. austriaca*), Black Pine, 70 to 100 ft., N. Europe; *pinaster* (Cluster Pine), 60 to 80 ft., Mediterranean Region; *pinex* (The Umbrella Pine), 40 to 60 ft., Mediterranean Region; *ponderosa*, 100 to 150 ft., British Columbia; *strotus* (Weymouth Pine), 100 to 150 ft., N. America; *sylvestris* (Scots Pine), 50 to 100 ft., N. Europe (Britain).

**Pinxter-flower** (*Rhododendron nudiflora*).—See *Rhododendron*.

**Piper** (Pepper Plant).—Piperaceæ. Stove & greenhouse evergreen shrubs. Orn. foliage. First introduced 1748. Leaves, large, green, or purple, marbled or blotched with white or bronze.

**CULTURE OF STOVE SPECIES:** Compost, two parts loam, one part leaf-mould, half a part sand. Position, well-drained pots in shade. Pot, Feb. to April. Prune slightly into shape, Feb. Water freely, April to Oct., moderately afterwards. Syringe twice daily, April to Sept.; once daily afterwards. Temp., March to Oct. 75° to 85°; Oct. to March 55° to 65°.

**CULTURE OF GREENHOUSE SPECIES:** Compost as for stove species. Position, well-drained pots in partial shade. Pot, March or April. Water moderately, Oct. to April; freely afterwards. Temp. March to Oct. 55° to 65°; Oct. to March 50° to 55°. Propagate by cuttings of half-ripened shoots inserted in small pots of sandy soil under bell-glass in temp. of 65° to 75°, March to July.

**STOVE SPECIES:** *P. betle* (Betle Pepper), green, climber, India; *nigrum* (Black Pepper), green, 4 to 6 ft., India.

**GREENHOUSE SPECIES:** *P. excelsum aureo-pictum*, leaves green and creamy white, 4 to 6 ft., Australia.

**Pipe-tree** (*Syringa vulgaris*).—See *Syringa*.

**Pipe Vine** (*Aristolochia Siphon*).—See *Aristolochia*.

**Piptanthus** (Nepaul Laburnum).—Ord. Leguminosæ. Hardy evergreen flowering shrub. First introduced 1821.

**CULTURE:** Soil, rich sandy loam. Position, warm sheltered shrubberies, S. & S.W. of England; against S. walls, N. of London. Plant, Sept., Oct., April, or May. Prune straggling shoots moderately after flowering. Propagate by seeds sown in sandy soil in cool greenhouse or cold frame in spring; cuttings of ripened shoots inserted in small pots of sandy soil under bell-glass or hand-light outdoors, Aug. or Sept.; layering shoots, Sept. or Oct.

**SPECIES CULTIVATED:** *P. nepalensis*, yellow, summer, 5 to 10 ft., Himalayas.

**Pistachio-nut** (*Pistacia vera*).—See *Pistacia*.

**Pistacia** (*Pistachio-nut Tree*; *Mastich Tree*).—Ord. Anacardiaceæ. Hardy evergreen & deciduous trees. Flowering & orn. foliage. First introduced 1656. Leaves, unequally feather-shaped, green; reddish in young state.

**CULTURE:** Soil, deep rich sandy loam. Position, sheltered shrubberies S. & S.W. England; against S. walls, N. of London. Plant evergreen species, Sept., Oct., April, or May; deciduous species, Nov. to Feb. Prune evergreen species, April; deciduous species, Nov. to Feb. Propagate by cuttings inserted in sandy soil in cold frame or under hand-light, Sept. or Oct.; layering in Sept.

**SPECIES CULTIVATED:** *P. atlantica*, leaves pinnate, evergreen, 40 ft., Canary Isles; *Lentiscus* (*Mastich Tree*), leaves pinnate, 20 ft., S. Europe; *Terebinthus* (*Turpentine Tree*), yellow, June, 30 ft., S. Europe; *vera* (*Pistachio Nut Tree*), brown, April, 20 ft., Syria.

**Pistia** (*Tropical Duck Weed*; *Water Lettuce*).—Ord. Aroideæ. Stove aquatic perennial. First introduced 1843. Flowers, green, borne on spadix at base of leaves. Leaves, wedge-shaped, notched, pale green, hairy.

**CULTURE:** Soil, rich loam. Position, shallow tub or tank in stove. Place 2-in. layer of soil on bottom of tub or tank & plant on surface of water. Replenish with tepid water occasionally. Add fresh soil annually. Temp., March to Oct. 70° to 85°; Oct. to March 60° to 70°. Propagate by offsets.

**SPECIES CULTIVATED:** *P. stratiotes*, 1 to 3 in., Jamaica.

**Pisum** (*Garden Pea*; *Sugar Pea*; *Crown or Mummy Pea*).—Ord. Leguminosæ. Hardy annuals. Edible seeded & podded vegetables.

**CULTURE OF GARDEN PEAS:** Soil, deep, rich calcareous loam, previously trenched three spits deep & containing a thick layer of manure between first and second spit. Position, open sunny, protected from N. & N.E. & E. winds. Suitable Manures: Solid—Horse dung or peat-moss litter for heavy soils; cow or pig dung for light or sandy soils. Chemical—(1) Kainit 2 lb., nitrate of soda 5 lb., superphosphate of lime 9 lb., half of each to a square rod before sowing, remainder when plants are 6 in. high; (2) nitrate of soda 1½ lb., kainit 1½ lb., superphosphate 1½ lb., salt 3 lb., applied same as No. 1; (3) native guano 6 lb. to a square rod applied before sowing, & 6 lb. when plants are 3 in. high; (4) Peruvian guano 1 lb. for square rod before sowing, also 1 lb. when plants are 3 in. high. Liquid—Horse & cow urine diluted with two-thirds water; nitrate of soda ½ oz. to gallon, all to be applied when ground is moist only & when pods have just formed. Direction of rows: E. to W. or S.E. to N.W. for early sorts; N. to S. for main crops. Depth of drills, 2½ to 3 in.; width, 6 to 9 in. Distance apart for sowing the seeds: 1 in. each way for dwarf sorts; 2 in. for medium kinds; 3 in. for tall vars., arranged in

two rows, thus: . . . . . Distance between rows: 18 in. for varieties not exceeding 2 ft. in height; 3 ft. for those not more than 4 ft. high; 6 to 8 ft. for those growing 5 to 6 ft. high. Sow earliest sorts on south border, Nov. & Jan., or in 4½ in. pots in temp. 55° in Jan., hardening plants off when 3 in. high in cold frame & planting outdoors in Feb. or March; second early sorts in open garden in Feb. & March; main-crop, April & May; late crops, June & July. Draw mould up to each side of row when plants are 6 in. high & place supports to them. Mulch to width of 15 in. on each side of row with manure. Water copiously in dry weather. Nip off points of shoots of tall kinds when 4 ft. high, & again when 5 ft. high. Early peas, seeds round, late ditto, wrinkled (marrowfats). Quantity of seed required for a row 50 ft. long: 1 pint. Seeds retain their vegetative powers for 3 to 4 years, and seeds germinate in 10 to 20 days. Crop reaches maturity in 18 to 24 weeks. Round-seeded sorts germinate more quickly than wrinkled kinds. Protect seeds from mice and birds by soaking them in paraffin oil for 4 hours before sowing.

**MARKET CULTURE:** Soil, deeply worked and well-manured. Manure and trench or plough deeply previous autumn. Position, sheltered for early crops. Manures: Basic slag, 8 to 10 cwt. and kainit 2 cwt. per acre, applied in autumn. When plants appear, apply 3 cwt. superphosphate per acre, & a few weeks later 1 cwt. nitrate of soda per acre. On poor soils apply 10 tons of farmyard manure per acre in autumn, and superphosphate & nitrate of soda in spring. Sow early sorts, Nov. to Jan.; mid-season, Feb. & March; late, April. Distances to sow: 3 in. deep, 2 to 3 in. apart in rows 2½ to 3 ft. asunder. Quantity to sow an acre: 3 bushels. Cost of cultivation per acre: Hoeing, 3s.; brushing haulm, 3s. 6d.; picking per bushel (32 lb.), 4d. to 6d. Average yield per acre, 150 bushels. Average return per acre, £20 to £30. Weight of seeds per bushel, 56 to 63 lb.

**CULTURE OF SUGAR PEAS:** Soil, same as for garden peas. Sow in March or April, 2½ in. deep in drills 6 in. wide & 6 ft. apart, & earth up & stake in the usual way. Gather pods when fully developed & cook like French beans. Rotation: Peas may follow potatoes, carrots, parsnips, turnips, broccoli, or cabbage; & be succeeded by cabbage, turnips, spinach, or celery.

**CULTURE OF MUMMY PEA:** Soil, ordinary. Position, open sunny borders. Sow seeds ½ in. deep, three or four in a 3-in. pot filled with light soil & placed in warm window or greenhouse in March, transplanting seedlings outdoors in May; or 2½ in. deep in open ground in April. Support with stakes when 6 in. high. Water copiously in dry weather. Apply stimulants occasionally when flowers appear.

**SPECIES CULTIVATED:** *P. sativum* (Garden Pea), parent of cultivated varieties, white or red, summer, Europe, etc.; *sativum saccharatum* (Sugar Pea), white or red, summer, Europe; *elatus* (Mummy or Crown Pea), bluish, summer, 4 to 6 ft., Mediterranean Region. The statement that seeds of latter were originally found in an Egyptian mummy is a purely legendary one.

**Pitcairnia.**—Ord. Bromeliaceæ. Stove perennial herbs. First introduced 1777. Leaves, narrow or sword-shaped; margins prickly.

**CULTURE:** Compost, equal parts fibrous loam, rough peat, & leaf-mould. Pot, March. Water freely always. Good drainage essential. Temp., Sept. to March 60° to 70; March to Sept. 70° to 80°. Propagate by offshoots inserted in small pots at any time.

**SPECIES CULTIVATED:** *P. andreana*, yellow and red, summer, 1 ft., Vene-

zuela and Colombia; *aphelandraflora*, red, summer, 1 ft., Brazil; *fulgens*, red, May, 1 to 2 ft., Guadeloupe; *mucosa*, red, winter, 1 ft., Brazil; *violacea*, violet, summer, 1 ft., Brazil. There are 40 or more other species of little merit.

**Pitcher-plants** (*Sarracenias* and *Nepenthes*), which see.

**Pittosporum** (Parchment-bark).—Ord Pittosporiaceæ. Greenhouse evergreen & half-hardy flowering shrubs. First introduced 1783.

**CULTURE OF GREENHOUSE SPECIES:** Compost, two parts fibrous loam, one part fibrous peat, half a part silver sand. Position, pots or tubs in light airy sunny greenhouse. Pot, March or April. Prune straggling shoots moderately immediately after flowering. Water moderately, Sept. to April, freely afterwards. Syringe occasionally, except when in flower, during summer. Temp., Oct. to April, 40° to 50°; April to Oct. 60° to 70°.

**CULTURE OF HALF-HARDY SPECIES:** Soil, deep sandy loam. Position, well-drained border against S. walls S. & S.W. England; pots in cold greenhouse, Oct. to May; sunny border outdoors, May to Oct., N. of London. Plant, March or April. Propagate by cuttings of moderately firm shoots, 2 to 3 in. long, inserted singly in small pots of sandy soil under bell-glass in shade in temp. 55° to 65° in summer.

**GREENHOUSE SPECIES:** *P. eriocarpum*, yellow, fragrant, summer, 6 to 10 ft.; *viridiflorum*, greenish yellow, June, 6 ft.

**HALF-HARDY SPECIES:** *P. crassifolium* (Parchment-bark), purple, spring, 10 ft., New Zealand; *tobira*, white, fragrant, summer, 10 to 12 ft., Japan and China.

**Placea.**—Ord. Amaryllidaceæ. Greenhouse bulbs. Deciduous. First introduced 1840.

**CULTURE:** Compost, two parts sandy loam, one part well-decayed cow manure or leaf-mould, & one part coarse sand. Pot, Aug. or Sept., placing point of bulb just below surface of soil in a 4½-in. pot or three in a 6-in. pot. Good drainage essential. Plunge pots to rim in coal ashes or cocoanut-fibre refuse in cold frame, & protect from frost until Dec., then remove to greenhouse. Water moderately from time growth begins until leaves decay, then keep quite dry. Repot annually in Aug. Season of growth, Jan. to Aug.; season of rest, Aug. to Jan. Temp., Dec. to April 50° to 55°; Ap. to Aug. 60° to 70°; Aug. to Dec. 35° to 40°. Propagate by offsets in Aug.

**SPECIES CULTIVATED:** *P. Arzæ*, yellow and purple, summer, 1 ft.; *grandiflora*, white and crimson, summer, 1 ft.; *ornata*, white and red, 1 ft. All natives of Chili.

**Plane-tree.**—See *Platanus*.

**Plantain** (*Musa sapientum paradisiaca*).—See *Musa*.

**Plantain Lily.**—See *Funkia*.

**Plantain-tree** (*Musa sapientum paradisiaca*).—See *Musa*.

**Platanus** (Plane-tree).—Ord. Platanaceæ. Hardy deciduous trees. Orn. foliage. First introduced 1548. Leaves more or less deeply lobed, coriaceous, pubescent; green or variegated.

**CULTURE:** Soil, deep rich moist loam. Position, parks, avenues, etc., for Oriental Plane; streets, squares in towns, or in open gardens or shrubberies in country for London Plane. Plant, Oct. to March. Prune into shape when desirable, Oct. to Feb. Plenty of moisture at roots essential; dry soil not suitable. Propagate by seeds simply pressed into surface of soil in moist position outdoors in autumn: cuttings of shoots 6 to 8 in. long inserted in moist soil in sheltered position in Nov.; layering shoots in autumn or spring.

**SPECIES CULTIVATED:** *P. acerifolia* (London Plane), 50 to 70 ft., Orient; *occidentalis* (Western Plane), 70 ft., N. America; *orientalis* (Oriental Plane), 60 to 70 ft., Orient.

**Platycerium** (Elk's-horn Fern; Stag's-horn Fern). — Ord. Filices. Stove & greenhouse evergreen ferns. First introduced 1808. Fronds more or less broad, divided; resembles stag's horn.

**CULTURE:** Compost, equal parts fibrous peat & sphagnum moss. Position, blocks of wood suspended from roof or sides of greenhouse or stove. Place plant on block of wood, cover roots with layer of moss & peat, & secure in position by means of copper wire. Top-dress annually with fresh peat & moss in Feb. or March. Water copiously, April to Sept.; moderately Sept. to March. Shade from sun. Temp. for stove species, 55° to 65°, Oct. to March; 70° to 80°, March to Oct.; greenhouse species, 45° to 55°, Oct. to March; 60° to 70°, March to Oct. Propagate by offsets in Feb. or March; also by spores sown in sandy peat in temp. 75° to 85°.

**STOVE SPECIES:** *P. grande*, Tropical Asia; *Wallichii*, Malaya; *Willinckii*, Java.

**GREENHOUSE SPECIES:** *P. alcornae* (Common Elk's-horn Fern), Australia; *alcornae Hillii*, fronds much forked.

**Platyclinis**. — Ord. Orchidaceæ. Stove epiphytal orchids. First introduced 1836.

**CULTURE:** Compost, equal parts fibrous peat & sphagnum. Position, well-drained pots in plant stove. Water moderately Sept. to April, freely afterwards. Temp., Oct. to March 60° to 65°; March to Oct. 70° to 85°. Flowers appear in centre of new growth. Resting period, winter. Propagate by dividing pseudo-bulbs & plants when beginning to grow.

**SPECIES CULTIVATED:** *P. filiformis* (Syn. *Dendrochilum filiformis*), yellow, fragrant, June to Aug., Philippines; *glumacea* (Syn. *Dendrochilum glumaceum*), greenish white, fragrant, spring, Philippines.

**Platyodon** (Chinese Bell-flower).—Ord. Campanulaceæ. Hardy herbaceous perennial. First introduced 1782.

**CULTURE:** Soil, ordinary rich. Position, sunny well-drained borders or rockeries. Plant, Oct. to April. Propagate by seeds sown 1-16 in. deep in sandy soil in temp. 55°, March or Aug.; cuttings, 3 in. long, of young shoots, inserted singly in small pots of light sandy soil in temp. 55° in March or April; division of plants in April.

**SPECIES CULTIVATED:** *P. grandiflorum*, blue, July, 1 ft., China and Japan; and its varieties *alba* (white), and *Mariesii* (white and dwarf).

**Platylobium** (Flat Pea). — Ord. Leguminosæ. Greenhouse flowering shrubs. Evergreen. Nat. Australia. First introduced 1790.

**CULTURE:** Compost, three parts peat, one part loam & little silver sand. Position, well-drained pots in light airy greenhouse. Pot, Feb. or March. Nip off points of young shoots in spring to induce bushy growth. Water freely, April to Sept.; moderately, Sept. to April. Temp., March to Sept. 55° to 65°; Sept. to March 45° to 50°. Stand plants outdoors from July to Sept. to mature flowering shoots for following year. Propagate by seeds sown 1-16 in. deep in well-drained pots of sandy peat in temp. of 55° to 65° in March or April; cuttings inserted in sandy soil under bell-glass in temp. 55°, April to July.

**SPECIES CULTIVATED:** *P. formosum*, yellow, summer, 3 to 4 ft.; *gracile*, yellow, June, 3 ft.; *obtusangulum*, yellow and red, May, 1 ft.

**Platyloma**.—See *Pellæa*.

**Platystemon** (Californian Poppy; Cream Cups).—Ord. Papaveraceæ. Hardy annual. First introduced 1833.

**CULTURE:** Soil, good ordinary. Position, sunny beds, borders, or

rockeries. Sow seed  $\frac{1}{2}$  in. deep in patches where required to grow in April. Thin seedlings 1 to 2 in. apart when  $\frac{1}{2}$  in. high. Water freely in dry weather. Mulch with decayed manure or cocconut-fibre refuse in June.

**SPECIES CULTIVATED:** *P. californicus*, yellow, July, 1 ft., California.

**Pleione.**—See *Cœlogyne*.

**Pleroma.**—See *Tibouchina*.

**Pleurisy-root** (*Asclepias tuberosa*).—See *Asclepias*.

**Pleurothallus.**—Ord. Orchidaceæ. Stove epiphytal orchids. First introduced 1826

**CULTURE:** Compost, sphagnum moss only. Position, small blocks of wood suspended from roof. Place layer of moss on block, then roots of plant, then another layer of moss, & secure with copper wire. Water abundantly, March to Oct., moderately afterwards. Shade from sun. Syringe blocks 2 or 3 times daily in summer; once daily in winter & autumn. Temp., Nov. to March 45° to 55°; March to Nov. 55° to 60°. Propagate by division, Feb. to March.

**SPECIES CULTIVATED:** *P. barberiana*, yellow, purple and white, spring, 4 to 6 ft., S. America; *ornata*, yellow, purple and white, April, Trop. America; *punctulata*, yellow, purple and brown, spring, Colombia; *Roezii*, blood purple, spring, Colombia.

**Plum.**—See *Prunus*.

**Plumbago** (Leadwort; Cape Leadwort).—Ord. Plumbaginaceæ. Stove & greenhouse evergreen flowering shrubs. First introduced 1596.

**CULTURE OF STOVE SPECIES:** Compost, equal parts fibrous peat & leaf-mould, half a part each loam & sand. Position, pots, shoots trained to stakes or balloon trellis, or in borders, shoots trained to wall in light part of stove. Pot, Feb. to April. Prune shoots moderately in Jan. Water freely, April to Oct., moderately afterwards. Syringe daily, March to Sept. Shade from sun. Temp., March to Oct. 75° to 85°; Oct. to March 55° to 65°.

**CULTURE OF GREENHOUSE SPECIES:** Compost, two parts fibrous loam, half a part each of silver sand. Position, pots, shoots trained to stakes or trellis; borders with shoots trained up rafters, pillars, or walls in light part of house. Pot or plant, Feb. or March. Prune shoots to within 1 in. of base immediately after flowering; flowers borne on points of shoots of current year's growth. Water copiously, March to Sept.; moderately, Sept. to Nov.; very little afterwards. Syringe daily until flowering begins. Apply weak stimulants twice a week during flowering period. Shade only from very bright sun. Temp., March to Oct. 55° to 65°; Oct. to March 40° to 50°. Propagate by seeds sown on surface of sandy peat & slightly covered with fine sandy soil in temp. 65° to 75° in Feb. or March; cuttings of side shoots, 2 to 3 in. long, inserted singly in 2-in. pots of sandy peat in temp. 60° to 70°, Feb. to Aug.

**STOVE SPECIES:** *P. rosea*, rose, winter, 2 ft., India.

**GREENHOUSE SPECIES:** *P. capensis*, blue, summer, 10 to 15 ft., S. Africa; *capensis alba*, white.

**HARDY SPECIES:** See *Ceratostigma*.

**Plume Poppy** (*Bocconia cordata*).—See *Bocconia*.

**Plum Fir** (*Prumnopitys elegans*).—See *Prumnopitys*.

**Plumiera** (Frangipanni Plant).—Ord. Apocynaceæ. Stove evergreen flowering shrubs. First introduced 1690.

**CULTURE:** Compost, two parts sandy loam, one part fibry peat, half a part silver sand. Position, well-drained pots in light stove.



Pot, Feb. to April. Prune straggling shoots moderately close immediately after flowering. Water freely, March to Oct., moderately afterwards. Syringe daily, March, & until flowers appear. Temp., March to Sept. 70° to 80°; Sept. to March 65° to 75°. Propagate by cuttings of ripe shoots, 2 to 3 in. long, inserted in small pots filled with sand under bell-glass in temp. 65° to 75° in Feb.

SPECIES CULTIVATED: *P. acutifolia*, pink and white, fragrant, July, 15 to 20 ft., Mexico; bicolor, white, and yellow, July, 10 to 15 ft., S. America; *rubra* (Frangipanni Plant), red, July, 10 to 15 ft., Trop. America.

**Plumy Bleeding Heart** (*Dicentra eximia*.—See *Dicentra*.)

**Poa** (Variegated Meadow Grass).—Ord. Gramineæ. Hardy perennial flowering & orn.-foliaged grass.

CULTURE: Soil, ordinary. Position, edgings to sunny beds or borders, or in clumps in borders. Plant, Oct., Nov., March, or April.

POT CULTURE: Compost, two parts good ordinary soil, one part leaf-mould, half a part sand. Position in 4 or 5-in. pots in cold or cool greenhouse or window. Pot, March or April. Water moderately, Oct. to March, freely afterwards. Repot & divide annually. Propagate by division of plants, March or April.

SPECIES CULTIVATED: *P. trivalis albo-vittata*, leaves edged with white, 6 in., Europe (Britain).

**Pod Fern** (*Ceratopteris thalictroides*).—See *Ceratopteris*.

**Podocarpus** (*Totara* Pine).—Ord. Coniferæ. Hardy & half-hardy evergreen trees. Orn. foliage. First introduced 1774.

CULTURE OF HARDY SPECIES: Soil, good, deep loam, well-drained. Position, sunny sheltered lawns. Plant, Oct., Nov., March, or April.

CULTURE OF HALF-HARDY SPECIES: Compost, two parts loam, one part leaf-mould. Position, pots or tubs in light airy greenhouse. Pot or plant, March or April. Water freely, May to Sept., moderately afterwards. Temp., Sept. to April 45° to 55°; April to Sept. 55° to 65°. Propagate by cuttings of firm young shoots inserted in small pots of sandy loam under bell-glass in temp. 60° to 70°, summer.

HARDY SPECIES: *P. alpina*, 10 ft., Tasmania.

HALF-HARDY SPECIES: *P. pectinata*, 12 ft., New Caledonia; *totara* (*Totara* Pine), New Zealand.

**Podolepis**.—Ord. Compositæ. Hardy annuals & half-hardy perennials. Nat. Australia. First introduced 1803.

OUTDOOR CULTURE OF ANNUAL SPECIES: Soil, ordinary. Position, sunny well-drained beds or borders or rockeries. Sow seeds 1-16 in. deep in well-drained pots of light soil in temp. of 55° to 65° in March, transplanting seedlings outdoors in flowering position, end of May; or sow outdoors in sunny position end of April where required to grow & flower, thinning seedlings to 3 in. apart when  $\frac{1}{2}$  in. high.

POT CULTURE OF ANNUAL SPECIES: Compost, equal parts sandy loam, leaf-mould, & sand. Fill 5-in. pots to within  $\frac{1}{2}$  in. of rim moderately firm with above compost; sow seeds thinly in March, & cover with sprinkling of fine soil. Place pots in temp. of 55° till seedlings have formed three or four leaves, when remove to cool greenhouse or cold frame. Thin seedlings to 1 in. apart. Water moderately until plants are 3 in. high, then freely.

CULTURE OF HALF-HARDY PERENNIAL SPECIES: Soil, sandy loam. Position, sunny rockery or borders, May to Sept. Lift & repot in Sept., & store away in greenhouse until following May. May be

successfully treated as an annual also. Propagate half-hardy perennial species by division of plants in spring.

ANNUAL SPECIES: *P. acuminata*, yellow, summer, 1 ft.; *aristata*, yellow and pink, summer, 1 ft.

PERENNIAL SPECIES: *P. gracilis*, purple, lilac, and white, summer, Aug., 3 ft.

**Podophyllum** (Duck Foot; May Apple).—Ord. Berberidaceæ. Hardy herbaceous perennials. Orn. foliage. First introduced 1664. Leaves, large, shield-shaped; divided, ornamental.

CULTURE: Soil, moist peat. Position, partially-shaded borders, woods, marshes, or bog gardens. Plant, March or April. Propagate by division of roots in March or April.

SPECIES CULTIVATED: *P. Emodi* (Himalayan May Apple), white, May, 1 ft., Himalayas; *peltatum* (May Apple), white, May, 6 in., N. America.

**Poet's Daffodil** (*Narcissus poeticus*).—See *Narcissus*.

**Poet's Laurel** (*Laurus nobilis*).—See *Laurus*.

**Poet's Narcissus** (*Narcissus poeticus*).—See *Narcissus*.

**Poinciana**.—Ord. Leguminosæ. Stove evergreen trees. Flowering & orn. foliage. First introduced 1691. Leaves, fern-like, green, graceful.

CULTURE: Compost, two parts peat or loam, one part leaf-mould, half a part silver sand. Position, pots in light part of stove or outdoors during July & Aug. Pot Feb. or March. Water freely, March to Oct., moderately afterwards. Temp., March to Oct. 70° to 85°; Oct. to March 55° to 65°. Propagate by seeds sown in light sandy soil in temp. of 75° to 85° in spring; cuttings of short young shoots inserted singly in small pots filled with pure sand under bell-glass in temp. 75° to 85° in summer.

SPECIES CULTIVATED: *P. elata*, yellow, summer, 10 to 15 ft., Trop. Africa; *regia*, crimson, summer, 20 to 30 ft., Madagascar.

**Poinsettia**.—See *Euphorbia*.

**Poison Ash** (*Chionanthus virginica*).—See *Chionanthus*.

**Poison Bay Tree** (*Illicium Floridanum*).—See *Illicium*.

**Poison-dart**.—See *Aglaonema*.

**Poison Oak** (*Rhus toxicodendron*).—See *Rhus*.

**Poirrea**.—See *Combretum*.

**Poke** (*Phytolacca decandra*).—See *Phytolacca*.

**Polemonium** (Jacob's Ladder; Greek Valerian).—Ord. Polemoniaceæ. Hardy herbaceous perennials.

CULTURE: Soil, good ordinary or deep rich well-drained loam. Position, open sunny borders for *P. cæruleum* & vars.; sunny well-drained rockeries for other species. Plant, Oct., Nov., March, or April. Cut off flower stems immediately after flowering. Top-dress annually in spring with well-decayed manure or leaf-soil. Propagate *P. cæruleum* by division of plants in Oct. or Nov.; other species by division in March or April.

SPECIES CULTIVATED: *P. cæruleum* (Jacob's Ladder or Greek Valerian), blue, June, 2 ft., Europe (Britain); *cæruleum album*, white; *confertum*, blue, summer, 16 in., N.W. America; *flavum*, yellow, summer, 3 ft., New Mexico; *humile*, blue, July, 6 in., N. America; *reptans*, blue, spring, 6 in., N. America; *Richardsoni*, blue, summer, 1 ft.

**Polianthes** (The Tuberoses).—Ord. Amaryllidaceæ. Half-hardy bulbous plant. Flowers fragrant. First introduced 1629.

CULTURE: Compost, two parts fibrous loam, one part of equal proportions of leaf-mould, decayed manure & coarse silver sand. Pot, African kinds in Oct., Nov., & Dec., to flower following autumn; American or Pearl varieties in Jan., Feb., March & April, to flower

following winter & spring. Plant bulbs about two-thirds of their depth singly in a 5-in. pot, or three in a 6-in. size. Pot firmly. After treatment: (a) Plunge pots to their rims in bottom heat, 75° to 85°, & give one application of water only until growth begins, then remove to a shelf near the glass in temp. 55° to 65°, & remove to temp. 50° to 55° when in bloom. (b) Place pots on bed of coal ashes in cold frame, cover with 4 in. cocoanut-fibre refuse, & give no water until growth begins. After this, remove the fibre refuse, water moderately, & transfer most forward plants to the greenhouse. (c) Pot bulbs in April, plunge pots just above rim in a sunny spot in garden, keep moderately moist, lift pots in Sept. or Oct., & place in greenhouse to flower. Water freely when in full growth. Syringe foliage frequently. Apply stimulants (½ oz. guano or Clay's fertiliser) once a week when growing freely. After flowering, bulbs of no further use.

**OUTDOOR CULTURE:** Soil, ordinary rich. Position, warm sunny border. Plant bulbs 3 in. deep & 6 in. apart, March to April, to flower in Aug. & Sept. Plant fresh bulbs annually. Propagate by offsets.

**SPECIES CULTIVATED:** *P. tuberosa* (Tuberose), white, fragrant, autumn and winter, 3 ft., Mexico.

**VARIETIES:** Double African, American, Italian, and The Pearl.

**Polyantha Rose** (*Rosa multiflora*).—See *Rosa*.

**Polyanthus** (*Primula elatior*).—See *Primula*.

**Polyanthus Narcissus** (*Narcissus tazetta*).—See *Narcissus*.

**Polybotrya**.—See *Acrostichium*.

**Polygala** (Milk-wort).—Ord. Polygalaceæ. Hardy herbaceous perennials, greenhouse & hardy evergreen flowering shrubs. First introduced 1658.

**CULTURE OF HARDY SPECIES:** Soil, sandy peat. Position, sunny border or rockery. Plant, Oct., Nov., or April. No pruning required.

**CULTURE OF GREENHOUSE SPECIES:** Compost, two parts fibrous peat, one part silver sand. Position, well-drained pots in cool, airy greenhouse. Pot, Feb. or March. Prune straggly shoots only into shape, Feb. Water freely, April to Sept., moderately afterwards. No stimulants required. Shade unnecessary. Temp., March to Sept. 55° to 65°; Sept. to March 40° to 50°. Propagate hardy species by cuttings inserted in sandy peat under hand-light or in cold frame in autumn; or by suckers removed in Sept.; greenhouse species by cuttings of young shoots inserted in small pots of sandy peat under bell-glass in temp. 55° to 65° in spring.

**GREENHOUSE SPECIES:** *P. myrtifolia grandiflora*, purple, spring, 4 to 6 ft., S. Africa; *oppositifolia*, purple and yellow, June, 2 to 3 ft., S. Africa.

**HARDY SPECIES:** *P. Chamabuxus*, yellow and purple, summer, 6 in., Alps.

**Polygonatum** (Solomon's Seal).—Ord. Liliaceæ. Hardy herbaceous perennials.

**CULTURE:** Soil, ordinary light mould. Position, partially-shaded beds, borders, or woodlands. Plant, Oct., Nov. or March. Top-dress annually with decayed manure in March. Apply stimulants occasionally in summer.

**POT CULTURE OF P. MULTIFLORUM:** Pot roots in ordinary light soil in 6 or 8-in. pots in Nov. Cover with cocoanut-fibre refuse outdoors or in frame until growth begins, then remove to heated or cold greenhouse to flower. Water freely. Propagate by division of roots in Oct., Nov., or March.

**SPECIES CULTIVATED:** *P. biflorum*, green and white, May, 1 to 3 ft., N. America; *latifolium*, white, July, 2 to 3 ft., Europe; *multiflorum* (David's Harp), white, June, 3 ft., Europe; *officinale* (Common Solomon's Seal), white, May, 1 ft., Europe (Britain); *oppositifolium*, white and green, April, 3 ft., Himalayas. There are double-flowered forms of *P. multiflorum* and *officinale*.

**Polygonum** (Knot Weed).—Ord. Polygonaceæ. Hardy annuals, herbaceous perennials, & shrubby climbers.

**CULTURE OF ANNUAL SPECIES:** Soil, ordinary. Position, sunny well-drained borders. Sow seeds 1-16 in. deep in light soil in temp. 65° in March, planting seedlings outdoors in June; or sow in open border in April. Water freely in dry weather. Apply stimulants during flowering period.

**CULTURE OF PERENNIAL SPECIES:** Soil, good rich ordinary. Position of *P. cuspidatum* & *P. sachalinense* in large sunny or shady moist borders, as isolated specimens on lawns, or on margins of ponds; & *P. baldschuanicum* for covering arbours, pergolas, or tree trunks. *P. vacciniifolium* in ordinary sunny borders or on rockeries. Plant, Oct., Nov., March, or April. Mulch with decayed manure annually in March. Apply stimulants occasionally during July & Aug. Water copiously in dry weather. Prune away the dead points of shoots of *P. baldschuanicum* in early spring. Propagate perennials by seeds, as advised for annuals, or by division of roots in Oct. or March; greenhouse species by cuttings inserted in sandy peat under bell-glass in temp. 65° to 75° in spring.

**ANNUAL SPECIES:** *P. orientale*, rosy purple, Aug., 4 to 8 ft., Tropics.

**PERENNIAL SPECIES:** *P. affine*, rose, autumn, 5 to 8 ft., Himalayas; *alpinum*, white, Aug., 4 ft., S. Europe; *amplexicaule*, rose, autumn, 3 ft., Himalayas; *baldschuanicum*, white, autumn, 10 to 15 ft., climber, Bokhara; *compactum*, white, autumn, 2 ft., Japan; *cuspidatum*, white, July and Aug., 6 to 8 ft., Japan; *sachalinense*, white, summer, 8 to 10 ft., Sachalin Isles; *vacciniifolium*, rose, autumn, 6 in., Himalayas. Latter to be grown on a rockery.

**Polypodium** (Common Polypody; Oak Fern; Beech Fern).—Ord. Filices. Stove, greenhouse & hardy ferns. Evergreen & deciduous.

**CULTURE OF STOVE AND GREENHOUSE SPECIES:** Compost, equal parts loam, peat, leaf-mould, & silver sand. Pot, Feb. to April. Position, pots, baskets, or rock beds. Shade from sun essential. Moist atmosphere, Feb. to Sept.; moderately moist afterwards. No syringing required. Water freely, March to Sept.; moderately, Sept. to March. No stimulants. Temp. for greenhouse species, March to Oct. 55° to 65°; Oct. to March 40° to 50°; stove species, March to Oct. 65° to 75°; Oct. to March 55° to 65°.

**CULTURE OF HARDY SPECIES:** Soil, equal parts fibry peat, decayed turfy loam, leaf-mould, & coarse silver sand for *P. vulgare* & vars.; equal parts peat, loam, coarse sand & small lumps of sandstone for *P. dryopteris* (Oak Fern) & *P. phegopteris* (Beech Fern); two-thirds sandy fibry loam, one-third pounded limestone for *P. dryopteris robertianum*. Position, shady fernery, bank, or rockery for *P. vulgare*; partially-shaded dryish rockery for *P. dryopteris* & *P. phegopteris*, dry partially-shady rockery for *Robertianum*; other species anywhere in shade in ordinary soil. Plant, April. Water in dry weather. Top-dress annually in April with the special soils described above.

**POT CULTURE OF HARDY SPECIES:** Composts as above. Pot, March. Position, shady, airy cold greenhouse, pit or frame. Water evergreen kinds freely in summer, moderately at other times; deciduous kinds freely whilst growing; occasionally after foliage dies

down. Repot annually. Propagate by spores sown on surface of shallow pan or box filled with fine sandy peat, covered with pane of glass & placed in temp. 65° to 75°; division of roots in March or April.

**STOVE SPECIES:** *P. albo-squamatum* (Syn. *Phymatodes albo-squamatum*), Malaya; *chnoodes* (Syn. *Goniophlebium chnoodes*), W. Indies; *heracleum* (Syn. *Drynaria Heracleum*), Java; *Lingua* (Syn. *Niphobolus Lingua*), Manchuria; *loriceum latipes* (Syn. *P. Catherineæ*), W. Indies; *Meyeniaum* (Bear's Paw Fern), Philippines; *musæfolium*, Malaya; *pectinatum*, W. Indies; *persicaefolium*, Malaya; *refracturum*, Brazil; *sub-auriculatum*, Malaya; *verrucosum*, Philippines.

**GREENHOUSE SPECIES:** *P. aureum* (Syn. *Phlebodium aureum*), W. Indies; *Billiardieri* (Syn. *Phymatodes Billiardieri*), Australia; *drepanum* (Syn. *Phegopteris drepanum*), Madeira; *pustulatum* (Syn. *Phymatodes pustulata*), Scented Polypody, Australia and New Zealand; *P. Schneiderii*, a hybrid.

**HARDY SPECIES:** *P. alpestre* (Alpine Polypody), Europe (Britain); *Dryopteris* (Oak Fern), Britain, etc.; *Dryopteris robertianum* (Geranium-scented Polypody); *Phegopteris* (Beech Fern), Britain, etc.; *Phegopteris multistidum*, fronds finely cut; *vulgare* (Common Polypody), Britain, etc.; *vulgare cambricum* (Welsh Polypody), and several other varieties as *cristatum*, *multindo-cristatum*, etc.

**Polypody** (*Polypodium vulgare*).—See *Polypodium*.

**Polystichum**.—See *Aspidium*.

**Pomegranate tree** (*Punica Granatum*).—See *Punica*.

**Pontederia** (Pickerel Weed). — Ord. *Pontederiaceæ*. Hardy aquatic perennials. First introduced 1579.

**CULTURE:** Soil, rich loam. Position, shallow ponds or tanks, containing water, 6 to 12 in. in depth. Plant, Oct., Nov., March, or April. Propagate by division of roots any time in spring.

**SPECIES CULTIVATED:** *P. cordata*, blue, white and green, summer, 2 ft., N. America.

**Pontic Daphne** (*Daphne pontica*).—See *Daphne*.

**Pope's-head** (*Melocactus communis*).—See *Melocactus*.

**Poplar**.—See *Populus*.

**Poppy**.—See *Papaver*.

**Poppy Anemone** (*Anemone coronaria*).—See *Anemone*.

**Poppy Mallow**.—See *Callichroë*.

**Populus** (Aspen-tree; Abele-tree; Poplar). — Ord. *Salicaceæ*. Hardy deciduous trees. Orn. foliage. Flowers, catkin-shaped; March & April. Leaves, roundish, lobed, toothed, green, whitish beneath. Wood, soft, yellow, or white; used for toy-making, spade handles, etc. Average price per cubic foot, 6d. to 8d. Weight of timber per cubic foot, 30 lb.; number of cubic feet per ton, 74.

**CULTURE:** Soil, ordinary moist. Position, margins of ponds, lakes, rivers, moist shrubberies or woods. *P. deltoidea* and *N. nigra pyramidalis*, good trees for forming screens in town or suburban gardens. Plant, Oct. to Feb. For screens, plant 4 to 6 ft. apart. Prune, Nov. to Feb. Dry soils not suitable. Average price per 100 of one-year-old trees 3s.; two-year-old 10s. to 15s. Propagate by seeds sown  $\frac{1}{2}$  in. deep in ordinary soil in moist border in autumn; cuttings of firm shoots, 8 in. long, inserted in ordinary soil outdoors in Oct. or Nov.; layering shoots in Oct.; suckers, Oct. to Feb.; weeping kinds by grafting on common poplars in March.

**SPECIES CULTIVATED:** *P. alba* (White Poplar or Abele), 60 to 100 ft., Europe (Britain), N. Asia, etc.; *balsamifera* (Balsam Poplar), 60 to 70 ft., N. America; *canescens* (Gray Poplar), 70 to 80 ft., Britain; *deltoidea* (Syn. *Canadensis*), Cotton Wood, 80 to 100 ft., N. America; *deltoidea erecta* (Necklace Poplar), 80 to 100 ft.; *nigra* (Black Poplar), 50 to 60 ft., Europe; *nigra pyramidalis* (Lombardy Poplar), 60 to 80 ft.; *tremula* (Aspen), 50 to 80 ft., Europe (Britain), N. Asia.

**Portlandia**. — Ord. *Rubiaceæ*. Stove evergreen flowering shrubs. First introduced 1775.

**CULTURE:** Compost, equal parts fibrous loam & leaf-mould & half a part silver sand. Pot, Feb. or March. Position, well-drained pots in partially-shaded part of stove. Prune into shape immediately after flowering. Water copiously, April to Sept., moderately afterwards. Syringe twice daily, March to Oct., once afterwards. Temp., March to Sept. 70° to 85°; Sept. to March 60° to 70°. Propagate by cuttings of firm shoots, 2 to 3 in. long, inserted in sand under bell-glass in temp. 75° to 85° in summer.

**SPECIES CULTIVATED:** *P. grandiflora*, white, June, fragrant, 8 to 10 ft., W. Indies.

**Portugal Broom** (*Cytisus albus*).—See *Cytisus*.

**Portugal Laurei** (*Prunus lusitanica*).—See *Prunus*.

**Portulaca** (Purslane; Sun Plant).—Ord. Portulacaceæ. Hardy & half-hardy annual flowering & edible-leaved plants. Leaves of Purslane form an excellent summer salading. First introduced 1582.

**CULTURE OF HALF-HARDY ANNUAL SPECIES:** Soil, good ordinary. Position, sunny rockeries, raised beds or borders. Sow seeds thinly on surface of light sandy soil in well-drained pot, box, or pan, lightly cover with fine soil & place in temp. 65 in March. Transplant seedlings when three leaves formed singly into 2-in. pots, gradually harden off, & plant outdoors end of May. Water in dry weather. Plant 3 in. apart each way.

**POT CULTURE:** Compost, equal parts loam, leaf-mould, & coarse silver sand. Raise plants from seeds as advised above. Transplant seedlings 1 in. apart in 5-in. pots, well-drained & filled with above compost. Grow near glass in temp. 55° to 65° Water freely. Apply weak stimulants when in flower.

**CULTURE OF PURSLANE:** Soil, light, rich ordinary. Position, sunny well-drained borders. Sow seeds thinly broadcast, middle of April, lightly rake in and keep well watered. To ensure a succession, sow at intervals of a month up to Aug. Gather shoots when 2 to 3 in. long, cutting them off close to the ground.

**SPECIES CULTIVATED:** *P. grandiflora* (Sun Plant), yellow and purple, 6 in., Brazil; *grandiflora compacta*, various colours; *oleracea* (Purslane), June, 6 in., Tropical Regions; *Thellusonii*, scarlet, June, 8 to 12 in., Tropics.

**Posoqueria.** — Ord. Rubiaceæ. Stove evergreen flowering shrubs. First introduced 1815.

**CULTURE:** Compost, one part loam, one part peat, one part well-decayed manure & charcoal. Position, well-drained pots, or beds in plant stove. Pot or plant, Feb. or March. Prune into shape, Feb. or March. Temp., March to Sept. 65° to 85°; Sept. to March 55° to 65°. Water moderately, Oct. to Feb., freely afterwards. Syringe daily (except when in bloom) March to Sept. Apply liquid manure occasionally to healthy plants in flower. Plants one to two years old produce the best blooms. Propagate by cuttings of firm young side shoots, 2 to 3 in. long inserted in well-drained pots of sandy peat under bell-glass in temp. 75° to 85°, Jan. to April.

**SPECIES CULTIVATED:** *P. formosa*, white, fragrant, summer, 10 ft., Venezuela; *fragrantissima*, white, fragrant, summer, 8 to 10 ft., Brazil; *latifolia*, white, Oct., 6 ft., Trop. America.

**Potato** (*Solanum tuberosum*).—See *Solanum*.

**Potato Onion** (*Allium cepa aggregatum*).—See *Allium*.

**Potato-tree** (*Solanum crispum*).—See *Solanum*.

**Potato Vine** (*Ipomæa pandurata*).—See *Ipomæa*.

**Potentilla** (Cinquefoil). — Ord. Rosaceæ. Hardy herbaceous

perennials. Double potentillas are hybrids between *P. insignia* & *P. argyrophylla atrosanguinea*.

**CULTURE:** Soil, ordinary deep rich sandy. Position, sunny rockeries for dwarf species (*P. alba*, *P. alpestris*, *P. ambigua*, *P. calabria*, *P. nitida*, & *P. pyrenaica*); sunny borders for tall kinds (*P. argyrophylla atrosanguinea* & vars., *P. fruticosa*, etc.). Plant, Oct., Nov., March or April. Mulch tall kinds with decayed manure annually in March. Water copiously in dry weather. Apply stimulants occasionally during flowering period. Lift, divide, & replant border kinds in fresh soil every three or four years. Propagate by seeds sown 1-16 in. deep, in shallow pans or boxes of light sandy soil in temp. 55° to 65°, March, transplanting seedlings outdoors in May or June; or similar depth in partially-shaded border outdoors in April; division of roots, Oct., Nov., March or April.

**SPECIES CULTIVATED:** *P. alba*, white, spring, 6 in., Europe; *alchemellioides*, white, summer, 6 in., Pyrenees; *ambigua*, yellow, summer, 6 in., Himalayas; *argyrophylla*, yellow, summer, 2 to 3 ft., Himalayas; *argyrophylla atrosanguinea*, crimson; *fruticosa*, yellow, summer, 3 to 4 ft., Britain; *hopwoodiana*, yellow and rose, summer, 18 in., hybrid; *nepalensis*, crimson, summer, 18 in., Himalayas; *nitida*, rose, summer, 6 in.; Europe; *nitida alba*, white; *nitida grandiflora*, pink; *nitida atrorubens*, rose; *nitida rosea*, rose. Many beautiful hybrids for which see trade lists.

**Poterium** (Burnet). — Ord. Rosaceæ. Hardy perennial herb. Leaves used for flavouring soups, salads, & wines.

**CULTURE:** Soil, ordinary light. Position, sunny dryish bed or border. Plant, 6 in. apart in rows 8 in. asunder, Feb. Water freely in dry weather. Remove flower stems directly they appear. Roots to be lifted & replanted annually. Propagate by seeds sown ½ in. deep in drills 8 in. apart, March, April, or Sept., thinning seedlings when 2 in. high, 6 in. apart.

**SPECIES CULTIVATED:** *P. officinalis* (Syn. *Sanguisorba officinale*), green and purple, summer, 2 ft., Europe (Britain).

**Pothos**.—Ord. Aroideæ. Stove evergreen climbing shrubs. Orn. foliage. First introduced 1821. Leaves, roundish or lance-shaped, green, or variegated with creamy yellow.

**CULTURE:** Compost, equal parts rough peat, sphagnum moss, charcoal, & coarse sand. Position, pots with shoots trained to old tree stems, trunks of tree ferns or walls. Pot, Feb. or March. Water copiously, March to Oct., moderately afterwards. Syringe freely all the year round. Temp., Sept. to March, 60° to 65°; March to Sept., 80° to 85°. Shade from sun essential. Propagate by division of roots, Feb. or March.

**SPECIES CULTIVATED:** *P. argenteus*, leaves silvery grey, Borneo; *aureus*, leaves variegated with yellow, Borneo; *celatocaulis*, stems clinging, Borneo; *scandens*, stems climbing, India.

**Pot Marigold** (*Calendula officinalis*).—See *Calendula*.

**Pot Marjoram** (*Origanum Onites*).—See *Origanum*.

**Prairie Rose** (*Rosa setigera*).—See *Rosa*.

**Prairie Sun-flower** (*Helianthus rigidus*).—See *Helianthus*.

**Pratia**. — Ord. Campanulaceæ. Hardy herbaceous perennial trailing plants. First introduced 1879.

**OUTDOOR CULTURE:** Soil, two parts peat, one part leaf-mould & little sand. Position, sunny well-drained rockeries. Plant, March or April. Water freely in dry weather.

**POT CULTURE:** Compost, two parts sandy loam, half a part each leaf-mould & silver sand. Pot, March. Position, cool or cold green-

house, frame, or window. Water freely, April to Sept., moderately afterwards. Apply weak stimulants occasionally when flowering. Shade from midday sun. Propagate by seeds sown 1-16 in. deep in equal parts loam, leaf-mould, & sand in temp. 85°, March; cuttings of young shoots inserted in well-drained pots, July to Sept., & stored in cold frame or greenhouse until March, then planted outdoors.

SPECIES CULTIVATED: *P. angulata* (Syn. *Lobelia littoralis*), white, summer, 1 in., New Zealand; *begoniaefolia* (Syn. *Lobelia begoniaefolia*), blue, summer, Himalayas.

**Prickly Cedar** (*Juniperus oxycedrus*).—See *Juniperus*.

**Prickly Date Palm**.—See *Acanthophœnix*.

**Prickly Heath**.—See *Pernettya*.

**Prickly Ivy** (*Smilax aspera*).—See *Smilax*.

**Prickly Pear** (*Opuntia vulgaris*).—See *Opuntia*.

**Prickly Poppy** (*Argemone mexicana*).—See *Argemone*.

**Prickly Rhubarb** (*Gunnera scabra*).—See *Gunnera*.

**Prickly-seeded Spinach** (*Spinacia oleracea spinosa*).—See *Spinacia*.

**Prickly Shield Fern** (*Aspidium aculeatum*).—See *Aspidium*.

**Prickly Thrift** (*Acantholimon glumaceum*).—See *Acantholimon*.

**Pride-of-Barbados** (*Cæsalpinia pulcherrima*).—See *Cæsalpinia*.

**Primrose** (*Primula vulgaris*).—See *Primula*.

**Primula** (*Auricula*; *Ox-lip*; *Primrose*; *Polyanthus*).—Ord. *Primulaceæ*. Greenhouse & hardy perennial herbs. First introduced 1596.

CULTURE OF AURICULA: Alpine type have blooms one colour, white or yellow eye, stems smooth & free from powder. Florists' type, stems & blooms covered with mealy powder; blooms with more than one colour, & white, grey, or green-edged petals. Properties of florists' auricula: Stem erect, elastic, carrying truss well above foliage; stalk proportionately long to size of petals; pips (blooms) seven to each truss, round; anthers, bold; eye, white, smooth & round; colours, well defined, rich; edges, distinct. Compost, two parts turfy loam, one part cow manure, leaf-mould, half a part silver sand. Position, choice kinds in 3 in. pots in airy frame or cool greenhouse; others in rich soil in shady borders. Pot & plant, Feb. or March. Water those in pots moderately in winter; freely other times. Top-dress with rich soil in March plants that were not repotted. Apply liquid manure in a weak state to plants in flower. Propagate by seeds sown in pans of light rich soil, just covered with fine soil, in March, in cold frame or greenhouse; by offsets in Feb.

CULTURE OF CHINESE PRIMULA: First introduced 1820. Compost, one part fibrous loam, half a part each of leaf-mould & decayed cow manure, half a part silver sand. Sow seeds in May on surface of a compost of two parts leaf-mould & one part loam, half a part sand, pressed moderately firm in a shallow pan or 6-in. pot, half filled with drainage. Cover seeds thinly with similar soil. Place pane of glass over pot or pan & put in temp. 55° to 65°. Shade from sun. Keep soil just moist. Transplant seedlings when three leaves form 1 in. apart in 3-in. pots, well drained & filled with compost advised for seeds. Still keep in temp. 55° to 65°. When leaves of seedlings meet each other, place singly in 2-in. pots, keep in same temp. for a week, then transfer to cold frame. Shade from sun. Admit air freely. Sprinkle foliage in evening. Transfer to 5-in. pots when well rooted. Replace



in frame, shade from sun, water moderately, & sprinkle foliage as before. Apply liquid soot & cow or sheep manure—1 bushel of latter & 1 peck of former to 36 gallons of water—diluted with two-thirds water twice a week when well rooted. Water freely. Remove to temp. 50° to 55° in Sept. Admit air freely on fine days. Nip off first truss of bloom if not required to flower before Nov. Temp. for flowering 50° to 55°. When potting, allow base of leaves to just touch the compost. Pot moderately firm. Suitable artificial manures:  $\frac{1}{2}$  oz. each sulphate of ammonia & kainit to 2 gall. of water. To be applied twice a week to plants established in flowering pots. Single-flowered kinds best raised from seed annually, rejecting old plants after flowering. Sow in June for spring flowering. Double varieties require to be propagated annually by cuttings inserted singly in small pots filled with equal parts leaf-mould, loam, & sand, placed in temp. 65° to 70°, after flowering; or by division of plants in April. Culture same as advised for seedlings. Temp. for flowering 55° to 60°. Semi-double varieties raised from seed as advised for singles.

**CULTURE OF P. OBCONICA:** Compost & mode of raising from seed and general treatment same as advised for *P. sinensis*. Temp. for flowering 45° to 55°. Top-dress old plants with decayed cow manure in Feb. to promote spring flowering. Repot old plants in March to flower in summer. Old plants may also be divided in March.

**CULTURE OF PRIMROSE:** Hardy herbaceous perennial. Soil, ordinary rich moist. Position, partially or wholly shaded beds & borders. Plant, Oct., Nov., Feb. & March. Mulch surface of beds containing choice sorts with decayed manure in Feb. Lift those grown in flower beds directly after flowering, divide & replant 6 in. apart each way in shady border until Oct., then replant in beds. Pot culture, as advised for *Polyanthus*.

**CULTURE OF POLYANTHUS:** Hardy herbaceous perennial. Supposed to be a hybrid between the primrose and cowslip. Flowers, various; spring. **CLASSIFICATION:** Gold-laced, having centre and edges of bloom golden; Fancy, blooms of various hues; Hose-in-Hose, semi-double, one bloom growing out of another; Jack-in-the-Green, bloom surrounded by a collar-like calyx; Pantaloons, small, curiously-coloured blooms. Properties of Gold-laced *Polyanthus*: Pip (bloom) perfectly flat and round, slightly scalloped on edge, and divided into five or six lobes or segments; Tube or throat, thrum-eyed, that is, not showing the pistil; Edging and centre of lobes or florets to be even in width, and of same shade of sulphur, lemon or yellow as the eyes, and one shade of yellow only in centre; Ground or body colour, black or red; Flower-stem, stiff, strong, erect. **OUTDOOR CULTURE:** Same as for Primrose. **POT CULTURE:** Compost, two parts good yellow fibrous loam, one part of equal proportions of thoroughly decayed manure, leaf-mould & silver sand. Pot in Aug. Place in shady cold frame in a north aspect after potting until Oct., then transfer to frame in south aspect. Give just enough water to keep soil moist between Aug. & March, afterwards water freely. Admit air freely always, except in severe weather. Top-dress in Feb. with compost of equal parts loam & decayed cow manure. Apply weak stimulants once a week March to July. Transfer to cold frame or greenhouse with north aspect when in flower. Repot annually.

**PROPAGATION:** Miscellaneous species by seeds sown on surface of equal parts peat, leaf-mould, & loam in shallow pans or boxes in shady

cold frame in March or April, or by division in spring; *P. verticillata* & *P. floribunda* by seeds sown as advised for *P. sinensis*, also by division after flowering; primrose & polyanthus by seeds sown on surface of light sandy soil, slightly covered in cold frame in March or April; or outdoors in shady position in April, likewise by division after flowering.

**GREENHOUSE SPECIES:** *P. floribunda*, yellow, spring, 6 in., Himalayas; *kewensis*, yellow, spring, 6 to 12 in., hybrid; *obconica*, lilac, spring, 6 to 8 in., China; *sinensis* (Chinese Primrose), various colours, winter and spring, 6 to 9 in., China; *verticillata*, yellow, spring, 12 to 18 in., Arabia.

**HARDY SPECIES:** *P. auricula* (*Auricula*), various colours, 6 in., Europe; *variabilis* (*Polyanthus*), various, spring, 6 in., hybrid; *vulgaris* (Primrose), various, spring, 6 in., Europe (Britain); *elatior* (*Oxlip*), yellow, 6 to 8 in., Britain; *Allionii*, mauve, April, rockery, sandy soil, Mentone; *alpina*, hybrid, violet-purple, May, rockery, sandy soil; *altaica*, Altai Mountains, mauve with yellow eye, rockery, sandy loam; *capitata*, Himalayan species, wrinkled foliage, violet-purple or blue flowers, autumn, partially shaded rockery, moist loam; *clusiana*, Tyrol, rose, April and May, 6 to 9 in., rockery, loamy soil; *cortusoides*, Siberia, 6 to 10 in., rose, June, sunny rockery or border, light, rich loam; *denticulata*, Himalayas; 8 to 12 in., bright lilac, May to June, sunny rockery or border, rich, well-manured loam; *cashmeriana*, violet-purple, April and May; *alba*, white, and *pulcherrima*, dark lilac, are pretty varieties of it; *elwesiana*, Sikkim, purple, June, partially shaded rockery, loam and leaf-mould; *farinosa* (Bird's Eye Primrose), British species, lilac with yellow eye, June and July, 6 in., rockery, loam and peat, moist; *floribunda*, Himalayan species, golden-yellow, summer, 4 to 8 in., rockery, ordinary soil; *Forbesii*, China, rosy purple with orange-white eye, March to June, warm rockery, sandy loam and leaf-mould, hardy in mild districts only; *glutinosa*, Tyrol, bluish purple, June, rockery, sandy loam and peat, moist; *grandis*, Caucasus, yellow, summer, 9 in., rockery, loam and leaf-mould; *involucrata*, Himalayas, creamy white, yellow centre, March to June, 6 in., moist border, loam and peat; *integrifolia*, Pyrenees, rose, April to June, rockery, moist loam; *japonica*, Japan, crimson, June, 1 to 2 ft., partially shady moist borders, deep, rich loam (*alba* a pretty white variety); *latifolia*, Pyrenees, violet, fragrant, June, 4 to 6 in., sunny rockery, sandy peat and loam; *marginata*, Switzerland, lilac, April and May, 2 to 4 in., rockery, moist sandy loam; *minima*, S. Europe, rose or white, June, 2 in., rockery, moist sandy loam; *Parryi*, Rocky Mountains, purple, yellow centre, spring, 6 to 12 in., shady rockery or bed, moist sandy loam and peat; *pubescens*, a hybrid, rosy crimson, April, 3 to 6 in., rockery, moist loam; (*alba*, Syn. *P. nivalis*, is a rare and pretty white variety of the latter); *purpurea*, Nepal, purple, March to June, 6 to 8 in., sunny rockery or border, sandy loam and leaf-mould; *rosea*, Kashmir, rosy carmine, yellow centre, spring, 4 to 6 in., partially shady rockery or bed, moist loam and leaf-mould; *Sieboldi* (Syn. *P. amœna*), Japan, rose with white eye, April and May, 6 to 12 in., partially shady bed, well-manured sandy loam and leaf-mould; *sikkimensis*, Sikkim, pale yellow, drooping, fragrant, May and June, 18 in. to 2 ft., shady beds or margin of water, deep, moist peat and leaf-mould; *spectabilis*, Eastern Alps, rosy purple, July, 3 in., sunny rockery, sandy loam and leaf-mould; *Stuarti*, N. India, golden-yellow, summer, 9 to 15 in., shady rockery or bed, moist sandy loam and leaf-mould; *viscosa* (Syn. *P. villosa*), a Pyrenean species, rosy purple with white eye, spring, 4 in., shady rockery, sandy loam, peat, and leaf-mould.

**Prince's-Feather** (*Amaranthus hypochondriacus*).—See *Amaranthus*.

**Pritchardia**.—Ord. Palmaceæ. Stove palms. Orn. foliage. First introduced 1870. Leaves more or less fan-shaped, green.

**CULTURE:** Compost, two parts peat & one part of loam & sand. Position, well-drained pots in light part of stove. Pot, Feb. to April. Water moderately, Oct. to March; freely afterwards. Syringe twice daily, March to Sept.; once daily, Sept. to March. Temp., March to Sept. 65° to 75°; Sept. to March 55° to 65°. Propagate by seeds sown ½ in. deep in light rich soil in temp. 80° to 90°, Feb., March or April.

**SPECIES CULTIVATED:** *P. aurea*, 4 to 10 ft., Fiji; *Martii*, 4 to 10 ft., Sandwich Islands; *Thurstoni*, 4 to 10 ft., Fiji; *Vuylstekiana*, 4 to 10 ft., Potomou Islands.

**Privet** (*Ligustrum vulgare*).—See *Ligustrum*,

**Prophet's-flower** (*Macrotoma echioides*).—See *Macrotoma*.

**Protea**.—Ord. Proteacæ. Greenhouse evergreen flowering shrubs. First introduced 1774.

**CULTURE**: Compost, two parts light well-decayed turfy loam, one part equal proportions silver sand, charcoal, broken pots, freestone, & peat. Position, light airy greenhouse fully exposed to sunshine. Pot, March. Drain pots one-third of depth with broken potsherds. Pot firmly. Water moderately, March to Sept., occasionally afterwards, keeping soil just moist. No syringing or stimulants required. Stand plants in sunny position outdoors during June, July, & Aug. Temp., Sept. to March 40° to 50°; March to June 55° to 65°. Propagate by cuttings of firm shoots cut off close to a joint, pared quite smooth, inserted thinly in small pots half-filled with drainage, & remainder with pure sand, placed under bell-glass in cool part of greenhouse in summer.

**SPECIES CULTIVATED**: *P. cordata*, purple, spring, 18 in., S. Africa; *grandiflora*, white, May, 6 to 8 ft., S. Africa.

**Provence Rose** (*Rosa gallica provincialis*).—See *Rosa*.

**Prumnopitys**.—Ord. Coniferæ. Hardy and half-hardy evergreen trees. Orn. foliage. First introduced 1863.

**CULTURE OF HARDY SPECIES**: Soil, good, deep loam, well-drained. Position, sunny sheltered lawns. Plant, Oct., Nov., March or April.

**CULTURE OF HALF-HARDY SPECIES**: Compost, two parts loam, one part leaf-mould. Position, pots or tubs in light airy greenhouse. Pot or plant, March or April. Water freely, May to Sept., moderately afterwards. Temp., Sept. to April 45° to 55°; April to Sept. 55° to 65°. Propagate by cuttings of firm young shoots inserted in small pots of sandy loam under bell-glass in temp. 60° to 70°, summer.

**SPECIES CULTIVATED**: *P. elegans* (Plum Fir), Syn. *Podocarpus andina*, 40 to 50 ft., Chili, hardy; *spicata* (Black Pine), Syn. *Podocarpus spicata*, 50 to 70 ft., New Zealand.

**Prunella** (Selfheal).—Ord. Labiataæ. Hardy herbaceous perennials.

**CULTURE**: Soil, ordinary light rich. Position, moist shady border or rockery. Plant, Oct., Nov., March, or April. Lift, divide, & replant every 2 or 3 years. Water in dry weather. Mulch with decayed manure in March. Apply stimulants during flowering season. Propagate by division of roots, Oct., Nov. or March.

**SPECIES CULTIVATED**: *P. grandiflora*, purple, July and Aug., 6 in., Europe; and its varieties *alba* (white) and *rubra*, or *webbiana* (red); *vulgaris laciniata*, purple, July, leaves finely cut, 1 ft., Britain.

**Prunus** (Plum; Damson; Myrobalan Plum; Double Chinese Plum).—Ord. Rosacæ. Hardy deciduous and evergreen trees & shrubs. Edible fruit-bearing, flowering & orn. foliage. First introduced: Peach and nectarine, 1562; Almond, 1548; Apricot, 1548; Common Laurel, 1629; Portugal Laurel 1648.

**CULTURE OF PEACH AND NECTARINE**: Soil, deep, but not over-rich sandy loam, well drained, & free from manure. Position, south or south-west walls, fully exposed to sun. Plant, Oct. to Feb. Distances for planting: Cordons, 18 in.; dwarf fan-trained, 15 ft.; standard fan-trained, 15 ft. Depth of soil above roots, 4 to 6 in. Approximate cost of trees, each: Cordons, 1s. 6d.; dwarf fan, 3s. 6d.; half & full standard fans, 7s. 6d. Prune, Jan. or Feb. Fruit borne on old spurs & shoots of previous years' growth. Do not shorten the

latter unless very strong. Always cut back if possible to a triple bud. Train previous year's shoots 2 to 3 in. apart all over tree. Remove a small proportion of shoots that have borne fruit annually to make room for new ones. Fruit buds, conical, downy. Wood buds, pointed, narrow. Disbud, i.e., rub off young shoots, April, May, & June, removing those growing out of front of branches, & reducing those issuing from the sides of previous year's shoots to 6 in. apart each side. Train young shoots when 3 to 6 in. long to the wall. Protect blossoms from frost by covering of tiffany or fish netting in Feb. & March. Thin fruit when size of a hazel nut to 3 or 4 in. apart; again when size of a walnut to 10 & 12 in. apart. Average number of fruit for a full-grown tree to carry, about 240. Mulch with decayed manure in March or April. Apply stimulants occasionally, April to Aug. Suitable artificial manures: (1) 1½ oz. salt & 3 oz. soot per square yard, applied in March; (2) 1 part (by weight) crude magnesium sulphate, 6 parts muriate of potash, 18 parts bone superphosphate forked into the soil at the rate of 7 lb. per tree after pruning; (3) ¼ lb. kainit, ¾ lb. each of superphosphate & nitrate of soda, 1½ lb. salt, applied as advised for No. 2. Liquid manure: Nitrate of soda ½ oz. to gallon; guano 1 oz. to gallon; horse & cow manure diluted one-third—all applied in spring & summer. UNDER GLASS: Soil, planting, pruning, manuring, same as for outdoors. Temp. for forcing: Jan. 40° to 50°; Feb. 45° to 55°; March & onwards, 55° to 65°. Disbud when shoots are an inch or so long. Syringe twice daily until blossoms open, then cease; commencing again when fruit forms, & discontinuing when it begins to ripen. Ventilate freely in summer. Thin the fruit when the size of a hazel nut to 3 or 4 in. apart; & again when as large as a walnut to a foot apart. Water border thoroughly in Jan. or Feb., again in March, May, July, & Sept. Apply stimulants, March, May, July, & Sept. TREES IN POTS: Compost, two parts decayed turfy loam, one part well-decayed manure, a quarter part crushed bones, & a tablespoonful of superphosphate to each bushel. Pot, Nov. Stand the trees in a sheltered corner till Jan., when remove to greenhouse. Water moderately at first, freely in spring & summer, none in winter. Pruning, manuring, etc., as advised above.

CULTURE OF CHERRY: Soil, rich, sandy; stiff or gravelly unsuitable. Position, standards, pyramids, & bushes open & sunny; May Duke & early kinds on S. & W. walls or fences; Bigarreau & Morello on E. or N. walls. Plant standards 25 ft. apart; pyramids, 15 ft.; horizontal or fan-trained, 15 ft.; bush-trained, 5 to 8 ft.; cordons, 18 in. Cost of trees, each: Cordons, 2s. 6d. to 3s. 6d.; pyramids, 1s. 6d. to 2s. 6d.; fan-trained, 2s. 6d. to 3s. 6d.; standards, 1s. 6d. to 3s. 6d. Time to plant, Oct. to Feb. Depth for roots, 6 in. Stocks for standard trees, seedling Duke or Morello; for dwarf trees, Mahaleb Cherry. Mode of bearing: Morello bears fruit along full length of shoot of previous year's growth; other kinds at base of shoots only, called "spurs." Pruning: Standards, simply remove branches when too thick; pyramids & bushes, cut back all shoots to 3 in. in July, except those required to form branches, which leave 6 or 8 in.; cordons, cut all shoots except leading one similarly; horizontal & fan-trained, cut back side shoots to 3 in., leading ones to 6 in. in July; Morello, remove old or weak shoots only in Dec. Winter pruning consists of removal of dead or over-

crowded shoots & cutting back those omitted in summer. Protect early cherries by nets or tiffany. **POT CULTURE:** Plant in 10 or 12 in. pots in Oct. Compost, two parts turfy loam, one part decayed manure. Place trees in sheltered position outdoors till Jan., then remove them to greenhouse or vinery. Temp., Jan. to March, 45° to 60°; March to June 55° to 65°. Water moderately. Ventilate moderately before & after flowering, freely when in flower.

**MARKET CULTURE OF CHERRY:** Soil, loam overlying chalk or gravel. Position, sheltered away from low valleys. Plant, autumn. Distances for planting standards, 30 ft.; bushes, 12 ft. Number of trees per acre: Standards, 48; bushes, 302. Cost of trees per acre: Standards, £5; bushes, £15. Cost of planting per acre: Preparing sites, £7; manure, £5; planting and staking, 16s. to 20s.; total per acre—bushes, £27; standards, £16. Cost of cultivation per acre: Pruning, £1; gathering fruit, £9; annual manuring, £5. Average yield per acre, 4 tons. Average return per acre (gross), £100; net, £80 to £83. Manures (per acre), steamed bone-meal, 3 cwts.; sulphate of potash, 1½ cwt.; chloride of soda, ¾ cwt.; sulphate of magnesia, ½ cwt.; sulphate of lime, 5 cwt., to be applied in Feb.; nitrate of soda, 1½ cwt., applied when fruit has set.

**CULTURE OF PLUM:** Soil, shallow, moderately moist sandy loam, or good ordinary, intermixed freely with old mortar. Subsoil, gravelly or chalky. Position, open, sunny, sheltered gardens, orchards, walls, or fences. Plant, Nov. to Feb. Distance for planting: Standards, 21 to 24 ft. each way; pyramids, 9 to 10 ft.; fan-trained, 15 ft.; bush-trained, 6 to 9 ft.; cordons, 18 in. Distance from paths: Pyramids, 5 ft.; bush-trained, 2 ft. 6 in. Cost of single trees: Standards, 2s. 6d. to 7s. 6d.; pyramids, 2s. 6d. to 5s.; fan-trained, 3s. 6d. to 7s. 6d.; bush-trained, 2s. 6d. to 3s. 6d.; cordons, 1s. 6d. to 2s. 6d. Mode of bearing: On spurs formed at base of shoots of previous year's growth, 4 on older branches. Prune, summer, July & Aug.; winter, Dec. to Feb. Simply thin out branches of standards, & keep centres open. Shorten leading shoots of pyramids & bushes at sixth leaf from base in July; remainder 2 in. from their base, a week or so later. Shorten leading shoots of fan-trained trees in Dec.; also side or front shoots not required to forward new branches to within 2 in. of base, July or Aug. Leading shoots of cordons to grow unpruned until full height is attained; side shoots to be shortened to within 1 in. of base, June or July. Thin fruit of greengages to 3 in. apart; large kinds to 4 or 6 in. apart, when size of hazel nut. Mulch newly-planted trees with thick layer of cow manure. Root-prune vigorous & unfruitful trees in Sept. Lift, root-prune, & repot pyramids, bush, & cordon trees every third year. Chemical manures: Kainit (sulphate of potash), 5 parts; (ry weight), magnesium sulphate, 2 parts; superphosphate, 2 parts. Apply at rate of 7 lbs. per tree immediately after pruning to area of soil equal to circumference of branches, & 22 lbs. more in March, forking it in. Stocks used for budding and grafting: Mussle for standards & pyramids; common plum for dwarfs.

**MARKET CULTURE OF PLUM:** Soil, sandy loam overlying chalk or clay. Position, sheltered. Plant, autumn. Distances to plant: Standards, 20 ft.; dwarfs, 12 ft. Trees per acre: Standards, 108; dwarfs, 302. Cost of trees per acre: Standards, £7; dwarfs, £15. Cost of planting per acre: Preparing sites, £7; manures, £5; plant-

ing and staking, standards, 32s. 6d.; dwarfs, 7s. 6d.; total, £20 to £27. Cost of cultivation per acre: Pruning, 20s.; annual manuring, £5; gathering fruit, £7. Average yield per acre, 7 tons. Average returns per acre (gross), £100; net, £85. Manures (per acre): Steamed bone-meal, 3 cwt.; kainit, 1½ cwt., after pruning; nitrate of soda, 2½ cwt. after fruit has set.

**CULTURE OF DAMSON:** Soil, moderately rich deep loam. Position, south aspect, well-drained site. Shape of trees, standard, pyramidal, or bush. Plant bush-trained trees 5 ft. apart; pyramidal, 15 ft.; standards, 24 ft., in Nov., Dec., or Jan. Depth for roots, 6 in. Prune in Dec., simply cutting away old branches or weak shoots & moderately shortening strong ones. Manures, cost of trees, etc., same as for plums.

**CULTURE OF APRICOT:** Soil, light well-drained loam, containing plenty of old mortar rubbish. Position, S. walls in Midlands & North; E. & W. walls in the South. May be grown as bushes or standards in sheltered gardens in S. of England. Plant, Sept. to Nov., 2 ft. apart for cordons, & 18 ft. for fan-trained trees. Fruit borne on spurs, 1, 2, & 3 years old. Prune in Jan., shortening shoots not required to form new branches to within an inch of their base. Summer prune in July, pinching back side shoots not required for future branches to two leaves. Disbud, in June, i.e., rub off all young shoots growing out of front of branches. Protect when in flower with tiffany or fish-netting. Mulch roots with decayed manure in hot, dry seasons. Water copiously in summer. Feed with manures advised for peaches. Thin fruit out early to 1 ft. apart. **POT CULTURE:** Same as for Peaches.

**CULTURE OF MYROBALAN PLUM:** Used chiefly for hedges; occasionally as a stock for plums. Soil, ordinary. Position, sunny. Plant, Oct. to Feb. Distance apart to plant, 6 in. Size of plants, two-year-old. Trim into shape, June or July. Cost per 100, 5s. to 7s.; per 1,000, 35s. to 40s. Cost of planting and preparing soil per lineal yard, 9d.; trimming per chain, 4d. Makes an impenetrable hedge.

**CULTURE OF CHERRY AND PORTUGAL LAURELS:** Soil, good ordinary. Position, mixed shrubberies or hedges for Cherry Laurel; lawns or shrubberies for Portugal Laurel. Plant, Sept. to Oct., or in May. Prune in April, merely shortening straggly growths.

**HEDGE CULTURE OF CHERRY LAUREL:** Trench site 3 ft. wide & 2 ft. deep, mixing plenty of rotten manure with soil. Plant, 12 in. to 24 in. apart. Cost of plants per 100, 15s. Cost of preparing and planting per lineal yard, 9d. Prune in April.

**CULTURE OF FLOWERING SPECIES:** Soil, ordinary. Position, well-drained sunny borders or shrubberies; Almond good town tree. Plant, Oct. to Feb. Prune only to cut away dead wood; or to shorten straggly growths after flowering. **POT CULTURE OF P. TRILOBA:** Compost, two parts sandy loam, one part leaf-mould, half a part silver sand. Position, cold greenhouse, Jan. to June; outdoors, pots plunged to rim in garden soil, June to Nov.; sheltered corner or pit, Nov. to Jan. Pot, Nov. Repot annually. Water freely, March to Oct., moderately afterwards. Apply stimulants occasionally, April to Sept. Temp. for forcing 55° to 65°

**PROPAGATION:** Peach and nectarine by budding in July or Aug.

on Seedling Almonds or Plums; Cherry by budding in July or Aug. on the Mahaleb Cherry for dwarfs, or seedling cherry for standards; Plums by budding in July or Aug., on the seedling Damson or St. Julien Plum, or Myrobalan Plum reared from cuttings; Damsons by seed; Almonds by budding on seedling Plums; other species by budding on the Myrobalan Plum; Laurels and Myrobalan Plum by cuttings inserted in sheltered border or cold frame in autumn; all kinds by seeds to produce new varieties.

**FRUIT-BEARING SPECIES:** *P. Persica* (Peach), rose, April, 15 to 25 ft., China; *Persica lævis* (Nectarine); *communis* (Plum), white, spring, 20 ft., native habitat unknown; *Cerasus* (Cherry), white, April, 15 to 20 ft., Europe (Britain), etc.; *Armeniaca* (Apricot), bluish, Feb. and March, 15 to 25 ft., N. China; *insititia* (Bullace), white, April, 10 to 20 ft., Europe (Britain); *spinosa* (Sloe), white, March, 10 to 15 ft., Europe (Britain); *spinosa* var. (Damson), white, spring, 20 ft., Britain.

**FLOWERING SPECIES:** *P. Amygdalus* (Almond), rose, March and April, 20 to 30 ft., S. Europe; *Amygdalus flore-pleno*, double; *Amygdalus amara* (Bitter Almond); *Amygdalus dulcis* (Sweet Almond); *dauidiana*, rose, Jan. to March, 10 ft., China; *nana* (Dwarf Almond), rose, March, 3 ft., S. Russia; *Persica flore roseo plena* (Double Peach), rose, double, March, 10 to 20 ft.; *Persica flore albo plena*, white, double; *Persica foliis rubris*, leaves purple; *Avium flore pleno* (Double Gean Cherry), white, double, spring, 30 ft., Europe (Britain); *Cerasus Rhexii flore pleno* (Double Cherry), white, double, April, 20 ft., Europe; *Japonica flore pleno albo* (Double Chinese Cherry), pink, April, 3 ft., Japan; *pseudo-cerasus* (Syn. *Watereri*), white, semi-double, May, 12 ft., Japan; *triloba flore pleno*, silvery rose, double, and May, 5 to 10 ft., China; *Padus* (Bird Cherry), white, May, 20 to 30 ft., Europe (Britain); *virginiana* (Virginian Bird Cherry), white, May, 30 to 40 ft., N. America.

**EVERGREEN SPECIES:** *P. Laurocerasus* (Common or Cherry Laurel), white, spring, 8 to 20 ft., E. Europe, Orient, etc.; and its varieties, *caucasica*, *colchica*, *latifolia*, etc.; *lusitanica* (Portugal Laurel), white, June, 10 to 15 ft., Portugal.

**MISCELLANEOUS SPECIES:** *P. cerasifera* (Myrobalan or Cherry Plum), white, March, 15 to 20 ft., Caucasus; *cerasifera atropurpurea* (Purple-leaved Plum), Syn. *Prunus Pissardii*, leaves, purple; *communis juliana* (St. Julien Plum), white, March, 10 ft.; Mahaleb (Mahaleb or St. Lucie Cherry), white, May, 10 ft., Europe. Last two species used as stocks.

**Pseudopanax.** — Ord. Araliaceæ. Greenhouse evergreen shrubs. Orn. foliage. First introduced 1846. Leaves, hand-shaped, shining.

**CULTURE:** Compost, equal parts loam, peaty leaf-mould, charcoal, & sand. Pot, Feb. to March. Water freely, March to Oct., moderately afterwards. Temp., March to Sept. 55° to 60°; Sept. to March 45° to 55°. Propagate by grafting in heat in spring; inserting portions of roots in light soil in temp. 80° in April.

**SPECIES CULTIVATED:** *P. crassifolium*, 5 to 10 ft., New Zealand.

**Psidium** (Guava Tree).—Ord. Myrtaceæ. Stove evergreen shrubs. Flowering & edible fruit-bearing. First introduced 1692. Fruit (berries) yellow or claret-coloured, round or pear-shaped, aromatic, edible.

**CULTURE:** Compost, two parts fibrous sandy loam, one part equal proportions dry cow manure & silver sand. Position, well-drained pots, tubs, or beds with shoots trained to back walls of stove, warm greenhouse, or vinery. Pot or plant, Feb. or March. Prune into shape annually, Feb. Water freely, April to Oct., moderately afterwards. Syringe freely, March, until fruit begins to ripen, then keep foliage dry. Apply weak stimulants occasionally after berries form until fruit ripens. Temp., March to Oct. 65° to 75°; Oct. to March 45° to 55°. Propagate by cuttings of firm young shoots 2 to 3 in. long, inserted in sand under bell-glass in temp. 75° to 80°, spring or summer.

**SPECIES CULTIVATED:** *P. cattleianum*, white, June, fruits fig-like, 10 to 15 ft., Brazil; *Guava pomiferum* (Red Guava), white, June, fruits apple-like, 10 ft.; and *Guava pyriferum* (Common Guava), white, fruits pear-like, Trop. America.

**Psoralea** (Scurvy Pea).—Ord. Leguminosæ. Greenhouse evergreen flowering shrubs. First introduced 1690.

**CULTURE:** Compost, equal parts fibrous loam, peat, & silver sand. Position, pots in sunny airy greenhouse. Pot, Feb. or March. Prune into shape, Feb. Water freely, April to Sept., moderately afterwards. Good drainage essential. No stimulants or shade required. Temp., March to Sept. 55° to 65°; Sept. to March 40° to 50°. Propagate by cuttings of firm shoots, 2 to 3 in. long, inserted in pots half filled with drainage, remainder layer of moss & pure sand, placed under bell-glass in shady part of greenhouse, May or June.

**SPECIES CULTIVATED:** *P. aculeata*, blue and white, summer, 3 ft., S. Africa; *pinnata*, blue, summer, 4 ft., S. Africa; *arborea*, blue, June, 6 ft., S. Africa.

**Ptelea** (Hop Tree).—Ord. Rutaceæ. Hardy deciduous trees. Flowering & orn. foliage. First introduced 1704. Leaves, trifoliate, green, or variegated with yellow.

**CULTURE:** Soil, ordinary. Position, open shrubberies, plantations, or woods. Plant, Nov. to Feb. Prune into shape, Dec. to Feb. Propagate by seeds sown  $\frac{1}{2}$  in. deep in sunny position outdoors in March or April; layering shoots any time.

**SPECIES CULTIVATED:** *P. trifoliata*, green, May, 4 to 8 ft., N. America; *trifoliata aurea*, young leaves golden.

**Pteris** (Bracken; Brake-fern; Spider Fern).—Ord. Filices. Stove, greenhouse, & hardy ferns. Evergreen and deciduous. Young shoots of bracken, gathered when 6 in. long, may be cooked and eaten like Asparagus.

**CULTURE OF HARDY SPECIES:** Soil, ordinary. Position, shady borders or woods. Plant, April.

**CULTURE OF STOVE SPECIES:** Compost, equal parts loam, leaf-mould, peat, & sand. Position, pots, beds, or rockeries in shady part of stove. Pot or plant, Feb. or March. Water abundantly, April to Sept., moderately afterwards. Temp., March to Sept. 70° to 80°; Sept. to March 60° to 70°.

**CULTURE OF GREENHOUSE SPECIES:** Compost, as above. Pot, March or April. Position, pots, beds, or rockery in shady part of house. Water freely, March to Oct.; moderately Oct. to March. Temp., March to Sept., 55° to 65°; Sept. to March, 50° to 55°. Propagate by spores sown on fine sandy peat in well-drained pans in temp. 80° any time; dwarf species by division of plants, Oct. or April.

**HARDY SPECIES:** *P. aquilina* (Brake or Bracken Fern), 2 to 4 ft., Britain, etc. Several varieties.

**STOVE SPECIES:** *P. aspericaulis*, 6 to 8 in., India; *aspericaulis tricolor*, fronds green, white and red; *palmata nobilis*, 1 ft., Brazil; *quadriaurata argyrea*, fronds with white centres, 1 ft., Tropics.

**GREENHOUSE SPECIES:** *P. Bausei*, hybrid; *cretica* and its varieties *albo-lineata*, *Mayi*, *major* and *Wimsettii*, Tropics; *ensiformis*, and its varieties *cristata*, *Roginæ* and *Victoriæ*, Tropics; *longifolia*, Japan; *scaberula*, New Zealand; *serrulata* (Spider Fern), and its variety *cristata*, China, Japan, etc.; *tremula* (Trembling Fern), and its varieties *Smithieana*, *elegans* and *variegata*, Australia. See also *Pellæa*.

**Ptychosperma** (Australian Feather Palm).—Ord. Palmaceæ. Stove palms. Orn. foliage. Leaves, feather-shaped, green, very graceful. First introduced 1868.

**CULTURE:** Compost, equal parts loam & leaf-mould, half a part silver sand. Position, shady part of stove, warm greenhouse, or conservatory; pots or tubs. Pot, Feb. or March. Water copiously,



March to Sept., moderately afterwards. Syringe freely daily, March to Oct. Shade from sun. Top-dress large plants occasionally with layer of cow manure. Apply stimulants occasionally, April to Sept. Temp., March to Oct., 60° to 75°; Oct. to March, 55° to 60°. Propagate by seeds sown  $\frac{1}{2}$  in. deep in light rich soil in temp. 80° to 90°, Feb., March, or April.

SPECIES CULTIVATED: *P. elegans*, 10 to 20 ft., Australia; *sanderiana*, 10 to 20 ft.

**Pulmonaria** (Lung-wort; Blue Cowslip; Sage of Bethlehem).—Ord. Boraginaceæ. Hardy herbaceous herbs. Orn. foliage. Leaves, lance shaped, green, spotted with white.

CULTURE: Soil, ordinary. Position, partially-shaded rockeries or borders. Plant, Oct., Nov., March or April. Lift & replant in fresh soil every 4 or 5 years. Propagate by seeds sown 1-16 in. deep in ordinary soil in shady position outdoors, March or April; division of roots, Oct. or March.

SPECIES CULTIVATED: *P. angustifolia* (Blue Cowslip), blue and pink, spring, 1 ft., Europe; *angustifolia azurca*, blue; *officinalis* (Sage of Bethlehem or Lung-wort), red and violet, spring, 1 ft., Europe (Britain); *saccharata*, pink, June, 1 ft., Europe.

**Pultenæa**.—Ord. Leguminosæ. Greenhouse evergreen flowering shrubs. First introduced 1792.

CULTURE: Compost, two parts fibrous peat, one part equal proportions silver sand & pounded charcoal. Position, light, airy greenhouse. Pot, Feb. or March. Well-drained pots & firm potting essential. Water freely, April to Sept., moderately other times. Use soft water only. No stimulants required. Shade unnecessary. Stand plants in sunny position outdoors during July & Aug. Temp., Sept. to March 40° to 50°; March to July 55° to 65°. Propagate by seeds sown on surface of shallow well-drained pans, filled with sandy peat, slightly covered with fine peat, placed under bell-glass in temp. 55° to 65°, March or April; cuttings of firm shoots, 2 to 3 in. long, inserted in sandy peat under bell-glass in shade in temp. 55° to 65° in summer.

SPECIES CULTIVATED: *P. obcordata*, yellow, April, 3 ft.; *rosea*, pink, spring, 1 ft.; *stricta*, yellow, spring, 3 ft.; *villosa*, yellow, spring, 3 ft. All natives of Australia.

**Pumpkin** (*Cucurbita Pepo*).—See *Cucurbita*.

**Punica** (Pomegranate).—Ord. Lythraceæ. Hardy deciduous fruit-bearing trees. Fruits, roundish, golden red. First introduced 1548.

CULTURE: Compost, two parts rich fibrous loam, one part thoroughly decayed cow manure. Position, well-drained borders against S. & S.W. walls, S. & S.W. England; in tubs, pots, or borders, with shoots trained against back wall of cool or cold houses or conservatories in other parts of the country. Plant, Oct. to Feb. Train branches thinly to walls. Prune weak shoots only. Blossom & fruit borne on extremities of shoots of previous year's growth. Water outdoor trees copiously in dry weather; indoor trees frequently in summer; moderately in autumn & spring; give none in winter. Mulch surface of soil annually with cow manure in March or April. Propagate by seeds sown  $\frac{1}{4}$  in. deep in well-drained pots of sandy soil in temp. 55° to 65° in spring, transplanting seedlings singly into small pots & keeping in greenhouse until following spring, then plant outdoors or continue to grow in pots. Double-flowered sorts by cuttings of firm shoots, 6 to 8 in. long, inserted in well-drained pots of sandy soil in cold frame or greenhouse any time; suckers removed from roots

& transplanted in Oct. or Nov.; layering shoots Oct. or Nov.; grafting on single-flowered species in March.

SPECIES CULTIVATED: *P. Granatum*, red, June, 15 to 20 ft., Persia; *Granatum flore pleno*, double; *Granatum nana*, dwarf.

**Purple Beech** (*Fagus sylvatica purpurea*).—See *Fagus*.

**Purple Birch** (*Betula alba purpurea*).—See *Betula*.

**Purple Clover** (*Trifolium repens purpureum*).—See *Trifolium*.

**Purple Cone-flower** (*Echinacea purpurea*).—See *Echinacea*.

**Purple Crocus** (*Colchicum autumnale*).—See *Colchicum*.

**Purple-leaved Elm** (*Ulmus campestris purpurea*).—See *Ulmus*.

**Purple-leaved Filbert** (*Corylus Avellana purpurea*).—See *Corylus*.

**Purple Mexican Aster** (*Cosmos bipinnatus*).—See *Cosmos*.

**Purple Orchis** (*Orchis mascula*).—See *Orchis*.

**Purple Osier** (*Salix purpurea*).—See *Salix*.

**Purple Rock-ress** (*Aubrietia purpurea*).—See *Aubrietia*.

**Purple Sand Verbena** (*Abronia umbellata*).—See *Abronia*.

**Purple Side-saddle-flower** (*Sarracenia purpurea*).—See *Sarracenia*.

**Purple Tassels** (*Muscari comosum*).—See *Muscari*.

**Purple Toad-flax** (*Linaria purpurea*).—See *Linaria*.

**Purple Willow** (*Salix purpurea*).—See *Salix*.

**Purple Wreath** (*Petræa volubilis*).—See *Petræa*.

**Purslane** (*Portulacca oleracea*).—See *Portulacca*.

**Puschkinia** (*Striped Squill*).—Ord. *Liliaceæ*. Hardy bulbous flowering plants. First introduced 1819.

CULTURE: Soil, ordinary light sandy. Position, sunny well-drained border or rockery. Plant bulbs 4 in. deep, 1 in. apart, Oct. or Nov. Protect immediately after planting with covering 1 in. deep of cocoanut-fibre refuse or decayed manure. After flowering remove protective material, fully exposing surface to sun to ripen bulbs. Lift & replant every 2 or 3 years. Propagate by seeds sown  $\frac{1}{2}$  in. deep in shallow well-drained pans filled with light sandy soil in Aug. or Sept., placed in cold frame; offsets removed & planted as advised for old bulbs, Oct. or Nov.

SPECIES CULTIVATED: *P. scilloides* (Syn. *libanotica*), white, striped with blue, spring, 4 in., Asia Minor; *scilloides compacta*, dwarf.

**Pyrenean Adonis** (*Adonis pyrenaica*).—See *Adonis*.

**Pyrenean Lily** (*Lilium pyrenaicum*).—See *Lilium*.

**Pyrenean Meadow Saffron** (*Merendera bulbocodium*).—See *Merendera*.

**Pyrenean Violet** (*Viola cornuta*).—See *Viola*.

**Pyrethrum**.—See *Chrysanthemum*.

**Pyrola** (*Winter Green*).—Ord. *Ericaceæ*. Hardy perennial herbs.

CULTURE: Soil, equal parts peat, leaf-mould, & sandy loam. Position, moist partially-shady borders or rockeries. Plant, March or April. Water freely in dry weather. Lift, divide, & replant only when overgrown. Propagate by seeds sown thinly & slightly covered with very fine sandy peat in position where intended to grow, March or April; division of roots March or April.

SPECIES CULTIVATED: *P. olliptica*, white, fragrant, summer, 6 in., N. America; *media*, white and red, summer, 4 in., Britain; *minor*, white and red, summer, 8 in., Europe (Britain); *rotundifolia*, white, fragrant, summer, 6 in., Britain.

**Pyrus** (Apple; Pear; Crab; Medlar; Quince; Mountain Ash; Rowan Tree; White Beam Tree).—Ord. Rosacæ. Hardy deciduous fruit-bearing & flowering trees & shrubs.

**CULTURE OF APPLE:** Soil, deep loam. Position, open, sheltered gardens, N.W. or E. walls. Plant, Nov. to Feb. Distance for planting: Cordons, 18 in.; bush-trained trees, 12 ft.; pyramids, 12 ft.; fan-trained trees, 15 ft.; espaliers, 18 ft.; standards, 21 to 24 ft. Distance from paths: Pyramids, 5 ft.; bush-trained, 2 ft. 6 in. Mode of bearing: On spurs formed on older branches & base of shoots of previous year's growth. Fruit buds may be distinguished from growth buds by having four leaves growing in a cluster. Summer pruning: Shorten all side shoots on cordon trees to the second latent bud—about 1 in.—from their base in June; leave the leader unpruned. Remove the points of the strongest young shoots on pyramids & bushes in July; leave the weak ones untouched. Secure to the wall suitably-placed young shoots of fan-trained trees to form future branches, & shorten remaining ones to two leaves in July. Allow the extremity of each espalier branch to grow unchecked & shorten side growths to two or three leaves in July. Standards require no summer pruning. Autumn & winter pruning: Shorten secondary shoots of cordons to within 1 in. of their base in Sept.; no further pruning required. Shorten all shoots, except leading ones, of bushes & pyramids to within 2 in. of their base in Sept.; leading shoots to 6 or 8 in. in Nov. Prune to within 2 in. of base all side shoots on fan-trained trees; leading shoots, intended to form new branches, to 6, 9, or 12 in. in Nov. Espalier side shoots shorten to 2 in. in Aug. or Sept.; leaders at end of branches to 6, 9, or 12 in. in Nov. Simply thin out branches of standards, keep centre quite open, & shorten any extra vigorous shoots. Mulch newly-planted trees with thick layer of manure. Root prune vigorous unfruitful trees in Sept. Lift & replant every third year cordon, bush, & pyramid trees to keep them fruitful. Gather fruit when, on lifting it by the hand, from a vertical to a horizontal position, it readily parts from the tree. Store in dark, cool, frost-proof room (temp. 40° to 45°). Chemical manures: (1) Superphosphate of lime 12 parts (by weight); nitrate of potash, 10 parts; common salt, 4 parts; sulphate of magnesia, 2 parts; sulphate of iron, 1 part; sulphate of lime, 8 parts. To be applied at the rate of  $\frac{1}{4}$  lb. per square yard in March or April. (2) Equal parts (by weight) kainit, sulphate of soda, & superphosphate of lime. To be applied at the rate of 6 lbs. per tree after pruning. Natural manures: (3) Decayed cow manure spread on surface of soil over roots in Nov. or Dec. (4) Poultry dung applied in a similar manner. (5) Soapsuds applied liberally in autumn & winter. (6) Liquid horse or cow manure & urine applied at any time. Stocks used for budding or grafting: Crab & seedling apple for standards; English Paradise for pyramids & bushes; French Paradise for cordons & very dwarf trees. Propagate for new sorts by seeds sown 3 in. deep outdoors in March; grafting in March, or budding in July & Aug., to perpetuate existing varieties.

**MARKET AND ORCHARD CULTURE:** Soil, loam overlying clay sub-soil. Position, land sloping to S.E. or S.W., just above a valley. Plant, Oct. to March. Distances for planting: Standards, 20ft.; dwarfs, 12ft. Trees to plant a statute acre: Standards, 108; dwarfs, 302. Cost of planting a statute acre: Standard trees, £9; dwarf trees, £8; preparing land, £8; manure, £8; planting and staking

standard trees, 32s. 6d.; dwarf trees, 7s. 6d.; total cost, £20 to £22. Cost of cultivation: Pruning per acre, 20s.; annual manuring, £5; gathering fruit, £7. Average yield per acre: 6 tons; average return (gross), £60; ditto (net), £45. Manures: Superphosphate, 3 cwt., and kainit, 1½ cwt. per acre, applied after pruning; nitrate of soda, 1 cwt., applied when fruit has set; or 20 tons of farmyard manure per acre applied in winter.

**CULTURE OF PEARS:** Soil, deep rich loam; clay soil unsuitable. Position, S., W. or E. walls, fences, or arches, for cordons, fan, or espalier-trained trees; open sheltered garden for pyramids or bushes; N. walls for early sorts. Plant, Nov. to Feb. Cultural details, except chemical manures & stocks, as advised for the apple. Chemical manures: Kainit, 4 parts (by weight); superphosphate, 1 part. Apply at rate of 4 lbs. per tree in Feb. or March. Apply also nitrate of soda at the rate of ½ oz. per gallon of water in liberal quantities once a week, July to Sept. Stocks: Common Pear for standards; quince for pyramids, bushes, & cordons.

**MARKET AND ORCHARD CULTURE:** Soil, light loam over clay soil. Position and other details as advised for apples. Average yield per acre, 5 tons; average return (gross), £50; ditto (net), £35. Manures: Bonemeal, 3 cwt., & kainit, 1½ cwt. per acre applied after pruning; nitrate of soda, 2½ cwt., when fruit has set; or 20 tons of farmyard manure in winter. Propagate as advised for the apple.

**CULTURE OF MEDLAR:** Soil, light, moist loam. Position, sheltered garden or orchards; or grown as espaliers on walls or fences. Plant in autumn. Prune espaliers as advised for apples. Gather fruit in Nov. after one or two sharp frosts. Store in any light, warm place till semi-rotten, then eat. Fruit makes excellent jelly. Propagate by seeds sown in light soil in gentle heat as soon as fruit is ripe; budding in July or grafting in April, on Quince or Hawthorn stocks.

**CULTURE OF QUINCE:** Soil, light, rich moist loam. Position, as standards in orchards or low-lying gardens, margins of water. May also be grown fan-trained against walls. Plant in autumn. Prune as advised for apples and pears. Gather fruit in November. Store away from other fruits. Makes a nice jelly. Propagate by seeds sown outdoors when ripe; budding in July, or grafting in March on seedling Quinces, Pears, or Whitethorn; layering in summer.

**CULTURE OF FLOWERING SPECIES:** Hardy deciduous trees and shrubs. Soil, ordinary. Position, sunny borders or shrubberies for tall species; S., S.W., or W. walls for *P. Maulei*. Fruit of latter species edible. Plant, Nov. to Feb. Prune, Dec. to Feb., shortening previous year's side shoots of *P. spectabilis* to within 2 in. of base, leading shoots to 6, 8, or 12 in. Other species require no pruning beyond thinning out branches. Propagate by seeds sown 3 in. deep in sandy soil in sunny position outdoors in March; cuttings of shoots 8 to 12 in. long inserted in ordinary soil outdoors in autumn; layering in autumn; budding on common pear or quince in July; grafting in March.

**CULTURE OF MISCELLANEOUS SPECIES:** Hardy deciduous trees & shrubs. Orn. foliage; also berry and fruit-bearing. Soil, ordinary. Position, sunny shrubberies or woodlands. Plant, Nov. to Feb. Prune, Dec. to Feb., simply thinning out branches. Propagate *P. aucuparia* by seeds sown ½ in. deep, & 1 in. apart in ordinary

soil outdoors in Oct. or Nov.; also by other methods advised for flowering species.

**FRUIT BEARING SPECIES:** *P. communis* (Pear), white, April to May, 40 ft., Europe (Britain) and Asia; *germanica* (Medlar), white, June and July, 20 to 25 ft., Europe, Asia; *malus* (Apple; Crab), pink, white, May, 20 to 30 ft., Europe (Britain); *vulgaris* (Quince), white or pink, June, 12 to 20 ft., native habitat unknown; *baccata* (Siberian Crab), white, April and May, fruit cherry-like, yellow and red, good for jelly making, 15 to 20 ft., Himalayas, Japan, etc.

**FLOWERING SPECIES:** *P. chamæmespilus* (Bastard Medlar), red, May and June, 6 ft., Europe; *communis flore pleno* (Double-flowered Pear), white, double, May, 20 to 40 ft.; *coronaria* (Sweet-scented Crab), rose, May, 20 ft., U. States; *coronaria flore-pleno*, double; *floribunda*, rose, May, 8 ft., Japan; *floribunda flore-pleno*, double; *floribunda Scheideckeri*, semi-double; *japonica* (Japanese Quince), *Syn. Cydonia japonica*, scarlet, March to July, 6 ft., Japan; *japonica flore-pleno*, crimson, double; *japonica nivalis*, white; *Maulei*, scarlet, April, 3 to 4 ft., Japan; *Maulei alba*, white; *Maulei atrosanguinea*, crimson; *nivalis* (Snow Tree), white, May, 6 ft., Levant; *nivalis variegata*, variegated; *sinensis* (Snow or Sand Pear), white, April, China; *sinensis flore pleno*, double; *prunifolia*, white, April, 20 to 30 ft., Siberia; *spectabilis*, red, April and May, 20 to 30 ft., China and Japan; *spectabilis flore albo*, white; *spectabilis flore pleno*, double.

**MISCELLANEOUS SPECIES:** *P. arbutifolia* (Chokeberry), white or purple, May, 2 to 4 ft., N. America, fruit pear-shaped; *Aria* (White Beam Tree), white, May and June, 20 to 30 ft., ornamental leaved, N. Temperate Zone; *aucuparia* (Mountain Ash; Rowan Tree), creamy white, May, 10 to 20 ft., berries scarlet, leaves finely cut, N. Hemisphere; *Sorbus* (Service Tree), creamy white, May, 20 to 30 ft., berries red, Europe; *Toringo* (Toringo Crab), white, May, Japan; *Toringo flore pleno*, double.

***Pyxidantha*** (Pine-Barren Beauty).—Ord. Diapensiaceæ. Hardy evergreen creeping shrub. First introduced 1851.

**CULTURE:** Soil, equal parts sandy peat & leaf-mould. Position, sunny rockeries. Plant, Sept., Oct., March or April. Propagate by seeds sown where required to grow, lightly covering with fine sandy peat, Sept., Oct., or March; division of plants, Oct. or March.

**SPECIES CULTIVATED:** *P. barbulata*, white, rose, summer, 2 in., N. America.

**Quaking Grass** (*Briza media*).—See *Briza*.

**Quamash** (*Camassia esculenta*).—See *Camassia*.

**Quamoclit** (*Ipomœa Quamoclit*).—See *Ipomœa*.

**Queen Lily**.—See *Phædranassa*.

**Queen of the Orchids**.—See *Grammatophyllum*.

**Queen of the Prairie** (*Spirœa lobata*).—See *Spirœa*.

**Queen of the Woods** (*Betula alba*).—See *Betula*.

**Queen's Cushion** (*Saxifraga hypnoides*).—See *Saxifraga*.

**Queen's-flower** (*Lagerstrœmia Flos-reginæ*).—See *Lagerstrœmia*.

**Queen's Gilliflower** (*Hesperis matronalis*).—See *Hesperis*.

**Queensland Elk's-horn Fern** (*Platycterium grande*).—See *Platycterium*.

**Queensland Spear-Lily** (*Doryanthes Palmeri*).—See *Doryanthes*.

**Queen's Stock** (*Matthiola incana*).—See *Matthiola*.

**Quercus** (Oak).—Ord. Cupuliferæ. Hardy deciduous & evergreen trees & shrubs. Orn foliage. Flowers, greenish; male & female organs borne in different flowers on the same plant; April. Male blooms in long pendulous catkins; females, short, solitary, or clustered. Fruit or seeds (acorns), more or less bullet shaped. Autumn.

**CULTURE:** Soil, clay, gravelly, sandy, ironstone, or reclaimed boggy ground for Common Oak & varieties; chalky or clay ground for Evergreen Oak (*Q. Ilex*); gravelly sandy for Cork Oak (*Q. suber*); chalky for *Q. Mirbeckii* and *rubra*; ordinary for remainder. Position,

open, well-drained shrubberies, fields, & woods. *Q. Ilex* & *Q. Cerris* well adapted for planting near the sea. Plant evergreen kinds, Sept. to Nov., or April; deciduous ones, Oct. to Feb. Depth for planting in heavy soils, 6 in.; light soils, 9 in. Distance apart for deciduous oaks, 20 to 25 ft.; evergreen oaks, used for shelter, 6 to 10 ft.; for hedges, 4 to 6 ft. Prune deciduous oaks in Dec.; evergreen kinds in April. Propagate by acorns gathered in autumn, stored in sand until March, then sown 2 in. deep & 3 in. apart each way. Transplant when one year old 12 in. apart each way, & plant in permanent position when three or four years old. Also choice kinds by grafting in March on common oak.

**USEFUL DATA:** Average age of oak tree, 2,000 years. Average diameter of largest trees, 180 ft. Supposed oldest oak in England, the Cowthorpe; its assumed age 1,800 years. Timber used for building, cabinet work, cartwheel spokes, fencing, barge building, etc.; very durable. Average value per cubic foot, 1s. 6d. to 2s. 6d. Weight of oak per cubic ft., 53 lb. Number of cubic ft. per ton, 42. One bushel of acorns will yield 7,000 trees. Avoid oak trees during thunderstorms. Average price of oak bark per ton, £4 10s. Average cost of felling and harvesting bark per ton, £1 10s. Average profit per ton, £2. Average number of cubic ft. of bark per ton, 150. Average prices for seedling trees: One-year old, 10s. to 12s.; two-year old, 18s. to 20s.; older, 25s. to 30s. per 1,000. Average cost of felling oak trees, 3s. per ton (42 cubic ft.).

**EVERGREEN SPECIES:** *Q. Ilex* (Evergreen Holm or Holly Oak), 60 ft., Mediterranean Region; suber (Cork Oak), 25 ft.; S. Europe.

**DECIDUOUS SPECIES:** *Q. Cerris* (Turkey Oak), 50 to 70 ft., S. Europe, and its varieties *fulhamensis*, *laociniata* and *variegata*; *coccinea* (Scarlet Oak), 50 to 70 ft., N. America; *macrocarpa* (Burr Oak), 30 to 40 ft., N. America; *Mirbeckii*, 50 to 70 ft., Spain, and N. Africa; *pedunculata* (Syn. *Q. Robus*), the Common Oak, 100 to 120 ft., Europe (Britain), Asia; and its varieties *fastigiata* (Cypress Oak), *filicifolia* (Fern-leaved Oak), and *pendula* (Weeping Oak); *rubra* (Red Oak), 50 to 60 ft.; *sessiliflora*, 100 to 120 ft., Europe (Britain) and Asia.

**Quick** (*Cratægus oxyacantha*).—See *Cratægus*.

**Quick-set Thorn** (*Cratægus oxyacantha*).—See *Cratægus*.

**Quince-tree** (*Pyrus cydonia*).—See *Pyrus*.

**Quinoa**.—See *Chenopodium*.

**Quisqualis** (Rangoon Creeper). — Ord. Combretacæ. Stove climbing flowering shrub. Deciduous. First introduced 1815.

**CULTURE:** Compost, two parts loam, one part peat, & a little sand. Position, well-drained pot or tub, or in a bed with shoots trained up rafters. Pot, Feb. Prune shoots moderately close after flowering. Water freely, April to Oct.; keep nearly dry remainder of year. Syringe daily, April to Sept. Shade from mid-day sun only. Propagate by cuttings of young shoots taken off with a small portion of old stem attached, & inserted in sandy soil in small pots under a bell-glass in a temp. of 75° to 85° in spring.

**SPECIES CULTIVATED:** *Q. indica*, orange-red, fragrant, summer, 10 to 15 ft., India.

**Rabbit-berry** (*Shepherdia argentea*).—See *Shepherdia*.

**Radish** (*Raphanus sativus*).—See *Raphanus*.

**Rægner's Ivy** (*Hedera helix rægneriana*).—See *Hedera*.

**Ramondia** (Rosette Mullein).—Ord. Gesneracæ. Hardy herbaceous perennial. Flowering. First introduced 1731.

**OUTDOOR CULTURE:** Two parts sandy peat, one part leaf-mould. Position, fissures or recesses of moist, well-drained shady rockeries, or

in partially shady peaty beds or borders. Plant, March or April. Water occasionally in dry weather. Should not be disturbed oftener than is absolutely necessary.

**POT CULTURE:** Compost, two parts peat, one part equal proportions of leaf-mould & silver sand. Position, shady, well-ventilated frames. Pot, March or April in 3 or 4½ in. pots. Water moderately April to Sept., moderately afterwards. Repot annually. No stimulants required. Propagate by seeds sown on the surface of sandy peat in well-drained pots or pans under bell-glass in cold, shady frame or greenhouse, March to May; division of plants, March or April.

**SPECIES CULTIVATED:** *R. Heldreichii*, violet, summer, 3 in., Thessaly; *pyrenaica* (Rosette Mullein), violet, summer, 4 to 6 in., Pyrenees.

**Rampion** (*Campanula rapunculus*).—See *Campanula*.

**Randia**.—Ord. Rubiaceæ. Stove evergreen flowering shrubs. Climbing. First introduced 1733.

**CULTURE:** Compost, one part loam, one part peat, one part well-decayed manure & charcoal. Position, well-drained pots, or beds in plant stove. Pot or plant, Feb. or March. Prune into shape, Feb. or March. Temp., March to Sept. 65° to 85°; Sept. to March 55° to 65°. Water moderately Oct. to Feb., freely afterwards. Syringe daily (except when in bloom), March to Sept. Apply liquid manure occasionally to healthy plants in flower. Plants one to two years old produce the best blooms. Propagate by cuttings of firm young side shoots, 2 to 3 in. long, inserted in well-drained pots of sandy peat under bell-glass in temp. 75° to 85°, Jan. to April.

**SPECIES CULTIVATED:** *R. macrantha*, yellow, summer, 10 to 20 ft., Trop. Africa.

**Rangoon Creeper** (*Quisqualis indica*).—See *Quisqualis*.

**Ranunculus** (Crow-foot; Fair Maids of France; Fair Maids of Kent; Butter-cup).—Ord. Ranunculaceæ. Hardy & half-hardy annuals; herbaceous, tuberous-rooted, and aquatic perennials.

**CULTURE OF TUBEROUS-ROOTED SPECIES** (Turban, Persian, Dutch, & Scotch *Ranunculus*): Soil, two parts good sandy loam & one part decayed cow manure for fine blooms; good ordinary soil, enriched with rotten manure & leaf-mould for general culture. Position, open, sunny beds or borders. Plant Turban, Scotch, & Dutch varieties in Oct. or Nov., in warm sheltered districts; end of Feb. otherwise; Persian kinds, end of Feb. Place tubers claw-side downwards 2 in. deep & 3 in. apart if to be grown in beds; 2 in. deep & 4 in. apart in rows 5 in. asunder if to be grown in lines in border. Press tubers firmly in soil & cover with fine soil. Protect autumn-planted tubers with mulch of manure or leaves. Mulch in April with rotten manure or cocconut fibre refuse. Water copiously in dry weather. Sprinkle Peruvian guano on the bed at the rate of 1 oz. per square yard when leaves appear. Apply liquid manures—¼ oz. each of nitrate of soda, superphosphate, & sulphate of iron to 1 gall. of water—once a week from time leaves appear until flower buds open. Lift tubers when flowers fade & leaves turn yellow—generally early in July—dry them in the sun, & store away in sand in cool place till planting time.

**CULTURE OF HARDY SPECIES:** Soil, ordinary. Position, shady or partially shady border. Plant, Oct., Nov., March or April. Lift, divide, & replant in fresh soil triennially. Mulch annually in March with decayed manure.

**CULTURE OF TENDER SPECIES:** Soil, sandy peat. Position, shady border at base of wall or fence; or in pots standing in shallow

pans of water in cool frame or greenhouse. Pot, Feb. or March. Plant in March. Water freely outdoors in dry weather, also at all times when grown in pots. Repot annually. Propagate by seeds sown as soon as ripe in autumn 1-16 in. deep in boxes or pans filled with equal parts loam, leaf-mould, & sand, & placed in a cold frame or cool greenhouse; herbaceous kinds by division in Oct. or March.

**TENDER SPECIES:** *R. cortusæfolius*, yellow, spring, 3 ft., Canaries.

**TUBEROUS-ROOTED SPECIES:** *R. asiaticus* (Turban, Persian, French, Dutch, and Scotch Ranunculus), various colours, summer, 6 to 12 in., Orient.

**HARDY SPECIES:** *R. aconitifolius*, white, May, 12 to 18 in., Europe; *aconitifolius flore pleno* (Fair Maids of France), double; *acris flore pleno* (Double Buttercup or Bachelor's Buttons), yellow, spring 1 to 2 ft., Europe (Britain); *alpestris*, white, summer, 4 in., Europe; *amplexicaulis*, white, May, 6 to 12 in., S. Europe; *bulbosus flore pleno*, yellow, double, spring, 1 ft., Europe (Britain); *bullatus*, orange yellow, May, 1 ft., rather tender, Mediterranean Region; *glacialis*, white and rose, summer, 6 in., Arctic Regions; *gramineus flore pleno*, yellow, spring, 6 to 8 in., Europe; *lingua* (Spearwort), yellow, summer, 3 to 4 ft., Europe (Britain); *Lyallii* (Rockwood Lily), white, spring, 2 to 3 ft., New Zealand; *monspeliacus*, yellow, spring, 1 ft., Mediterranean Region; *parnassifolius*, white, June, 6 in., Europe.

**Rape** (*Brassica napus*).—See Brassica.

**Raphanus** (Radish).—Ord. Cruciferæ. Hardy annual. Used extensively for salads. First introduced 1548. Flowers, white and purple; May. Roots, long, round or oval, crimson and white shades.

**OUTDOOR CULTURE OF COMMON RADISH:** Soil, light, ordinary. Position, warm south border for first & last sowing; cool, partially shady ones for intermediate crops. Sow for first crop in Feb., either broadcast or in drills 1 in. deep and 6 in. apart; successional crops in similar manner at intervals of a month until Oct. Long-rooted kinds best for spring sowing; round & oval ones for summer. Thin when three leaves form to 1 in. apart. Water copiously in dry weather. Seed required,  $\frac{1}{4}$  oz. for square yard, or  $\frac{1}{2}$  oz. for a row 50 ft. long. Manures: (1)  $\frac{1}{2}$  oz. kainit, 1 oz. sulphate of ammonia, 2 oz. superphosphate,  $\frac{1}{2}$  oz. iron sulphate to 1 gall. of water; to be applied once a week from time seedlings are 1 in. high. (2)  $\frac{1}{2}$  oz. Peruvian guano to 1 gall. of water applied as No. 1. (3)  $\frac{1}{4}$  oz. nitrate of soda to 1 gall. of water applied as No. 1. (4)  $\frac{1}{2}$  lb. of native guano per square yard, forked in before sowing. Forcing: Make a hotbed of manure, cover with 4 in. of fine mould, & place a frame over it. Sow seeds thinly, lightly cover with mould, moisten with tepid water, & keep close until seedlings appear, then admit air daily. Thin early to ensure good roots. First sowing should be made in Dec., second in Jan., third in Feb., and fourth in March. Apply stimulants as advised for outdoor kinds. Long-rooted varieties best for forcing. Seeds germinate in 3 to 5 days and retain vegetative powers for 5 to 10 years. Crop reaches maturity in 5 to 6 weeks.

**CULTURE OF SPANISH RADISH:** Sow seeds in drills 1 in. deep & 6 in. apart in July or Aug. Thin seedlings when 1 in. high to 6 in. apart. Water freely in dry weather, & apply stimulants as directed for ordinary kinds. Lift roots in Nov. & store in sand in a cool shed to use as required.

**CULTURE OF RAT-TAILED RADISH** (*R. caudatus*): Nat. Java. Introduced 1815. Sow seeds in drills 1 in. deep & 6 in. apart in April, May, or June. Thin to 6 in. apart when 1 in. high. Gather seed pods when grown for pickling, mixing with salads, or cooking & eating, like asparagus.

**MARKET CULTURE:** Soil, light rich. Plough or dig in previous



autumn 5 tons of stable dung and 2 cwt. of kainit per acre. Before sowing harrow in 3 cwt. of superphosphate per acre. When crop is half grown apply 1 cwt. nitrate of soda per acre. Sow in drills 1 in. deep and 1 ft. apart in Feb, March & April for early crops; May, June & July for late crops. Roll light soil before sowing. Sow also on hot-beds in Jan. for very early crops. Long rooted kinds best for outdoor early crops; turnip-rooted for later ones. Thin crops early to 2 in. apart. Early crops ready to gather 4 to 5 weeks after sowing; late ones, 6 weeks. Market in small bunches (6 to 12 roots, according to size and season), and sell by the dozen bunches. Average price per dozen bunches, 3d. to 1s. Average yield per acre, 1,200 bunches. Quantity of seed to sow an acre, 4 to 5 pecks. Number of seeds in an ounce, 1,000. Time to germinate, 4 to 6 days.

SPECIES CULTIVATED: *R. sativus* (Common Radish), Europe; *caudatus* (Rat-tail Radish), Java.

**Raphiolepis** (Indian Hawthorn).—Ord. Rosaceæ. Half-hardy & hardy evergreen flowering shrubs. First introduced 1806.

CULTURE: Soil, equal parts peat, loam & silver sand. Position, S. & S.W. walls, well-drained borders for half-hardy species; sunny rockeries or sheltered borders for hardy species. Plant, Sept., Oct. or April. Prune straggling shoots into shape, April. Protect half-hardy species in severe weather with mats or straw hurdles.

POT CULTURE OF HALF-HARDY SPECIES: Compost, as above. Position, well-drained pots in cold greenhouse or pit, Sept. to May; sunny place outdoors, May to Sept. Pot, Feb. or March. Water copiously April to Oct., moderately afterwards. No stimulants required. Propagate by cuttings of firm shoots, 2 to 3 in. long, inserted in compost of equal parts sand, peat, & loam, under bell-glass or hand-light in cold frame, Aug. to Nov.

HARDY SPECIES: *R. japonica*, white, fragrant, summer, 10 to 15 ft., Japan.

HALF-HARDY SPECIES: *R. indica* (Indian Hawthorn), white, summer, 4 to 8 ft., China.

**Raspberry** (*Rubus idæus*).—See *Rubus*.

**Raspberry-Blackberry**.—See *Rubus*.

**Rat's-tail Cactus** (*Cereus flagelliformis*).—See *Cereus*.

**Rat-tailed Radish** (*Raphanus caudatus*).—See *Raphanus*.

**Rattle-root** (*Cimicifuga racemosa*).—See *Cimicifuga*.

**Rattle-snake Fern** (*Botrychium virginianum*).—See *Botrychium*.

**Rattle-snake Plant** (*Goodyera pubescens*).—See *Goodyera*.

**Ravenala** (*Traveller's Tree*).—Ord. Scitamineæ. Stove evergreen perennials. Orn. foliage. Leaves, very large, green.

CULTURE: Compost, two parts good loam, one part well-decayed manure, & one part sand. Position, pots, tubs, or beds in lofty sunny stove. Pot or plant, Jan. to April. Water copiously Feb. to Oct., about once fortnightly afterwards. Syringe twice daily Feb. to Sept., once daily Sept. to Feb. Moist atmosphere essential. Apply stimulants twice or three times weekly, March to Oct. Temp., March to Oct. 70° to 85°; Oct. to March 60° to 70°. Propagate by suckers removed from parent plant & placed in pots in temp. 75° to 85° any time of year.

SPECIES CULTIVATED: *R. guianensis*, 10 to 15 ft., S. America; *madagascarensis* (*Traveller's Tree*), 10 to 15 ft., Madagascar.

**Ravenea**.—Ord. Palmaceæ. Stove palm. Orn. foliage. Leaves, feather-shaped, green. First introduced 1878.

CULTURE: Compost, equal parts peat, loam, leaf-mould & sand. Position, shady, moist. Pot, Feb. or March. Water abundantly March

to Oct., moderately afterwards. Temp., March to Sept. 70° to 85°; Sept. to March 60° to 65°. Propagate by seeds sown 1 in. deep in pots of light soil in temp. 85° in March.

SPECIES CULTIVATED: *R. Hildebrandtii*, 5 to 10 ft., Comoro Islands.

**Ravenna Grass** (*Erianthus Ravennæ*).—See *Erianthus*.

**Red Alder** (*Cunonia capensis*).—See *Cunonia*.

**Red Buckeye** (*Æsculus Pavia*).—See *Æsculus*.

**Red-bud** (*Cercis canadensis*).—See *Cercis*.

**Red Californian Cedar** (*Libocedrus decurrens*).—See *Libocedrus*.

**Red Cedar** (*Juniperus virginiana*).—See *Juniperus*.

**Red Currant**.—See *Ribes*.

**Red Fir** (*Abies amabilis*).—See *Abies*.

**Red Helleborine** (*Cephalanthera rubra*).—See *Cephalanthera*.

**Red-hot-poker-plant** (*Kniphofia aloides*).—See *Kniphofia*.

**Red-ink-plant** (*Phytolacca decandra*).—See *Phytolacca*.

**Red Maple** (*Acer rubrum*).—See *Acer*.

**Red Oak** (*Quercus rubra*).—See *Quercus*.

**Red Osier** (*Salix rubra*).—See *Salix*.

**Red-root** (*Ceanothus americanus*).—See *Ceanothus*.

**Red Side-saddle-flower** (*Sarracenia rubra*).—See *Sarracenia*.

**Red Star Lily** (*Lilium concolor*).—See *Lilium*.

**Red Valerian** (*Centranthus ruber*).—See *Centranthus*.

**Red-veined Rhubarb** (*Rheum Emodi*).—See *Rheum*.

**Reed Grass** (*Cortadeira conspicua*).—See *Cortadeira*.

**Reed Mace** (*Typha latifolia*).—See *Typha*.

**Rehmannia**.—Ord. Scrophulariaceæ. Half-hardy perennial herb. First introduced 1835.

**OUTDOOR CULTURE:** Soil, moist sandy peat. Position, partially shady borders or at base of walls running E. & W. Plant, March or April. Water freely in dry weather. Mulch liberally with cocoanut-fibre refuse or decayed manure in April. In cold districts it is best to lift plants in Oct.; place in pots & store in cold frame or pit until following March, then plant out.

**POT CULTURE:** Compost, two parts sandy peat, one part leaf-mould. Position, well-drained pots in cold frame, pit, or greenhouse. Pot, Feb. or March. Water liberally April to Oct., moderately afterwards. Apply weak stimulants once a week during flowering period. Shade from bright sun essential. Propagate by cuttings of stout, healthy shoots, 2 to 3 in. long, in sandy soil under bell-glass or hand-light, in cold frame or greenhouse, July to Oct.

SPECIES CULTIVATED: *R. sinensis*, purple, Japan, April, 1 to 2 ft., China and Japan.

**Reineckea**.—Ord. Liliaceæ. Hardy herbaceous perennial. Flowering & orn. foliage. First introduced 1792. Leaves green, or striped with creamy yellow.

**CULTURE:** Soil, ordinary good. Position, sunny rockeries or borders; variegated variety as edgings to borders. Plant, March or April. Lift, divide & replant every three or four years. Water copiously in dry weather. Propagate by division of creeping rhizomes in March or April.

SPECIES CULTIVATED: *R. carnea*, pink, fragrant, April, 6 in., China and Japan; *carnea variegata*, variegated.

**Rein Orchis** (*Habenaria ciliaris*).—See *Habenaria*.

**Reinwardtia** (East Indian Flax; Winter Flax).—Ord. Linacææ. Greenhouse evergreen flowering shrubs. First introduced 1779.

**CULTURE:** Compost, equal parts loam & peat, little sand. Pot, March or April. Prune previous year's shoots to within 1 in. of their base in Feb. or March. Position, warm greenhouse Sept. to June, cold sunny frame June to Sept. Water moderately Oct. to March, freely other times. Syringe twice daily Feb. to Sept. Apply weak stimulants occasionally when in flower. Temp., Sept. to Feb. 55° to 65°; Feb. to June 65° to 70°. Nip off points of young shoots in June to induce bushy growth. Propagate by cuttings of shoots, 2 to 3 in. long, inserted in sandy soil under bell-glass in temp. 65° to 75° in April or May.

**SPECIES CULTIVATED:** *R. tetragyna*, yellow, winter, 3 ft.; *trigyna* (Syn. *Linum trigynum*), yellow, autumn, 2 ft. Both natives of India.

**Renanthera**.—Ord. Orchidacææ. Stove epiphytal orchids. A shy-blooming plant. First introduced 1816.

**CULTURE:** Fix plant to blocks of wood or stems of dead tree ferns by means of copper wire. Syringe roots twice daily March to Oct., about once a week afterwards. Shade from mid-day sun; expose fully to light other times. Growing period, March to Oct.; resting period, Oct. to March. Temp., March to Sept. 65° to 85°; Sept. to March 60° to 70°. Propagate by division of pseudo-bulbs at potting time.

**SPECIES CULTIVATED:** *R. coccinea*, orange, red, and crimson, summer, 4 to 8 ft., Burma.

**Reseda** (Mignonette).—Ord. Resedacææ. A perennial, but usually grown as an annual. First introduced 1752.

**OUTDOOR CULTURE:** Soil, ordinary, containing old mortar or slaked lime. Position, sunny beds, borders, or rockeries. Sow seeds  $\frac{1}{2}$  in. deep in masses or rows in March or April. Thin seedlings when 1 in. high to 2 or 3 in. apart. Water freely in summer. Apply stimulants occasionally when in flower. In warm, dry positions plants will survive the winter outdoors for several years.

**INDOOR CULTURE:** Compost, equal parts loam, leaf-mould, dried manure, old mortar & silver sand. Sow March or April for summer flowering, July or Aug. for winter & spring. Fill 3 in. pots to within  $\frac{1}{4}$  in. of rim, sow 5 or 6 seeds in each, cover with 1-16 in. of soil, & place in temp. 55° to 65°. When seedlings are 1 to 2 in. high, transfer bodily to flowering pots (5 in.). Pot firmly & disturb roots as little as possible. Water moderately at first, freely afterwards. Pinch off points of main shoots when 3 in. high if abundance of bloom is required. Apply stimulants— $\frac{1}{4}$  oz. ammonia to 1 gall. of water—once a week from time flower spike forms till blooms expand.

**TREE MIGNONETTE:** Insert cuttings singly in 2-in. pots in spring in temp. 55° to 65°. Transfer to larger pots when well-rooted. Nip off all shoots & allow main stem to grow one or more feet high, then remove point, & let side shoots form at apex. Shorten these from time to time, until bushy head is obtained, then allow blooms to form. Water freely in summer, moderately in winter. Apply stimulants when in bloom. Repot annually.

**SPECIES CULTIVATED:** *R. odorata* (Mignonette), yellow and white, summer, 1 to 2 ft., N. Africa, Egypt.

**Rest Harrow**.—See *Ononis*.

**Restrepia**.—Ord. Orchidacææ. Stove epiphytal orchids. First introduced 1837.

**CULTURE:** Compost, sphagnum moss only. Position, small blocks of wood suspended from roof. Place layer of moss on block, then roots of plant, then another layer of moss, & secure with copper wire. Water

abundantly March to Oct., moderately afterwards. Shade from sun. Syringe blocks two or three times daily in summer, once daily in winter & autumn. Temp., Nov. to March 45° to 55°; March to Nov. 55° to 60°. Propagate by division, Feb. to March.

**SPECIES CULTIVATED:** *R. elegans*, white, purple and yellow, Jan., Venezuela; *maculata*, yellow, purple and crimson, Nov. to Feb., Colombia; *pandurata*, white and crimson, winter, Colombia.

**Resurrection Plant** (*Anastatica Hierochuntica*).—See *Anastatica*.

**Retinospora**.—See *Cupressus*.

**Rhamnus** (Buckthorn).—Ord. Rhamnaceæ. Hardy evergreen & deciduous trees & shrubs.

**CULTURE:** Soil, ordinary. Position, sunny or shady shrubberies; good seaside shrubs. Plant, Oct. to March. Prune, Feb. Propagate by seeds sown outdoors in autumn; cuttings inserted outdoors in ordinary soil in Sept.; by layering in Sept. or March.

**SPECIES CULTIVATED:** *R. Alaternus angustifolius variegatus*, leaves green and white, 10 to 20 ft., evergreen, S.W. Europe; *catharticus* (Buckthorn), 5 to 10 ft., deciduous, Europe (Britain); *frangula*, 5 to 10 ft., deciduous, Europe (Britain); *libanoticus*, 4 to 6 ft., pretty autumnal foliage, deciduous, Asia Minor.

**Rhapis** (Ground Rattan Cane).—Ord. Palmaceæ. Greenhouse palms. Orn. foliage. First introduced 1774. Leaves, fan-shaped, green; variety, green striped with white.

**CULTURE:** Compost, two parts rich loam, one part decayed leaf-mould & sand. Position, well-drained pots in greenhouse or dwelling-room, during summer. Pot, Feb. or March. Water copiously April to Oct., moderately afterwards. Apply weak stimulants occasionally during summer. Place small lumps of sulphate of iron on surface of soil to ensure deep healthy green foliage. Shade from sun essential. Syringe twice daily in summer, once other times. Temp., March to Sept. 55° to 65°; Sept. to March 45° to 55°. Propagate by seeds sown 1 in. deep in light soil in temp. of 80° in Feb. or March; suckers removed in April or August.

**SPECIES CULTIVATED:** *R. flabelliformis*, 3 to 4 ft., China and Japan, and its variety, *variegata*, leaves variegated; *humilis*, 3 ft., China.

**Rheum** (Rhubarb).—Ord. Polygonaceæ. Hardy herbaceous perennials. Edible stalked & orn. foliage plants. Leaves, large, hand-shaped, green. Roots, large, fleshy. First introduced 1573.

**CULTURE OF EDIBLE RHUBARB.**—Soil, light, deep, rich. Position, sunny, open. Plant single roots with crowns 2 in. below surface, 3 ft. apart in rows 3 ft. asunder, in Nov., Feb., or March. Top-dress with manure in Nov. or Feb., forking it into surface of soil. Lift, divide, & replant every four years. No stalks should be gathered the first year. Remove flower stems directly they appear. **FORCING:** Cover two or more year old crowns with pots or headless casks or tubs, & place fresh manure & tree leaves over these in Jan. or Feb., or lift strong roots & place them close together in deep boxes underneath staging in warm greenhouse, or in corners of dark cellars, in the mushroom houses, with a little soil between. Keep moist and dark. Temp., 55° to 75°. Forcing season, Nov. to Feb. Roots, two to five years old best for forcing. Reject roots after forcing. Chemical Manures: 2 oz. kainit, 2 oz. superphosphate, ¼ oz. iron sulphate to 1 gall. of water applied at intervals of a fortnight during growth (Griffiths). Propagate by seeds sown ½ in. deep in ordinary soil outdoors in March or April; by division of roots with crowns or buds attached, Nov. to Feb.

**MARKET CULTURE:** Soil, deep, rich loam. Plough or dig in in autumn 40 tons of stable manure per acre. Before planting apply 3 cwt. of superphosphate per acre. Plant in Feb. Distances for planting, 2½ ft. each way for Champagne variety; for larger sorts 3½ ft. Bury crowns 2 in. below surface. Top-dress annually with 20 tons of stable manure and 3 cwt. superphosphate per acre in winter. Remove flower stems. Market in bundles of six to eight stems, according to size, and sell by the dozen bundles. Average price per dozen bundles, 2s. to 3s. 6d. Average yield per acre, 20 to 30 tons. Quantity of roots to plant an acre, 7,000 at 2 ft. 6 in.; 5,000 at 3½ ft. Average returns per acre, £60 to £70. Forcing as above.

**CULTURE OF ORNAMENTAL-LEAVED SPECIES:** Soil, deep, rich ordinary. Position, isolated specimens on lawns, wild gardens, islands; sunny. Plant, Nov. to Feb. Water copiously in dry seasons. Apply stimulants occasionally in summer.

**SPECIES CULTIVATED:** *R. Emodi*, 6 to 8 ft., Himalayas; officinale (Medicinal Rhubarb), 8 to 10 ft., Thibet; palmatum, 5 to 6 ft., China; rhaponticum (Garden or Edible Rhubarb), 4 ft., Siberia.

**Rheumatism-root** (*Jeffersonia diphylla*).—See *Jeffersonia*.

**Rhexia** (Deer Grass; Meadow Beauty).—Ord. Melastomaceæ. Hardy perennial herbs. First introduced 1759.

**CULTURE:** Soil, sandy peat or bog earth. Position, open sunny bog, swamp, or moist border. Plant, Oct., Nov., March, or April. Propagate by division of roots in March or April.

**SPECIES CULTIVATED:** *R. virginica*, purple, summer, 6 to 12 in., N. America.

**Rhipsalis** (Mistletoe Cactus).—Ord. Cactaceæ. Greenhouse succulent shrubs. First introduced 1758.

**CULTURE:** Compost, equal parts sandy loam, leaf-mould, brick rubbish, & coarse silver sand. Position, well-drained pots in light greenhouse. Pot, April or May; pots to be drained 1-6 depth for large plants, 1-3 for small plants. Press compost in firmly. Water moderately April to Aug., keep almost dry Aug. to April. Shade from bright sunshine. Temp., March to Sept. 55° to 65°; Sept. to March 50° to 55°. Propagate by seeds sown ½ in. deep in well-drained sandy soil & placed in temp. 75° March; keep soil moderately moist. By cuttings of stems inserted in small pots of sandy soil in summer; grafting on *Cereus speciosissimus*.

**SPECIES CULTIVATED:** *R. Cassytha*, yellow, Sept., 1 ft., W. Indies; *crispata*, white, Dec., 1 ft.; *funalis* (Syn. *R. grandiflora*), white, Feb., 3 ft., Central America; *Houletii*, yellow, winter, Brazil; *mesembryanthemoides*, white, spring, 6 in., S. America; *pachyptera*, white, Feb., Trop. America; *Saglionis*, yellow, March, 1 ft., Buenos Ayres; *sarmentacea*, white, spring, Brazil; *swartziana*, white, June, Brazil.

**Rhodanthe**.—See *Helipterum*.

**Rhodochiton**.—Ord. Scrophulariaceæ. Greenhouse climbing herb. Evergreen. Nat. Mexico. First introduced 1833.

**CULTURE:** Compost, equal parts loam & leaf-mould & half a part silver sand. Position, well-drained pots, boxes, beds or borders with shoots trained up trellis, walls, or rafters of sunny greenhouse. Pot, March to May. Water freely March to Sept., moderately Sept. to March. Apply stimulants occasionally during flowering period. Shade from bright sun. Thin out & shorten shoots moderately in Feb. Temp., March to Sept. 55° to 65°; Sept. to March 45° to 55°. Propagate by seeds sown 1-16 in, deep in ordinary light soil in temp 50° to 60° March, transplanting seedlings when an inch high singly in

2 or 3 in. pots; cuttings of shoots inserted in sandy soil under bell-glass, in temp. 45° March to Aug.

SPECIES CULTIVATED: *R. volubile* (Syn. *Lophospermum atrosanguineum*), reddish purple, summer, 10 to 15 ft., Mexico.

**Rhododendron.**—Ord. Ericaceæ. Greenhouse, & hardy evergreen and deciduous flowering shrubs. The genus *Azalea* is now included with the *Rhododendron*. *R. ponticum*, parent of hardy kinds, first introduced 1763; *R. indica* (Indian *Azalea*) 1808.

**CULTURE OF GREENHOUSE RHODODENDRONS:** Compost, two parts turfy peat, one part silver sand. Position, well-drained pots or tubs indoors all the year round for stove kinds; pots indoors from Sept. to June; outdoors on bed of cinder ashes in sunny position; June to Sept. for greenhouse kinds. Pot, April or May, directly after flowering. Water freely April to Oct., moderately afterwards. Rain water preferable; water containing lime injurious. Apply a little artificial manure to surface of soil when buds show. Repotting only necessary every three or four years. Temp., for stove species, 55° to 65° Sept. to March; 70 to 80° March to Sept.; for greenhouse species, 45° to 55° Sept. to March; 55° to 65° March to Sept.

**CULTURE OF HARDY RHODODENDRONS:** Soil, peat or loam free from lime, or ordinary soil mixed with peat. Position, open sunny borders & shrubberies for tall kinds; sunny rockeries for dwarf kinds like *R. hirsutum*, *R. chamæcistus*, *R. ferrugineum*, etc. Plant, Sept. to Feb. or April, 3 to 6 ft. apart. Prune, April. Remove seed pods directly flowers fade. Water copiously in dry weather. Mulch choice kinds with 2 to 3 in. of decayed manure in May. To ensure flowers annually thin out flower buds freely in April. Apply liquid cow manure occasionally during summer.

**CULTURE OF THE INDIAN AZALEA:** Compost, three parts peat, one part loam & one part of equal proportions of leaf-mould & silver sand. Position, well-drained pots in sunny greenhouses from Oct. to June; in partial shade outdoors June to Sept. Repot directly after flowering. Firm potting essential. Prune only to shorten straggly growths. Syringe daily after flowering till plants are stood outdoors. Water moderately Oct. to March, afterwards freely, never allowing roots to get dry. Apply weak liquid manure when flower buds form. Temp., Oct. to March 45° to 55°; March to June 65°. Remove seed pods directly they form.

**CULTURE OF AZALEA PONTICA, Etc.:** Soil, sandy peat & leaf-mould. Position, beds on lawn; or in groups in front of shrubberies. Plant in autumn. No pruning required. Remove seed pods directly they form. Mulch annually in winter with decayed manure. Supply freely with water in dry weather. May also be grown in pots in cool greenhouses, or forced into flower early in temp. 65° to 75° in winter. Plants grown in pots should be kept under glass till July, then be stood outdoors till November, when remove to cold house or frame. Syringe foliage after flowering till placed outdoors. Repot every second year directly after flowering.

**PROPAGATION OF RHODODENDRONS, ETC.:** Propagate rhododendrons by seeds sown on surface of sandy peat, slightly covered with fine sand, placed under bell-glass in temp. 55° to 65° if stove or greenhouse kinds, in cold frame if hardy. Cover with bell-glass & keep moderately moist. Also by cuttings of firm shoots, 3 in. long, inserted in sandy peat under bell-glass in temp. 45° to 55° at first,

then 10° higher. By layering in Sept. or March. By grafting on common species in a close frame or propagator in March. Indian azaleas by seeds as advised for rhododendrons; cuttings of half-ripened shoots with a heel inserted in pots of sandy peat under bell-glass in temp. 65° to 75° in spring; also by grafting. Hardy deciduous azaleas by seeds sown as advised for rhododendrons; cuttings of half-ripened shoots inserted in sandy peat in a cold frame in August; layering shoots in spring; grafting in spring.

**GREENHOUSE EVERGREEN SPECIES:** *R. balsaminæflorum*, various colours, winter, 4 ft., hybrid; brookianum, orange yellow, spring, 3 to 4 ft.; *Dalhousiæ*, yellow and green, spring, 6 ft., Himalayas; *Edgeworthii*, white and yellow, fragrant, June, 6 ft., Himalayas; *Falconeri*, white or yellow, May, 8 to 10 ft., Himalayas; *formosum*, white and rose, fragrant, spring, 6 ft., Himalayas; *grande*, white, spring, 10 to 15 ft., Himalayas; *indicum* (Syn. *Azalea indica*), various, winter and spring, 6 to 10 ft., China; *indicum amœnum* (Syn. *Azalea amœna*), pink, 3 to 6 ft., spring; *indicum roseæflorum*, pink, double; *griffithiana* (Syn. *R. Aucklandii*), white, yellow, and rose, May, 6 ft., Himalayas; *jasminiflorum*, pink, summer, 3 ft., Java; *javanicum*, orange, summer, 4 ft., Java; *Maddeni*, bluish, summer, 6 to 10 ft., Himalayas; *multicolor*, yellow, autumn, 2 ft., Sumatra; *Nuttallii*, sulphur, May, 10 to 15 ft., Himalayas; *veitchianum*, white, fragrant, spring, 6 ft., Burma; *Wightii*, yellow and crimson, June, 6 to 10 ft., Himalayas; *Taylori*, pink, summer, 4 ft., hybrid. See also trade lists.

**HARDY EVERGREEN SPECIES:** *R. arboreum*, white, rose, and red, spring, 20 to 30 ft., India; *campanulatum*, lilac, rose, April, 6 to 10 ft., Himalayas; *cataubiense*, lilac, purple, July, 6 to 10 ft., Virginia; *caucasicum*, purple, Aug., 1 ft., Caucasus; *ferrugineum* (Alpine Rose), scarlet, June, 18 in., Alps; *ponticum*, parent of hardy race, purple, May, 10 to 15 ft., Spain, Asia, etc.; *racemosum*, white and pink, April, 3 ft., N. China. See also trade lists.

**HARDY DECIDUOUS SPECIES:** *R. calendulaceum* (Syn. *Azalea calendulacea*), yellow and red, May, 6 ft., U. States; *flavum* (Syn. *Azalea pontica*), yellow, June, 6 ft., Caucasus; *nudiflorum* (Syn. *Azalea nudiflora*), yellow, white, pink and orange, June, 3 ft., Canada, Florida, etc.; *sinense* (Syn. *Azalea mollis*), white, orange, etc., June, 4 ft., China and Japan; *viscosum* (Syn. *Azalea viscosa*), Swamp Honeysuckle, white, fragrant, summer, 4 ft., N. America. See also trade lists.

**Rhodothamnus** (Ground Cistus).—Ord. Ericaceæ. Hardy evergreen flowering shrub. First introduced 1786.

**CULTURE:** Soil, equal parts peat, loam & sand. Position, fissures between pieces of limestone on rockeries. Plant, March or April. Water freely in dry weather. Propagate by seeds, cuttings & layering as advised for rhododendron.

**SPECIES CULTIVATED:** *R. chamæcistus* (Syn. *Rhododendron Chamæcistus*), pink, spring, 6 in., Austrian Alps.

**Rhodotypos** (White Kerria).—Ord. Rosaceæ. Hardy deciduous flowering shrub. First introduced 1866.

**CULTURE:** Soil, good ordinary. Position, against S. or W. walls or fences. Plant, Oct. to March. Prune in May or June, cutting off old or weak shoots only.

**POT CULTURE:** Compost, two parts loam, one part leaf-mould & sand. Pot, Oct. Place in cold greenhouse & water moderately. After flowering, place plants in sunny position outdoors till Oct. **FORCING:** Place plants in temp. 55° to 65° in Jan. Water moderately. Transfer plants to sunny position outdoors after flowering. Propagate by cuttings of young shoots, 2 to 3 in. long, inserted in sandy soil under bell-glass or hand-light or in cold frame in summer; layering shoots in Oct.

**SPECIES CULTIVATED:** *R. kerrioides*, white, April, 10 to 15 ft., Japan.

**Rhopalostylis**.—Ord. Palmaceæ. Stove palms. Orn. foliage. Leaves, feather-shaped, green. First introduced 1827.

**CULTURE:** Compost, equal parts loam, peat, leaf-mould & sand. Position, pots or tubs in moist shady greenhouse or conservatory. Pot,

Feb. or March. Water copiously April to Oct.; moderately afterwards. Apply stimulants occasionally May to Sept. Keep piece of sulphate of iron on surface of soil to insure deep green foliage. Syringe twice daily April to Sept., once daily afterwards. Temp., March to Sept. 70° to 85°; Sept. to March 55° to 65°. Propagate by seeds sown 1 in. deep in light sandy soil in well-drained pot in temp. 75° under bell-glass or in propagator, March or April.

**SPECIES CULTIVATED:** *R. Baueri* (Syn. *Areca Baueri*), 10 to 20 ft., Norfolk Island; *sapida* (Syn. *Areca* or *Kentia sapida*), 10 to 20 ft., New Zealand.

**Rhubarb** (*Rheum rhaponticum*).—See *Rheum*.

**Rhus** (Sumach; Smoke Plant; Wig Tree; Stag's-horn Sumach).—Ord. Anacardiaceæ. Hardy deciduous trees. Flowering & orn. foliage. Foliage nicely tinted in autumn. First introduced 1629. Leaves, entire, or once divided, green.

**CULTURE:** Soil, ordinary. Position, sunny borders or shrubberies. Plant, Oct. to Feb. Prune flowering species moderately after blooming; others in Nov. or Dec. Propagate by cuttings of firm shoots, 6 to 8 in. long, inserted in ordinary soil in cold frame or under hand-light, Oct. to Nov.; cuttings of roots, 2 to 3 in. long, planted 3 in. deep in sandy soil, Oct. or Nov.; layering shoots in autumn.

**SPECIES CULTIVATED:** *R. canadensis*, yellow, April, 6 to 8 ft., N. America; *cotinoides* (American Smoke Tree), yellow, April, 6 to 8 ft., leaves assume rich tints in autumn, S.U. States; *cotinus* (Smoke Plant, or Wig Tree, or Venetian Sumach), purple, June, 6 ft., inflorescence and foliage richly tinted in autumn, Europe; *cotinus atropurpurea*, foliage purplish; *glabra* (Smooth Sumach), yellow, June, 10 to 15 ft., U. States; *glabra laciniata*, leaves finely cut, scarlet tinted in autumn; *typhina* (Stag's-horn Sumach), yellow, June, 10 to 20 ft., U. States.

**Rhynchospermum**.—See *Trachelospermum*.

**Ribbon-fern** (*Pteris serrulata*).—See *Pteris*.

**Ribbon-grass** (*Phalaris arundinacea variegata*).—See *Phalaris*.

**Ribes** (White, Red & Black Currant; Gooseberry).—Ord. Saxifragaceæ. Hardy deciduous fruit-bearing & flowering shrubs. Berries, black, red, white.

**CULTURE OF BLACK CURRANT** (*R. nigrum*): Soil, good ordinary. Position, sunny. Plant, 5 ft. apart each way, Nov. to Feb. Prune, Nov. to Feb., thinning out old shoots only. Fruit borne on shoots of previous growth & on older ones.

**CULTURE OF RED AND WHITE CURRANT:** *R. rubrum* & *R. r. album*). Soil, good ordinary. Position, sunny for early crops; against N. walls or fences for late ones. Plant, Nov. to Feb., 5 to 6 ft. apart each way. Pruning: Allow as many current year's shoots as are required to form branches to remain, & shorten remainder to within 1 in. of their base in June or July. Shorten the selected shoots to 4, 6, or 8 in., according to shape of tree, between Nov. & Feb. Cut out old or distorted branches at same time. Keep centres of trees well open. Fruit borne on base of previous years & older shoots only.

**CULTURE OF GOOSEBERRY** (*R. grossularia*): Soil, good ordinary. Position, sunny for early crops; against N. or E. walls for late crops. Plant, Nov. to Feb., 5 to 6 ft. apart each way. Pruning: Shorten all weak shoots of current year's growth to within 1 in. of base in June or July. Thin out remaining shoots in winter; shortening those left to 4 or 6 in. Shorten side shoots of trees grown against walls to 1 in. in July.

**MANURES FOR CURRANTS AND GOOSEBERRIES:** (1) Decayed cow, horse, or pig dung applied liberally in autumn, & forked lightly into surface of ground. (2) 1½ oz. each of superphosphate of lime &



kainit per square yard applied in autumn, & 1 oz. of nitrate of soda per square yard, applied in spring. (3) 1 oz. nitrate of soda,  $\frac{1}{2}$  oz. each of sulphate of iron & superphosphate, to 1 gall. of water applied occasionally during summer.

**MARKET CULTURE:** Soil, moist loam for black currants; loam over gravel or chalk for red currants and gooseberries. Position, valleys for black currants; higher land for others. Usually grown as an under crop in mixed plantations. Distance to plant, 6 ft. Number of trees to plant an acre, 1,210. Cost of trees per acre, £12; preparing sites, £7; manure, £5; planting, 14s.; total, £24 10s. Cost of cultivation per acre per annum: Digging & hoeing, 32s.; pruning, 22s.; gathering fruit, £6; manures, £5. Average yield per acre, two to three tons; returns (gross), £25 to £30; ditto (net), £12 to £16. Manures: 20 tons of stable manure per acre in autumn or winter; or 3 $\frac{1}{2}$  cwt. bone-meal and 1 $\frac{1}{2}$  cwt. kainit per acre in winter, and 1 $\frac{1}{2}$  cwt. nitrate of soda when fruit has set.

**CULTURE OF FLOWERING CURRANTS:** Soil, ordinary. Position, sunny. Plant, Oct. to Feb. Prune directly after flowering only. Top-dress with decayed manure in autumn. Propagate by seeds sown  $\frac{1}{2}$  in. deep in ordinary fine soil outdoors in Sept. or Oct.; by cuttings 6 to 8 in. long, inserted in ordinary soil outdoors, Oct. to Feb.; by layering in autumn; suckers, Nov. to Feb.

**FRUITING SPECIES:** *R. grossularia* (Gooseberry), N. Hemisphere; *nigrum* (Black Currant), N. Europe; *rubrum* (Red Currant), N. Hemisphere; *rubrum album* (White Currant).

**FLOWERING SPECIES:** *R. aureum* (Buffalo Currant), yellow, April, 6 to 8 ft., N. America; *gordonianum*, yellow and red, April and May, 6 to 8 ft., hybrid; *sanguineum* (Flowering Currant), rose, May, 6 to 8 ft., California; and its varieties, *album* (White), *atrorubens* (red), *atrosanguinea* (dark red), *carneum* (rose), and *carneum flore pleno* (double).

**Riccarton's Fuchsia** (*Fuchsia Riccartoni*).—See *Fuchsia*.

**Rice-flower** (*Pimelea elegans*).—See *Pimelea*.

**Rice-paper Plant** (*Fatsia papyrifera*).—See *Fatsia*.

**Rice's Acacia** (*Acacia riceana*).—See *Acacia*.

**Richardia** (*Arum* or *Calla Lily*; *Lily of the Nile*).—Ord. Aroideæ. Greenhouse herbaceous perennials.

**CULTURE OF R. AFRICANA** (*Arum Lily*): Compost, equal parts loam, cow manure, & coarse silver sand. Position, greenhouse or dwelling-room, Oct. to May; outdoors remainder of year. Repot annually in Aug or Sept. Water moderately Sept to March, freely March to May. Apply stimulants once a week during flowering period. Plant 15 in. apart in ordinary rich soil in sunny position outdoors in May, lift and repot in Aug. or Sept., singly in 5 or 6 in. pots. Supply freely with water in dry weather when outdoors. Suitable stimulants,  $\frac{1}{2}$  oz. of Peruvian guano, 1 teaspoonful of Albert's or Clay's manures,  $\frac{1}{4}$  oz. nitrate of soda or sulphate of ammonia to 1 gall. of water. Temp., Sept. to March 40° to 55°; March to May 50° to 60°.

**CULTURE OF OTHER SPECIES:** Compost, same as for *R. africana*. Position, greenhouse, Oct. to June; cold frame remainder of year. Repot annually in Feb. Water moderately Feb. to April & Aug. to Oct., freely April to Aug.; keep nearly dry Oct. to Feb. Apply stimulants during flowering period. Temp., Oct. to March 55° to 65°; March to Oct. 65° to 75°. Propagate by seeds sown  $\frac{1}{2}$  in. deep in loam, leaf-mould & sand, in temp. 65° to 75° in spring; division of plants when planting outdoors or repotting; suckers removed at potting time.

**SPECIES CULTIVATED:** *R. africana* (Syn. *Calla æthiopica*), white, winter and

spring, 3 to 4 ft., S. Africa; *africana nana compacta*, dwarf; *albo-maculata*, white, summer, 2 ft., leaves spotted white, S. Africa; *elliottiana*, yellow, Aug., 3 ft., S. Africa; *melanoleuca*, yellow and purple, summer, 18 in., S. Africa; *Pentlandii*, rich yellow and purple, summer, 2 ft., S. Africa; *Rehmannii*, rosy purple, summer, 2 ft., Natal.

**Richardson's Jacob's Ladder** (*Polemonium Richardsonii*).—See *Polemonium*.

**Ricinus** (Castor Oil Plant).—Ord. Euphorbiaceæ. Half-hardy annual herb. Orn. foliage. First introduced 1548. Flowers, insignificant. Leaves, hand-shaped, large, green, purplish.

**INDOOR CULTURE:** Sow seeds, previously steeped for a few hours in tepid water,  $\frac{1}{2}$  in. deep in pots of light sandy soil in temp. of 70° to 75° in March, transplanting seedlings when three leaves form singly into 2-in. pots, & keep in similar temp. until well rooted, then transfer to 5 or 6 in. pots, after which remove to cool greenhouse or dwelling-room. Water moderately. Shade from sun.

**OUTDOOR CULTURE:** Sow seeds & transplant into small pots as above. Transfer to cold frame or pit in May to harden. Plant out, June. Position, sunny beds or borders.

**SPECIES CULTIVATED:** *R. communis*, 3 to 6 ft., Trop. Africa, and its several varieties, *Gibsonii*, *zanzibarensis*, etc.

**Rigid Shield Fern** (*Nephrodium rigidum*).—See *Nephrodium*.

**River-side Windflower** (*Anemone rivularis*).—See *Anemone*.

**Rivina** (Blood Berry; Rouge Berry; Rouge Plant).—Ord. Phytolaccaceæ. Stove evergreen berry-bearing plants. Pretty for table decoration. First introduced 1699. Flowers succeeded by scarlet berries.

**CULTURE:** Compost, equal parts leaf-mould & sandy loam, half a part silver sand. Position, small, well-drained pots in light part of stove, Sept. to June; cold sunny frames, June to Sept. Pot, Feb. or March. Water freely April to Oct., moderately afterwards. Apply weak stimulants occasionally Oct. to Feb. Shade from sun. Best results obtained by raising plants from seed or cuttings annually. Propagate by seeds sown 1-16 in. deep in well-drained pots or shallow pans of good light soil placed in temp. 55° to 65°, spring; cuttings of young shoots inserted in Feb., March or April in small pots of light sandy soil in temp. of 65° to 75°, spring.

**SPECIES CULTIVATED:** *R. humilis*, white, June, 1 to 2 ft., Caribbean Islands.

**Roast-beef-plant** (*Iris foetidissima*).—See *Iris*.

**Robinia** (False Acacia; Locust Tree).—Ord. Leguminosæ. Hardy deciduous flowering trees & shrubs. First introduced 1640.

**CULTURE:** Soil, ordinary. Position, sunny well-drained borders & shrubberies. Plant, Oct. to Feb. Prune, Nov. to Feb. Rose Acacia (*R. hispida*) may be grown against S. or W. walls, side shoots being pruned annually to 1 in. of base, Nov. or Dec. Propagate choice varieties by grafting on common species (*R. pseudacacia*) in March; other kinds by seeds sown  $\frac{1}{2}$  in. deep in ordinary soil outdoors, Nov. or March; cuttings of shoots, 6 to 8 in. long, inserted in ordinary soil in sheltered position outdoors in autumn; suckers removed from parent tree & planted Oct. or Nov.; layering, Sept. or Nov.

**SPECIES CULTIVATED:** *R. hispida* (Rose Acacia), rose, May, 6 to 8 ft., S.U. States; *hispida inermis*, without prickles; *pseudacacia* (Locust Tree; False Acacia), white, April, 30 to 50 ft., E.U. States; and its varieties, *aurea* (golden-leaved) and *bessoniana* (round headed); *decaisneana* (pink-flowered), etc.

**Robinson's Iris** (*Moræa robinsoniana*).—See *Moræa*.

**Rocambol.**—See *Allium*,

**Rochea.** — Ord. Crassulaceæ. Greenhouse succulent plants. First introduced 1795.

**CULTURE:** Compost, equal parts sandy loam, brick rubble, dried cow manure & river sand. Position, well-drained pots in light greenhouse, close to glass. Pot, March. Water freely, April to Aug.; moderately, Aug. to Nov.; very little afterwards. Prune old plants after flowering, shortening shoots to 1 in., & repot when new shoots are 1 in. long. Temp., March to Sept. 55° to 65°; Sept. to March 45° to 50°. Propagate by seeds sown in well-drained pots or pans of sandy soil, just covering seeds with fine mould, in temp. 60° to 70° in March or April; seedlings to be kept close to glass & have little water; cuttings of shoots, 2 to 3 in. long, exposed to sun for few days, then inserted in June, July, or Aug. in well-drained pots of sandy soil, placed on greenhouse shelf & given very little water.

**SPECIES CULTIVATED:** *R. coccinea*, scarlet, July, 1 ft., S. Africa; *jasminea*, white, spring, 6 to 9 in., S. Africa; *versicolor*, white, spring, 2 ft., S. Africa. See also the genus *Crassula*.

**Rock Brake-fern** (*Cryptogramme crispa*).—See *Cryptogramme*.

**Rock Broom** (*Genista tinctoria*).—See *Genista*.

**Rock Candytuft** (*Iberis saxatilis*).—See *Iberis*.

**Rock Cress** (*Arabis albida* and *Aubrietia deltoidea*).—See *Arabis* and *Aubrietia*.

**Rock Daphne** (*Daphne rupestris*).—See *Daphne*.

**Rockfoil**.—See *Saxifraga*.

**Rock Forget-me-not** (*Omphalodes Luciliæ*).—See *Omphalodes*.

**Rock Gromwell** (*Lithospermum petræum*).—See *Lithospermum*.

**Rock Jasmine**.—See *Androsace*.

**Rock Knot-weed** (*Polygonum vacciniifolium*).—See *Polygonum*.

**Rock Larkspur** (*Delphinium ajacis*).—See *Delphinium*.

**Rock Lychnis** (*Lychnis Lagasceæ*).—See *Lychnis*.

**Rock Mad-wort** (*Alyssum saxatile*).—See *Alyssum*.

**Rock Navel-wort** (*Omphalodes Luciliæ*).—See *Omphalodes*.

**Rock Pink** (*Dianthus petræus*).—See *Dianthus*.

**Rock Purslane** (*Calandrinia umbellata*).—See *Calandrinia*.

**Rock Rose**.—See *Cistus*.

**Rock Soap-wort** (*Saponaria ocymoides*).—See *Saponaria*.

**Rock Speedwell** (*Veronica saxatilis* & *V. rupestris*).—See *Veronica*.

**Rock Spleenwort** (*Asplenium fontanum*).—See *Asplenium*.

**Rock Stonecrop** (*Sedum rupestre*).—See *Sedum*.

**Rock Wallflower** (*Erysimum pulchellum*).—See *Erysimum*.

**Rock Wood-Lily** (*Ranunculus Lyalli*).—See *Ranunculus*.

**Rock Yarrow** (*Achillea rupestris*).—See *Achillea*.

**Rocky Mountain Columbine** (*Aquilegia cærulea*). — See *Aquilegia*.

**Rodgers' Bronze-leaf** (*Rodgersia podophylla*). — See *Rodgersia*.

**Rodgersia** (*Rodgers' Bronze-leaf*).—Ord. Saxifragaceæ. Hardy herbaceous perennial. Orn. foliage. First introduced 1880. Leaves, very large, bronzy green.

**CULTURE:** Compost, two parts peat, one part loam. Position, partially-shaded border. Plant, March or April. Water freely in dry weather. Protect in severe weather with covering of fern fronds or litter. Propagate by division of rhizomes, March or April.

SPECIES CULTIVATED: *R. pinnata*, yellowish white, summer, 2 to 3 ft., China; *podophylla*, yellowish white, summer, 3 ft., Japan.

**Rodriguezia**. — Ord. Orchidaceæ. Stove epiphytal orchids. First introduced 1829.

CULTURE: Compost, sphagnum moss only. Position, blocks of wood or baskets suspended from roof. Place on blocks or in baskets, Feb. or March. Water freely, March to Sept.; moderately other times. Shade from sun. Moist atmosphere very essential in summer. Temp., Oct. to Feb. 50° to 60°; Feb. to Oct. 60° to 70°. Propagate by division of pseudo-bulbs at potting time.

SPECIES CULTIVATED: *R. candida*, white and yellow, April and May, 1 ft., Brazil; *decora*, rose, red, and white, May and June, 1 ft., Brazil; *fragrans*, white and yellow, April and May, fragrant, Brazil; *venusta*, white, pink and yellow, various periods, Brazil.

**Roelia** (South African Harebell).—Ord. Campanulaceæ. Greenhouse evergreen shrubs. First introduced 1774.

CULTURE: Compost, equal parts of peat & loam & a fair quantity of sand. Position, pots in light & dry part of greenhouse. Pot, March. Water very carefully during spring & summer, & give very little in autumn and winter. Syringing or wetting the foliage must be avoided at all seasons. Ventilate freely in summer & moderately at other times. Dry atmosphere essential in autumn & winter. Remove flowers directly they fade; also all blooms that form in autumn & winter. Temp., Sept. to April 40° to 45°; April to Sept. 50° to 60°. Propagate by cuttings of strong shoots 2 in. long, inserted in moist sand in a temp. 58° in spring. Shade from sun.

SPECIES CULTIVATED: *R. ciliata*, white and purple, summer, 1 ft., S. Africa; *elegans*, blue, spring, 8 in., S. Africa.

**Roman Hyacinth** (*Hyacinthus orientalis albulus*). — See *Hyacinthus*.

**Romanzoffia** (Sitcha Water-leaf). — Ord. Hydrophyllaceæ. Hardy perennial herb. First introduced 1873.

CULTURE: Soil, ordinary. Position, sunny ledges of sunny rockery. Plant, March or April. Propagate by division, March or April.

SPECIES CULTIVATED: *R. sitchensis*, white, spring, 3 to 4 in., Sitcha.

**Romneya** (White Bush or Tree Poppy).—Ord. Papaveraceæ. Half-hardy perennial. First introduced 1875.

INDOOR CULTURE: Compost, equal parts, peat, leaf-mould, & sand. Position, well-drained pots in light cold greenhouse. Pot, March or April. Water moderately, April to Oct.; keep nearly dry afterwards. No stimulants required. Repot annually. Propagate by seeds sown on compost of fine sandy peat in well-drained pots or pans under bell-glass in temp. 55° in spring.

OUTDOOR CULTURE: Soil, sandy peat. Position, well-drained elevated border at base of S. wall, or sheltered sunny rockery. Plant, April or May. Protect in severe weather with covering of fern or litter.

SPECIES CULTIVATED: *R. Coulteri*, white, summer, 4 to 6 ft., California.

**Romulea**.—Ord. Iridaceæ. Greenhouse or half-hardy bulbous plants. First introduced 1739.

CULTURE OF HARDY SPECIES: Soil, light rich sandy. Position, sunny well-drained border. Plant, Sept. to Jan., placing tubers 4 in. deep & 2 in. apart. Lift & replant tubers annually. Mulch surface of bed in March with cow manure.

CULTURE OF GREENHOUSE SPECIES: Compost, two parts sandy loam, one part leaf-mould or decayed cow-manure. Pots, 4½-in. in

diameter, well-drained. Place five tubers 3 in. deep, in each pot in Nov., & cover with cocoanut-fibre refuse in cold frame or under cool greenhouse stage until growth begins. Water moderately from time plants begin to grow until flowers fade, then gradually withhold it, keeping dry till Jan. Temp., Sept. to March 40° to 50°; other times 50° to 60°. Propagate by offsets treated as advised for tubers.

**HARDY SPECIES:** *R. bulbocodium*, yellow and violet, June, 4 to 6 in., Europe; *Columnæ*, white and purple, May, 6 in., Europe and Azores; *ramiflora*, yellow and lilac, May, 6 to 8 in., Mediterranean Region.

**GREENHOUSE SPECIES:** *R. rosea*, rose and yellow, summer, 6 in., S. Africa.

**Rondeletia.**—Ord. Rubiaceæ. Stove evergreen flowering shrubs. First introduced 1752.

**CULTURE:** Compost, equal parts rough fibrous peat & loam, one part equal proportions charcoal lumps, & coarse silver sand. Position, well-drained pots in light part of stove with shoots trained to sticks or trellis. Pot, Feb. or March. Prune moderately after flowering. Water freely, April to Oct.; moderately afterwards. Syringe daily, March to Sept. Shade from bright sunshine. Temp., March to Sept., 65° to 75°; Sept. to March, 50° to 55°. Propagate by cuttings of firm shoots inserted in pure sand under bell-glass in temp. 75° to 85° spring or summer.

**SPECIES CULTIVATED:** *R. amœna*, pink, summer, 3 to 4 ft., Mexico; *Backhousei*, pink, summer, 3 ft., Trop. America; *gratissima*, pink, fragrant, summer, 3 to 4 ft., Mexico; *odorata* (Syn. *R. splendens* and *speciosa*), scarlet, fragrant, summer, 3 to 4 ft., Mexico.

**Rosa** (Rose).—Ord. Rosaceæ. Hardy and half-hardy evergreen & deciduous shrubs. **CLASSIFICATION.**—Summer blooming types: Provence, Pompon, Moss, Damask, Hybrid China, Hybrid Bourbon, Hybrid Noisette, Alba, Austrian Briar, Scotch, Sweet Briar, Ayrshire, Boursault, Banksian, Evergreen, Polyantha. Summer and Autumn-blooming: Hybrid Perpetual, Hybrid Tea, Tea, Noisette, China, Bourbon, Dwarf Polyantha, Japanese, Perpetual Moss, Wichuriana, & Perpetual Scotch.

**CULTURE OF DWARF ROSES:** Soil, deep rich loam, well-enriched with decayed manure. If light, add clay and cowdung. If heavy, road grit, leaf-mould, burnt refuse, horse dung, & lime. Position, sunny beds or borders. Plant in Oct. or Nov., or Feb. to April. Distance apart to plant, 18 in. Depth of soil over roots, 4 to 6 in. on heavy, & 7 to 8 in. on light soils. Pruning: Time, end of March & early in April. Hybrid Perpetuals: Thin out weak shoots, & shorten others to dormant bud three to twelve inches from base, according to strength. Hybrid Teas: Treat as for last section. Teas and Noisettes: Thin out all weak wood, & shorten remaining shoots one-half or one-third according to strength. Bourbons: Treat as for Hybrid Perpetuals. Provence, Damask, Moss, Chinas, & Pompons: Treat as advised for Teas. Austrian & Scotch Briars: Thin out weak or dead growths only. Hybrid Sweet Briars: Thin out older shoots only after flowering. Japanese Roses: Thin out old wood only. Protect Tea, China, & tender roses in winter by drawing soil to a height of six inches around the base of each plant, & put bracken or dry litter among the shoots.

**CULTURE OF STANDARD ROSES:** Soil, position, and planting as for Dwarfs. Distance apart to plant, 3 ft. Pruning: Hybrid Perpetuals, Hybrid Teas, & Bourbons: Thin out weak shoots in centre of tree, & shorten remaining shoots to three or six inches, according to

vigour. Teas & Noisettes: Thin out weak shoots freely, & shorten remaining ones to a foot or so, according to strength.

**CULTURE OF CLIMBING ROSES:** Soil as advised for dwarfs. Position, against walls, fences, arbours, pergolas, arches, tree trunks, trellises, pillars, etc. Distance apart to plant, 5 to 6 ft. Plant in Oct. or Nov., or in March. Pruning: Rambler Type: Cut away old flowering shoots after blooming, & thin out dead or weakly growths in April; no further pruning required. Banksian type: Thin out the strong young shoots only not required to add to size of plant directly after flowering. Do not remove older or small shoots. Teas, Noisettes, Hybrid Teas, Singles, etc., grown as climbers, to have old flowering shoots thinned out after blooming, dead or weak growths removed in April, & the soft, unripened tips of shoots cut off at same time. Ayrshire, Boursault, & Evergreen types only require to have weak growths thinned out in March.

**CULTURE OF WEEPING ROSES:** Soil & planting as advised for dwarfs. Distance to plant, 10 ft. Pruning: Thin out weak & old growths in March, & remove soft, unripened ends of shoots only.

**MANURES FOR ROSES:** Cow or pig dung for light soils; horse manure for heavy ones. Top-dress with above directly after pruning, & lightly fork in. Suitable artificial manures: (1) Superphosphate of lime, 48 lb.; potash, 40 lb.; sulphate of magnesia, 8 lb.; sulphate of iron, 4 lb.; sulphate of lime (gypsum), 32 lb.; total, 132 lb. Mix thoroughly together, & apply at the rate of  $\frac{1}{4}$  lb. per square yard directly after pruning. One dose per annum sufficient. (2) Dissolve  $\frac{1}{2}$  oz. superphosphate of lime;  $\frac{1}{4}$  oz. sulphate of ammonia; and  $\frac{1}{4}$  oz. sulphate of iron in 2 gall. of water. Apply above quantity to each tree once a week from time buds form till flowers develop. Liquid soot-water, cow & sheep dung also good for roses outdoors or in pots.

**STOCKS FOR ROSES:** For standards, the wild dog rose of the hedgerow; for dwarfs and climbers, the seedling & cutting wild dog rose, the Manetti, de la Grifferæ, & the Polyantha rose. Manetti & de la Grifferæ stocks generally do best on light soils, & the others on heavy ones.

**CULTURE OF ROSES IN POTS:** Classes of roses suitable for pot culture.—Hybrid Perpetual, Hybrid Tea, Tea-scented, Polyantha, & Lawrenciana. Compost, two parts turfy loam, two parts decomposed cow or hotbed manure; one part of equal proportions of charred earth & sand. Pot, Oct. Repot annually in Aug. or Sept. Prune newly-lifted & potted plants in Nov., shortening shoots to 3, 2, & 1 "eyes," according to size; established plants of hybrid perpetuals, & Hybrid Teas to 6, 3, & 2 "eyes"; also tea-scented, Chinese, fairy, & polyantha kinds to 8, 6, & 4 "eyes" in Nov. for early flowering; Dec. or Jan. for late flowering. Position, sheltered corner outdoors, with pots protected from frost by straw, or in cold frame, Oct. to Jan.; greenhouse, Jan. to May; sunny place outdoors afterwards. Water moderately, Jan. to April; freely, April to Oct. Keep nearly dry, Oct. to Jan. Apply stimulants once or twice a week during flowering period. Syringe freely in greenhouse. Temp. for forcing, Jan., 40° by night 45° by day; Feb., 45° at night & 55° by day; March & onwards, 55° by night & 60° to 65° by day. Plants for forcing require to be established in pots one year.

**CULTURE OF CLIMBERS IN GREENHOUSE:** Compost, same as for pots. Beds or tubs for each plant, 18 in. deep & 2 ft. wide. Each

bed or tub to be provided with 3 in. of drainage. Plant, Sept. to Nov. or March. Prune shoots first year to within 8 in. of base at time of planting; second & future years to 6 or 8 in. immediately after flowering. Water freely, March to Nov.; keep nearly dry afterwards. Apply stimulants weekly, April to Sept. to established plants. Syringe daily in spring. Admit air freely in summer & autumn to ripen shoots.

**PROPAGATION:** Propagate by seeds sown  $\frac{1}{8}$  in. deep in light sandy soil in cold frame in March or April, or  $\frac{1}{2}$  in. deep in ordinary soil outdoors in April, transplanting seedlings when a year old; cuttings, 6 to 8 in. long, inserted in pots of sandy soil in cold frame in Oct., or in sheltered position outdoors, Sept. to Nov.; or by small side shoots of tea-scented & other kinds removed with a little of old stem attached, & inserted in small pots of light sandy soil in summer under a bell-glass or in a propagator; by budding in July; grafting in Feb. or March in a temp. 55° to 65°; layering in Sept. or Oct.

**SPECIES CULTIVATED:** *R. acicularis*, blush, June, 6 to 8 ft., Siberia; *alba*, white, June, 6 ft., Europe; *alpina* (Syn. *R. inermis*), pink, June, 8 ft., Europe, one of the parents of the Boursault Rose), *Banksiæ* (Banksian Rose), white, June, 15 to 20 ft., China, and its varieties *flore pleno* (double) and *lutea* (yellow); *arvensis* (Ayrshire Rose), white or rose, 10 to 15 ft., Europe (Britain); *blanda* (Syn. *R. lucida*), rose, June, 3 ft., N. America; *bourboniana* (Bourbon Rose), one of the parents—the other *indica*—of the Bourbon class of roses; *bracteata* (Macartney Rose), white, July, 2 ft., China; *canina* (Dog Rose), pink, June, 6 ft., Britain; *cinnamomea* (Cinnamon Rose), red, May, 4 to 6 ft., N. Temp. Zone, and its variety *flore pleno* (double); *damascæna* (Damask Rose), white and red, June, 4 ft.; *gallica centifolia* (Cabbage Rose), rosy purple, June, 6 ft., Europe; *gallica muscosa* (Moss Rose), rose, June, 4 to 6 ft.; *gallica provincialis* (Provence Rose), white, fragrant, June, 4 to 6 ft.; *gigantea*, white and yellow, June, climber, Burma; *Hardii*, yellow, June, hybrid; *indica* (China or Monthly Rose), red, June, 6 to 10 ft., China; *indica fragrans* (Syn. *R. odorata*) Tea rose, various colours; *indica minima* (Fairy Rose), Syn. *R. lawrenciana*, pink, etc., June, 1 to 2 ft., *indica sanguinea* (Crimson China Rose), crimson, summer, 6 to 10 ft.; *lutea* (Austrian Briar), yellow, June, 3 ft., Orient; *lævigata* (Cherokee Rose), white, June, 6 to 10 ft., China; *macrantha*, red, June, 4 ft., Europe; *moschata* (Musk Rose), yellow and white, summer, 10 to 12 ft., S. Europe; *multiflora* (Polyantha Rose), white, pink, etc., June, 10 to 12 ft., China and Japan; *noisettiana* (Noisette Rose), a hybrid and parent of Noisette type; *rubiginosa* (Sweet Briar), pink, June, 5 ft., Europe; *pomifera* (Apple Rose), pink, June, Europe; *rugosa* (Japanese Rose), red, June, 6 ft., Japan; *sempervirens* (Evergreen Rose), white, June, S. Europe; *spinossissima* (Scotch or Burnet Rose), white, May, 2 ft., Europe (Britain); *wichuriana*, white, summer, 6 to 10 ft., Japan, parent of the trailing type, such as Dorothy Perkins. The old rose grown in gardens under the name of "Seven Sisters" is a form of *R. multiflora* (called Grevillei), colour, purplish.

**Rosary-plant** (*Abrus precatorius*).—See *Abrus*.

**Rose**.—See *Rosa*.

**Rose Acacia** (*Robinia hispida*).—See *Robinia*.

**Rose Apple** (*Eugenia Jambos*).—See *Eugenia*.

**Rose Bay** (*Nerium oleander*).—See *Nerium*.

**Rose-bay Willow-herb** (*Epilobium angustifolium*). — See *Epilobium*.

**Rose Box** (*Cotoneaster microphylla*).—See *Cotoneaster*.

**Rose Campion** (*Lychnis coronaria*).—See *Lychnis*.

**Rose Mallow**.—See *Hibiscus*.

**Rosemary** (*Rosmarinus officinalis*).—See *Rosmarinus*.

**Rose of Heaven** (*Lychnis Cœli-rosa*).—See *Lychnis*.

**Rose of Jericho** (*Anastatica Hierochuntica*).—See *Anastatica*.

**Rose of Sharon** (*Hypericum calycinum*).—See *Hypericum*.

**Rose Pink** (*Sabbatia campestris*).—See *Sabbatia*.

**Rose-scented Geranium** (*Pelargonium capitatum*).—See *Pelargonium*.

**Rosette Mullein** (*Ramondia pyrenaica*).—See *Ramondia*.

**Rosin-weed** (*Silphium laciniatum*).—See *Silphium*.

**Rosmarinus** (*Rosemary*).—Ord. *Labiatae*. Hardy evergreen shrub. First introduced 1548. Leaves, highly fragrant.

**CULTURE**: Soil, ordinary, freely mixed with old mortar. Position, dryish border at base of a south or west wall; rarely does well in open garden. Plant, April. Water freely in summer. Propagate green-leaved kind by seeds sown  $\frac{1}{2}$  in. deep in sunny border outdoors in April; green & variegated sorts by cuttings 6 in. long, removing leaves from lower half, inserted in shady border in spring or summer; also by layering strong shoots in summer.

**SPECIES CULTIVATED**: *R. officinalis*, purple, Feb. " to 4 ft., S. Europe.

**Rosy-flowered Bramble** (*Rubus spectabilis*).—See *Rubus*.

**Rouen Lilac** (*Syringa sinensis*).—See *Syringa*.

**Rouen Violet** (*Viola rothamagensis*).—See *Viola*.

**Roupala**.—Ord. *Protaceæ*. Greenhouse evergreen shrubs. Orn. foliage & flowering. First introduced 1802. Leaves, simple or feather-shaped, covered with brownish wool.

**CULTURE**: Compost, equal parts fibrous loam, leaf-mould, peat, & little sand. Position, large pots or tubs in lofty sunny greenhouse or conservatory. Pot, Feb. or March. Water freely, April to Sept.; moderately afterwards. No syringing required. Temp., Sept. to March  $45^{\circ}$  to  $50^{\circ}$ ; March to Sept.  $55^{\circ}$  to  $65^{\circ}$ . May be stood outdoors in sunny position, June to Sept. Propagate by cuttings of firm shoots, inserted in pure silver sand, in well-drained pots, under bell-glass in temp.  $55^{\circ}$  to  $65^{\circ}$ , summer.

**SPECIES CULTIVATED**: *R. elegans*, 6 to 10 ft., and *Pohlil*, 6 to 15 ft., Brazil.

**Rowan-tree** (*Pyrus aucuparia*).—See *Pyrus*.

**Royal Brunswick Lily** (*Brunsvigia Josephinæ*).—See *Brunsvigia*.

**Royal Fern** (*Osmunda regalis*).—See *Osmunda*.

**Royal Water-Lily** (*Victoria regia*).—See *Victoria*.

**Royle's Flea-bane** (*Erigeron Roylei*).—See *Erigeron*.

**Rubus** (*Raspberry*; *Blackberry*; *Dewberry*; *Loganberry*; *Wineberry*).—Ord. *Rosaceæ*. Hardy fruit-bearing & flowering shrubs & perennials.

**CULTURE OF RASPBERRIES**: Soil, deep, rich moist loam, light ordinary or peaty; clay soils unsuitable. Position, open sunny, or partially shady one. Plant, Oct. to March. Distances for planting: Singly, 2 ft. apart in the row, & 5 ft. between the rows for training to wire trellis; in groups of three canes, 3 ft. apart in row, & 5 ft. between rows; singly 1 ft. apart in rows 4 ft. asunder for field culture. Pruning: Cut canes off to within 6 in. of ground first year; succeeding years, cut off old canes immediately after fruiting close to ground, & reduce number of young canes at each root or stool to three or four of the strongest. Remove tips of latter in Nov. or Dec. Apply decayed manure annually in Nov., forking it in 3 in. deep only. Mulch with littery manure in April on dry soil. Water copiously with liquid manure during bearing period. Remove suckers appearing away from base of "stools." Avoid deep digging. Chemical manures (1)  $1\frac{1}{2}$  oz. each of superphosphate of lime & kainit per square yard forked in 2 in.



deep in Nov., & 1 oz. of nitrate of soda per square yard applied in March. (2)  $1\frac{1}{2}$  lb. superphosphate of lime,  $1\frac{1}{2}$  lb. of nitrate of soda, 1 lb. of kainit, 3 lb. common salt per square rod, half applied in March, remainder in June. (3) Two parts by weight of nitrate of soda, 1 part superphosphate, 1 part kainit, to be applied at the rate of 2 lb. per 100 canes in Oct. or Nov. (Griffiths.) Propagate by seeds sown outdoors in a shady border as soon as ripe; by division of roots in autumn.

**MARKET CULTURE:** Soil, rich sandy loam. Position, not too dry. Manures: Farmyard dung at rate of 20 tons per acre, ploughed in before planting. Top-dress annually in winter with 3 cwt. of superphosphate & 1 cwt. of kainit per acre in winter, & 2 cwt. of nitrate of soda in April. Distance to plant, 1 ft. apart in rows 4 ft. asunder. Number of plants to the acre, 6,987. Cost of trees per acre, £10; preparing land for planting, £7; manure, £5; planting, 20s.; total, £16. Cost of cultivation per acre: Digging & hoeing, 32s; pruning, 12s.; gathering fruit, £10; annual manuring, £5. Average yield per acre: 2 tons. Average returns per acre (gross), £46. Average returns (net), £28.

**CULTURE OF BLACKBERRIES:** Soil, deep rich loam, liberally dressed with old mortar. Position, trained to sunny fences, or in rows in open garden, with shoots trained to a rough trellis. Plant in autumn, 1 ft. apart in rows 4 ft. asunder. Prune in autumn, cutting away shoots that have borne fruit directly after fruiting, & removing tips off remaining shoots in Dec. Top-dress annually in winter. Propagate by layering shoots in summer, or dividing the roots in summer.

**CULTURE OF LOGANBERRY:** Soil as for raspberries. Plant, 4 ft. apart each way in autumn. Shorten shoots well back first season. Place four stakes around each plant, at a distance of 3 ft. from the base, & train growths spirally around these. Prune after fruiting, cutting away shoots that have borne fruit, & removing soft tips of remaining shoots in Dec. Top-dress with decayed manure in winter. Propagate by layering shoots in summer, or dividing the roots in autumn.

**CULTURE OF HARDY HERBACEOUS SPECIES:** Soil, sandy peat. Position, shady rockery. Plant, autumn or spring. Water freely in dry weather. Propagate by division in spring.

**CULTURE OF HARDY SHRUBBY SPECIES:** Soil, good ordinary. Position, sunny or shady borders. Plant in Oct. Prune after flowering, cutting away old flowering shoots. Propagate by division in autumn.

**FRUIT-BEARING SPECIES:** *R. Idæus* (Raspberry), white, May, berries red or yellow, 6 to 8 ft., Europe; *Idæus Loganii* (Loganberry), a cross between the Raspberry and Blackberry, berries purple, 8 to 12 ft., America; *laciniatus* (American Blackberry), white, summer, berries black, 8 to 12 ft.; *phœnicolasius* (Wineberry), pink, summer, berries crimson, 10 to 20 ft., Japan; *roseiflorus flore simplicis* (Strawberry-raspberry), a plant of no value in this country.

**HERBACEOUS SPECIES:** *R. cæsia* (Dewberry), white, summer, 4 to 6 in., Britain; *arcturus*, pink, June, 6 in., N. Europe.

**HARDY SHRUBBY SPECIES:** *R. biflorus*, white, May, 8 ft., Himalayas; *deliciosus*, white, May, 6 ft., Rocky Mountains; *nutkanus* (Nootka Sound Bramble), white, summer, 6 ft., N. America; *odoratus* (Virginian Raspberry), purple and red, summer, 6 ft., N. America; *spectabilis* (Salmon Berry), rosy red, May, 6 ft., California; *ulmifolia flore pleno* (Daisy-flowered Bramble), pink, double, summer, 8 to 12 ft., Europe.

**Rudbeckia** (Cone-flower).—Ord. Compositæ. Hardy herbaceous perennials. First introduced 1793.

**CULTURE:** Soil, ordinary. Position, sunny well-drained borders. Plant, Oct., Nov., March, or April. Mulch with decayed manure annually, Feb. or March. Lift, divide, & replant in fresh position triennially. Propagate by seeds sown  $\frac{1}{2}$  in. deep outdoors in ordinary soil & sunny position, March or April, transplanting seedlings into flowering positions following autumn; by division of roots, Oct., Nov., March or April.

**SPECIES CULTIVATED:** *R. californica*, yellow and brown, July, 4 to 6 ft., California; *grandiflora*, yellow and purple, autumn, 3 ft., N. America; *laciniata*, Golden Glow, yellow, double, summer, 3 to 6 ft., N. America; *speciosa* (Syn. *R. Newmannii*), orange-yellow, summer, 3 ft., N. America.

**Rue** (*Ruta graveolens*).—See *Ruta*.

**Rue-anemone** (*Thalictrum anemonoides*).—See *Thalictrum*.

**Rue-leaved Spleen-wort** (*Asplenium Ruta-muraria*).—See *Asplenium*.

**Ruellia** (Christmas Pride).—Ord. Acanthaceæ. Stove perennial herbs or shrubs. First introduced 1768.

**CULTURE:** Compost, equal parts fibrous loam, leaf-mould, peat, & silver sand. Pot, Feb. or March. Position, pots in shady part of stove. Water freely, March to Oct.; moderately afterwards. Syringe twice daily, March to Sept.; once daily other times. Apply weak stimulants during flowering period to perennial species. Temp., Sept. to March 55° to 65°; March to Sept. 65° to 75°. Propagate by cuttings inserted in above compost in well-drained pots under bell-glass, or in propagator in temp. 75° to 85°, spring or summer.

**SPECIES CULTIVATED:** *R. macrantha*, rosy purple, winter, 1 to 2 ft., Brazil.

**Rumex** (Herb Patience; Sorrel).—Ord. Polygonaceæ. Hardy perennial herbs.

**CULTURE OF HERB PATIENCE:** Soil, ordinary moist. Remove flower stems directly they appear, & gather leaves frequently. Propagate by seeds sown in March, 1 in. deep in drills 18 in. apart, thinning seedlings to 1 ft. apart in row in April; division of roots in March.

**CULTURE OF SORREL:** Soil, ordinary rich moist. Position, open borders. Plant, 1 ft. apart in rows 15 in. asunder in March. Gather leaves frequently. Remove flower stems. Water freely in dry weather. Propagate by seeds  $\frac{1}{2}$  in. deep in drills 15 in. apart in March, thinning seedlings to 12 in. apart in April; division of roots in March.

**CULTURE OF AQUATIC SPECIES:** Soil, ordinary. Position, margins of water. Plant in spring. Increased by division in spring.

**SPECIES CULTIVATED:** *R. acetosa* (Garden Sorrel), green, summer, 18 in., leaves edible, Europe (Britain); *hydrolapathum* (Water Dock), 4 to 6 ft., Europe (Britain); *patienta* (Herb Patience), 4 ft., leaves used as substitute for spinach, S. Europe.

**Runner Bean** (*Phaseolus multiflorus*).—See *Phaseolus*.

**Rupture-wort** (*Herniaria glabra*).—See *Herniaria*.

**Ruscus** (Butcher's Broom; Knee Holly).—Ord. Liliaceæ. Hardy evergreen shrubs. Orn. leaved & berry-bearing. Male & female flowers borne on separate plants. Leaves (cladodes), oval, dark green. Berries, round, red; winter.

**CULTURE:** Soil, ordinary. Position, shady or sunny shrubberies, borders, or woods. Plant, Sept., Oct., or April. Prune, April. Propagate by suckers removed from parent plants in Sept. or Oct.; division of roots in Oct.

**SPECIES CULTIVATED:** *R. aculeatus* (Butcher's Broom), green, May, 3 ft., Britain.

**Rush Broom** (*Spartium junceum*).—See *Spartium*.

**Rush-leaved Daffodil** (*Narcissus juncifolius*).—See *Narcissus*.

**Rush-Lily** (*Sisyrinchium grandiflorum*).—See *Sisyrinchium*.

**Russelia**. — Ord. Scrophulariaceæ. Stove evergreen shrubs. Flowering. First introduced 1812. Pretty plants for hanging baskets.

**CULTURE:** Compost, equal parts sandy loam, leaf-mould, & silver sand. Position, in light part of stove. Pot, Feb. or March. Water freely, April to Sept.; moderately afterwards. Prune, Feb. Apply weak stimulants when in flower only. Syringe twice daily, April to Oct., except when in flower. Temp., Sept. to March, 55° to 65°; March to Sept., 65° to 75°. Propagate by cuttings inserted in silver sand in temp. 75° in spring; layering shoots at any time.

**SPECIES CULTIVATED:** *R. juncea*, red, July, 3 to 4 ft., Mexico; *sarmentosa*, red, July, 4 ft., Trop. America.

**Russian Knap-weed** (*Centaurea ruthenicus*). — See *Centaurea*.

**Ruta** (Rue).—Ord. Rutaceæ. Hardy evergreen shrub. First introduced 1562. Leaves, finely divided, bluish green; used for medicinal purposes.

**CULTURE:** Soil, ordinary. Position, sunny border. Plant, March, 8 in. apart in rows 18 in. asunder. Prune the plants closely in April. Propagate by seeds sown  $\frac{1}{2}$  in. deep in drills outdoors in April; cuttings or slips inserted in shady border in summer.

**SPECIES CULTIVATED:** *R. graveolens*, yellowish green, summer, 3 ft., S. Europe.

**Sabal** (Fan or Thatch Palm; Cabbage Palm).—Ord. Palmaceæ. Greenhouse orn.-leaved palms. First introduced 1810. Leaves, fan-shaped, green.

**CULTURE:** Compost, two parts rich loam, one part decayed leaf-mould & sand. Position, well-drained pots in greenhouse or sheltered well-drained beds outdoors in S. of England. Pot, March. Plant, April. Temp., Sept. to March 45° to 55°; March to Sept. 55° to 65°. Water moderately in winter; freely in summer. Propagate by seeds sown 1 in. deep in light soil in temp. of 80° in Feb. or March; suckers removed from parent plant in April or Aug.

**SPECIES CULTIVATED:** *S. Adamsoni*, 3 ft., S.U. States; *blackburniana* (Fan Palm), 20 ft., Bermuda; *Palmetto* (Cabbage Palm), 30 ft., S.U. States.

**Sabbatia** (American Centaury; Rose Pink).—Ord. Gentianaceæ. Hardy biennial flowering herbs. First introduced 1812.

**CULTURE:** Soil, equal parts good fibrous loam & finely-sifted leaf-mould & little sand. Position, moist partially-shaded borders or bogs. Sow seeds thinly in April where required to grow, lightly cover with soil, thin to 3 or 4 in. apart when an inch high, to flower following summer; or sow seed 1-16 in. deep in well-drained pots or shallow pans filled with equal parts sandy peat & leaf-mould; place in a pan partially filled with water & placed in cold frame or greenhouse. Transplant seedlings when an inch high, three in a 2-in. pot, in similar compost, keep in cold frame till following March, then plant out.

**SPECIES CULTIVATED:** *S. campestris*, rose, summer, 6 to 12 in., N. America.

**Saccharum** (Sugar Cane).—Ord. Gramineæ. Stove & hardy perennial grasses, flowering, & orn. foliage. Inflorescence, silky, borne

in pyramidal panicles, July. Leaves, ribbon-like, green, covered with silky hairs.

**CULTURE OF SUGAR CANE:** Two parts rich loam, one part leaf-mould or rotten manure & little sand. Position, large pots or tubs in lofty stoves. Pot, Feb. or March. Water freely, April to Sept.; moderately afterwards. Syringe twice daily during spring & summer. Shade from mid-day sun essential. Temp., March to Oct. 70° to 85°; Oct. to March 55° to 65°.

**CULTURE OF S. SPONTANEUM:** Soil, good ordinary. Position, margins of beds or lakes, sheltered. Plant, May or June.

**PROPAGATE** Sugar Cane by cuttings of stems inserted in light soil in temp. of 70° to 80° in spring, or by suckers removed in Feb. or March, & potted singly in above compost. *S. spontaneum* by division of roots in March or April.

**SPECIES CULTIVATED:** *S. officinarum* (Sugar Cane), white, summer, 10 to 15 ft., E. Indies; *officinarum violaceum*, stems violet tinted; *spontaneum* (Syn. *S. ægypticum*), white, summer, 10 ft., Algeria.

**Saccolabium.**—Ord. Orchidaceæ. Stove epiphytal orchids. First introduced 1837. Ht., 1 to 4 ft.

**CULTURE:** Compost, sphagnum moss, charcoal, & broken potsherds. Position, hanging baskets or attached to pieces of wood, or in pots filled to rim with charcoal & potsherds & remainder living sphagnum moss. Grow near glass always. Pot, or fix to blocks in Jan. or Feb. Water plants grown on blocks copiously twice daily, March to Sept.; once daily afterwards; those in baskets, copiously April to Sept., moderately afterwards. Shade from mid-day sun. Temp., March to Oct. 70° to 85°; Oct. to March 60° to 70°. Avoid allowing moisture to fall on leaves in winter. Moist atmosphere essential. Growing period, March to Nov.; resting period, Nov. to March. Flowers appear in axils of leaves near the top, after resting period. Propagate by offsets any time.

**SPECIES CULTIVATED:** *S. ampullaceum*, magenta rose, June, India; *bellinum*, green, brown, white, and yellow, Jan to March, Burma; *curvifolium*, orange-scarlet, May and June, N. India; *giganteum*, cream and purple, fragrant, Dec. to March, Burma; *hendersonianum*, rosy red and white, spring, Borneo; *miniatum*, orange-red, spring, Java; *violaceum*, white and mauve, Jan. and Feb., Philippines.

**Sacred Bean** (*Nelumbium luteum*).—See *Nelumbium*.

**Saddle-tree** (*Liriodendron tulipifera*).—See *Liriodendron*.

**Sadleria.**—Ord. Filices. Stove tree fern. First introduced 1877. Fronds, feather-shaped.

**CULTURE:** Compost, two-thirds peat & loam, & abundance of sand. Position, large pots or tubs, well-drained, in shady stove or warm conservatory. Repot, Feb. or March. Water moderately, Oct. to March; freely afterwards. Syringe trunks daily, March to Sept. Temp., Sept. to March 55° to 65°; March to Sept. 65° to 75°. Shade in summer essential. Propagate by spores sown at any time on surface of finely-sifted loam & peat in shallow well-drained pans; cover with sheet of glass, & keep moist in shady position in temp. 75° to 85°.

**SPECIES CULTIVATED:** *S. cyatheoides*, 5 to 8 ft., Sandwich Islands.

**Safflower** (*Carthamus tinctoria*).—See *Carthamus*.

**Saffron Crocus** (*Crocus sativus*).—See *Crocus*.

**Saffron Thistle** (*Carthamus tinctorius*).—See *Carthamus*.

**Sage** (*Salvia officinalis*).—See *Salvia*.

**Sagina** (Pearl-weed; Pearl-wort).—Ord. Caryophyllacæ. Hardy perennial herbs. Orn. foliage & flowering; evergreen. Leaves,

narrow, green, or golden-yellow. Stems, creeping. *S. glabra* used as a substitute for grass for forming lawns on sandy soils; golden-leaved variety used for carpet bedding.

**CULTURE OF *S. GLABRA* ON LAWNS:** Soil, sandy. Position, sunny. Plant small tufts 3 in. apart each way in March or April. Keep free from weeds & roll frequently. Requires frequent renewal.

**CULTURE OF GOLDEN-LEAVED VARIETY:** Soil, ordinary. Position, sunny beds, borders, or rockeries. Plant small tufts in March, 2 in. apart, in lines, designs, or masses. Propagate by seeds sown in sandy soil in sunny position outdoors in March; by division in March or April.

**SPECIES CULTIVATED:** *S. glabra*, white, summer, 2 in., Europe; *glabra, pilifera aurea*, leaves golden yellow.

**Sagittaria** (Arrow-head).—Ord. Alismaceæ. Hardy perennial aquatic herbs.

**CULTURE:** Compost, two parts strong rich loam, one part well-decayed manure. Position, open sunny ponds or lakes. Depth of water, 2 to 3 ft. Plant, March to Oct. Methods of planting: (1) Place plant in small wicker basket containing above compost, & lower to the bottom of pond or lake. (2) Inclose roots with soil & large stone in piece of canvas or matting, tie securely & immerse as above. (3) Place large hillock or mound of compost at bottom of pond when dry & plant roots in centre, afterwards submerging with water. Propagate by seeds sown  $\frac{1}{4}$  in. deep in rich soil in shallow basket & immersed in ponds or lakes in spring; division of plants, March or April.

**SPECIES CULTIVATED:** *S. sagittifolia*, white, summer, 2 ft., Europe (Britain).

**Sago Palm** (*Cycas circinalis*).—See Cycas.

**St. Anthony's Nut** (*Staphylea pinnata*).—See Staphylea.

**St. Bernard's Lily** (*Anthericum Liliago*).—See Anthericum.

**St. Bruno's Lily** (*Paradisea Liliastrum*).—See Paradisea.

**St. Dabeoc's Heath** (*Dabœcia polifolia*).—See Dabœcia.

**St. John's Wort** (*Hypericum calycinum*).—See Hypericum.

**St. Julian's Cherry** (*Prunus juliana*).—See Prunus.

**Saintpaulia** (African Violet).—Ord. Gesneriaceæ. Warm greenhouse perennial. First introduced 1894.

**CULTURE:** Compost, equal parts of loam, leaf-mould, peat & sand. Pot, Feb. to May. Size of pots, 3 in. for small &  $4\frac{1}{2}$  in. for large plants. Pots to be well drained. Water freely from April to Sept.; moderately afterwards. Apply weak liquid manure occasionally during flowering season. Temp., Oct. to April  $53^{\circ}$  to  $60^{\circ}$ ; April to Oct.  $65^{\circ}$  to  $75^{\circ}$ . Propagate by seeds sown thinly on surface of a compost of equal parts peat, leaf-mould, loam & sand in well-drained pots or shallow boxes. Cover seeds with a sprinkle of fine sand; shade from sun & place in temp. of  $65^{\circ}$  to  $75^{\circ}$  in spring.

**SPECIES CULTIVATED:** *S. ionanthe*, violet, June to Oct., 3 to 4 in., Central Africa, and its varieties *albescens* (white), *purpurea* (purple), and *violascens* (deep violet).

**Salisburia**.—See Gingko.

**Salix** (Willow; Sallow; Osier; Withy).—Ord. Salicineæ. Hardy deciduous trees & shrubs. Orn. foliage. Male & female flowers borne on separate trees in spring. Bark, yellow, purple, red, whitish, or orange-coloured. Shoots more or less drooping.

**CULTURE OF ORNAMENTAL SPECIES:** Soil, ordinary heavy or

moderately heavy; light soils not suitable. Position, damp, near margins of ponds, etc., for all species. Plant, Oct. to March. Prune, Nov. to Feb.

**OSIER CULTURE:** Soil, alluvial or sandy. Position, moist, low-lying land or margins of water. Trench soil deeply & add 30 tons of manure per acre. Plant cuttings 18 in. long, 15 in. apart in rows 18 in. asunder in Oct. Insert cuttings slantwise & 1 ft. deep. Number of cuttings to plant an acre, 23,000. Cut shoots for first time three years after planting. Time to cut, spring. Tie in bundles & immerse upright in water till bark readily peels off. Market peeled osiers in bundles of 50 lb. each. Average price, 4d. to 5d. per lb. Average yield per acre, 1,800 to 2,000 lb. Soil should be cultivated annually between plants, & give a dressing of 10 to 15 tons of manure per acre. Osiers of one year's growth used for making hampers & baskets; those of two year's growth for ribs of hampers; older wood for butter kegs.

**TIMBER CULTURE:** *S. Caprea* (Goat Willow) suitable for damp coppices, its wood being valuable for hoops, poles, crates, etc. *S. alba* (White or Huntingdon Willow) also suitable for damp soils, coppices, etc. Branches used for making scythe & rake handles; timber for lining carts & barrows. Wood of the Bat Willow (*Salix alba cœrulea*) used for making cricket bats. Plant in autumn. Time to pollard willows, Feb. Average value of willow timber, per cubic ft., 1s. to 5s. Weight of timber, cubic ft., 33 lbs. Number of cubic feet per ton, 68. Propagate by cuttings of shoots or stems of any age or size, inserted in moist soil, Oct. to March; choice kinds by budding on the Goat Willow (*S. caprea*) in July, bandaging the bud with damp moss, or by grafting on a similar stock in March.

**SPECIES CULTIVATED:** *S. alba* (White or Huntingdon Willow), 50 to 60 ft., Europe, Asia, and N. Africa; *alba argentea*, silvery foliage; *alba cœrulea* (Bat Willow), kind used for cricket bat making; *alba vitellina* (Syn. *S. vitellina*), shoots yellow and red; *alba vitellina pendula*, weeping variety; *babylonica* (Weeping Willow), 30 ft., Japan; *caprea* (Goat Willow), 15 to 20 ft., Europe (Britain); *Caprea pendula* (Kilmarnock Willow); *fragalis* (Crack Willow), 60 to 70 ft., shoots, yellow and brown, Europe and N. Asia; *fragalis blashfordiana*, shoots orange-red; *lanata*, 8 to 10 ft., N. Europe; *phylicifolia* (Tea-leaved Willow), 8 to 10 ft., N. Europe; *purpurea* (Purple Osier), shoots, reddish purple, 8 to 10 ft., Europe; *purpurea pendula*, weeping; *viminalis* (Osier Willow), the species grown to yield osiers, Russia and N. Asia.

**Sallow.**—See *Salix*.

**Salmon-berry** (*Rubus spectabilis* & *R. nutkanus*).—See *Rubus*.

**Salpiglossis** (Scalloped Tube-tongue).—Ord. Solanaceæ. Half-hardy annual. First introduced 1820.

**OUTDOOR CULTURE:** Soil, sandy loam or good ordinary rich. Position, sunny beds or borders. Sow seeds in well-drained pots, pans, or shallow boxes filled with compost of equal parts loam, leaf-mould & sand placed in temp. of 65° to 75°, Feb. or March. Cover seeds with thin sprinkling of fine soil. Transplant seedlings when three leaves have formed  $\frac{1}{2}$  in. apart in well-drained pots or shallow boxes of above compost. Keep in temp. of 55° to 65° till May, then place in cold frame to harden, & plant out in June. Water freely in dry weather. Apply weak stimulants occasionally to plants in flower.

**INDOOR CULTURE:** Compost, two parts sandy loam, half a part each of leaf-mould & decayed cow manure & silver sand. Sow seeds as advised above for summer flowering; in Aug. or Sept. for spring flowering. Transplant seedlings when three leaves have formed, 3 in

a 2½-in. pot, & place on shelf close to glass in temp. 55° to 65°. When well rooted in small pots, shift into 5-in. size. Water moderately until plants are well established. Apply stimulants—¼ oz. of kainit, superphosphate of lime, & nitrate of soda to 2 galls. of water—once a week during flowering period. Nip off points of main shoots when 6 in. high to induce bushy growth. Place in cool greenhouse or window whilst in bloom.

**SPECIES CULTIVATED:** *S. sinuata*, various colours, 2 ft., Chili, parent of the beautiful strains grown in gardens.

**Salsafy** (*Tragopogon porrifolius*).—See *Tragopogon*.

**Salt-tree** (*Halimodendron argenteum*).—See *Halimodendron*.

**Salvia** (Sage; Clary). — Ord. Labiatae. Greenhouse & hardy annuals & herbaceous perennials & evergreen shrubs.

**CULTURE OF ANNUAL SPECIES:** Soil, ordinary rich. Position, sunny borders. Sow seeds ½ in. deep in April where required to flower, & thin to 4 or 6 in. apart when 2 in. high.

**CULTURE OF GREENHOUSE SPECIES:** Compost, equal parts loam & decayed manure, little sand. Position, greenhouse, Sept. to June; cold frame, June to Sept. Pot, March. Water freely, March to Oct.; moderately afterwards. Apply stimulants occasionally a month after repotting until flowers expand, then cease. Temp., Sept. to March 45° to 55°; March to June 55° to 65°. Cut down shoots to within 3 in. of their base after flowering. Young plants: Insert cuttings 3 in. long of young shoots in light sandy soil in temp. 65° in Feb. or March. When rooted, place singly in 3½-in. pots. Nip off point of main shoots, also of succeeding shoots when 3 in. long. Shift into 5 or 6 in. pots when former pots are filled with roots. Water freely. Apply stimulants occasionally. Place in cold frame, June to Sept.

**OUTDOOR CULTURE:** Soil, rich ordinary. Position, sunny sheltered beds or borders. Plant, June. Lift in Sept., place in pots to flower in greenhouse in autumn. Water freely in dry weather. Apply stimulants once a week. Lift tuberous roots of *S. patens* in Oct., & store in sand in frost-proof place. Start in heat in March, & plant out in May.

**CULTURE OF HARDY SPECIES:** Soil, ordinary rich. Position, sunny borders. Plant, Oct., Nov., March, or April. Mulch annually with decayed manure in March. Cut down stems close to ground in Oct. Lift, divide, & replant every third year.

**CULTURE OF CLARY:** Hardy biennial. Leaves used for flavouring soups. Pretty border plant also. Soil, ordinary. Position, sunny. Sow seeds 1 in. deep in drills 18 in. apart in April. Thin seedlings when 2 in. high to 12 in. apart in row. Gather leaves in summer and dry for use following year.

**CULTURE OF SAGE:** Soil, ordinary rich, light, dryish. Position, sunny. Plant, March or April, 12 in. apart in rows 18 in. asunder. Nip off points of shoots first year to induce bushy growth. Water freely in dry weather first year after planting. Renew plantation every four years.

**PROPAGATION:** Propagate greenhouse species by cuttings 2 to 3 in. long of young shoots inserted in sandy soil in temp. 65° in spring; sage by seeds sown 1-16 in. deep in light soil in temp. 55° to 65° in March, transplanting seedlings outdoors in May or June, also by slips, i.e., young shoots pulled off the old plants in April, & inserted in a shady

border or under a hand-light, or in a cold frame, & kept moist until rooted.

**GREENHOUSE SPECIES:** *S. azurea*, blue, winter, 6 ft., N. America; *coccinea*, scarlet, autumn, 2 to 3 ft., N. America; *fulgens*, scarlet, summer, 2 to 3 ft., Mexico; *Grahami*, scarlet, Sept., 1 ft., Mexico; *Heeri*, scarlet, winter, 2 to 3 ft., Peru; *involuta* *Bethelli*, crimson, autumn, 3 to 4 ft., Mexico; *patens*, blue, summer, 2 to 3 ft., Mexico; *patens alba*, white, *splendens*, scarlet, autumn, 2 to 3 ft., Brazil; *splendens Bruantii*, rich scarlet; *splendens grandiflora*, salmon-red; *rutilans*, red, winter, 2 to 3 ft.

**HARDY SPECIES:** *S. argentea* (Silver Clary), white, summer, 3 ft., foliage silvery, Mediterranean Region; *azurea grandiflora*, sky blue, summer, 3 ft., Mexico; *hians* (Cashmere Sage), blue, summer, 2 ft., Himalayas; *officinalis* (Sage), blue, summer, 3 ft., S. Europe; *pratensis* (Meadow Sage), violet, May, 3 to 4 ft., Britain; *sclarea* (Clary), bluish white, summer, 2 ft., Mediterranean Region.

**ANNUAL SPECIES:** *S. Horminum* (Horminum Clary), purple, summer, 18 in., S. Europe; *Horminum purpurea*, rosy carmine bracts, very pretty. Hardy.

**Sambucus** (Elder; Dane-wort).—Ord. Caprifoliaceæ. Hardy deciduous shrubs & herbaceous perennials. Berries, black or scarlet. Leaves, feather-shaped, green, golden or white.

**CULTURE OF HERBACEOUS SPECIES:** Soil, ordinary. Position, dry banks or shrubberies in sun or shade. Plant, Oct. to Feb. Cut down stems in Nov.

**CULTURE OF SHRUBBY SPECIES:** Soil, ordinary. Position, open shrubbery, hedgerows for common species; moist sunny borders for variegated kinds. Plant, Oct. to March. Prune into shape, Nov. to Jan. Nip off points of young shoots of golden & silver elders during summer; also cut shoots closely back in March to insure dwarf growth & rich colouring in foliage. Propagate herbaceous species by division, Oct. to March; shrubby species by cuttings of branches or shoots inserted in moist soil in any position outdoors, Oct. to March.

**HERBACEOUS SPECIES:** *S. Ebulus* (Dane-wort), white and pink, summer, 3 ft., Europe (Britain).

**SHRUBBY SPECIES:** *S. nigra* (Common Elder), white, June, 20 ft., Britain; *nigra foliis-aureis*, leaves golden (Golden Elder); *nigra laciniata*, leaves finely cut (Cut-leaved Elder); *racemosa* (Scarlet Berried Elder), white, June, 10 to 15 ft., Europe, berries scarlet.

**Samolus** (Tasmanian Water Pimpernel).—Ord. Primulaceæ. Hardy herbaceous perennial. First introduced 1800.

**CULTURE:** Soil, sandy peat. Position, moist bog or rockery. Plant, March or April. Water freely in dry weather in summer. Propagate by division of the roots in spring.

**SPECIES CULTIVATED:** *S. repens*, white, August, 6 in., Australia.

**Samphire** (*Crithmum maritimum*).—See *Crithmum*.

**Sanchezia**.—Ord. Acanthaceæ. Stove perennial flowering & orn. foliage plants. First introduced 1866. Leaves, large, oval, glaucous green, or striped with white or yellow.

**CULTURE:** Compost, two parts peat & loam, one part decayed manure & sand. Position, light part of stove in winter; shady part in spring & summer. Pot, March. Syringe twice daily, April to Oct.; once daily afterwards. Water freely, March to Oct.; moderately other times. Apply weak stimulants occasionally during summer. Temp., Sept. to March 55° to 65°, March to Sept. 75° to 85°. Propagate by cuttings of young shoots inserted under bell-glass in fine soil, March to July.

**SPECIES CULTIVATED:** *S. nobilis*, yellow and red, March to Oct., 1 to 2 ft., Ecuador.

**Sandersonia**.—Ord. Liliaceæ. Stove tuberous-rooted herb. First introduced 1852.

**CULTURE:** Compost, equal parts loam, peat, leaf-mould, decayed



manure, & silver sand. Position, well-drained pots, with shoots trained to roof or trellis. Pot, Feb., placing tubers 2 in. deep, one in a 6-in. pot, or several in an 8 or 12-in. pot. Water moderately till growth is well advanced, then freely. After flowering, gradually withhold water & keep soil quite dry till potting time. Temp., Feb. to Sept. 70° to 85°; Sept. to Feb. 55° to 65°. Propagate by seeds inserted singly  $\frac{1}{4}$  in. deep in 3-in. pots filled with light soil in temp. 75° in Feb. or March; offsets removed from large tubers at potting time.

SPECIES CULTIVATED: *S. aurantiaca*, orange yellow, July and Aug., 13 to 18 in., Natal.

**Sandhill Rosemary** (*Ceratiola ericoides*).—See *Ceratiola*.

**Sand Myrtle** (*Leiophyllum buxifolium*).—See *Leiophyllum*.

**Sand Pear** (*Pyrus sinensis*).—See *Pyrus*.

**Sand Pink** (*Dianthus arenarius*).—See *Dianthus*.

**Sand Verbena** (*Abronia umbellata*).—See *Abronia*.

**Sand-wort** (*Arenaria balearica*).—See *Arenaria*.

**Sanguinaria** (Blood-root).—Ord. Papaveraceæ. Hardy perennial herb. First introduced 1630.

CULTURE: Soil, sandy loam or peat. Position, sunny borders or rockeries. Plant, Oct., Nov., March or April. Water freely in dry weather. Top-dress annually with decayed cow manure in Feb. or March. Should be interfered with as little as possible. Propagate by seeds sown 1-16 in. deep in equal parts leaf-mould, peat, & sand in cold frame or cool greenhouse in early autumn or spring, transplanting seedlings outdoors when large enough to handle; by division of roots in Oct. or March.

SPECIES CULTIVATED: *S. canadensis*, white, April, 6 in., N. America.

**Sansevieria** (Bow-string Hemp; Angola Hemp).—Hæmodoraceæ. Stove herbaceous perennials. Orn. foliage. First introduced 1690. Flowers, white, green, yellowish; insignificant. Leaves, narrow, ridged, green, long, margined or spotted with white.

CULTURE: Compost, equal parts loam, leaf-mould, & sand. Position, pots in shady part of stove. Pot, Feb. to April. Water copiously, March to Oct.; moderately afterwards. Syringe freely in summer. Temp., March to Sept. 65° to 75°; Sept. to March 55° to 65°. Propagate by division of plants, Feb. to April.

SPECIES CULTIVATED: *S. cylindrica*, Trop. Africa; *guineensis*, Trop. Africa; *zeylanica*, Trop. Africa.

**Santolina** (Lavender Cotton).—Ord. Compositæ. Hardy evergreen shrubby plants. First introduced 1573. Leaves & shoots covered with cottony down.

CULTURE: Soil, ordinary sandy. Position, margins of sunny borders or rockeries for *S. Chamæcyparissus incana*; backs of sunny borders or large rockeries for *S. Chamæcyparissus* & *S. rosmarinifolia*. Plant, Sept., Oct., March or April. Distance apart for forming edging of *S. incana*, 6 in. Propagate by cuttings of shoots, 2 to 3 in. long, pulled off with portion of stem attached & inserted in pots of sandy soil in cold frame, Sept. or Oct., or in sheltered position outdoors, same time.

SPECIES CULTIVATED: *S. Chamæcyparissus*, yellow, July, 2 to 3 ft. S. Europe; *Chamæcyparissus incana*, dwarf variety; *rosmarinifolia*, yellow, July, 2 ft., Spain and Portugal.

**Sanvitalia**.—Ord. Compositæ. Hardy annual. First introduced 1798.

**CULTURE:** Soil, ordinary. Position, margins of sunny borders or rockeries. Sow seeds 1-16 in. deep in light soil in temp. 55° to 65° in March. Harden off seedlings in cold frame in April & plant outdoors in May; or in lines or patches in open ground end of April, thinning seedlings when 1 in. high to 2 or 3 in. apart. Water freely in dry weather, & apply weak stimulants occasionally during flowering period.

**SPECIES CULTIVATED:** *S. procumbens*, yellow and purple, July, 1 ft., Mexico; procumbens flore pleno, flowers double.

**Saponaria** (Soap-wort; Fuller's Herb; Hedge Pink). — Ord. Caryophyllaceæ. Hardy annuals & perennials.

**CULTURE OF ANNUAL SPECIES:** Soil, ordinary. Position, margins of sunny borders or in beds. Sow seeds in lines or patches  $\frac{1}{2}$  in. deep in April for summer flowering; in Sept. for spring flowering. Thin seedlings when 1 in. high 2 or 3 in. apart. Water freely in dry weather & apply stimulants occasionally.

**CULTURE OF PERENNIAL SPECIES:** Soil, deep rich loam. Position, sunny rockeries or borders for *S. ocymoides*; large sunny or shady shrubby borders or wild garden for *S. officinalis*. Plant, Oct. to April. Top-dress annually in Feb. with decayed manure. Water freely in dry weather. Propagate by seeds sown in shallow boxes of sandy soil in temp. of 55° to 65° in March, hardening seedlings in a cold frame in April, & planting out in May or June; or outdoors in April, transplanting seedlings in June & July; by cuttings inserted in sandy soil in cold frame, Sept. to Oct.; division of roots, Oct. to March.

**ANNUAL SPECIES:** *S. calabrica*, rose, July to Sept., 6 to 12 in., Italy.

**PERENNIAL SPECIES:** *S. ocymoides* (Rock Soap-wort), rosy purple, summer, trailing, Europe; *officinalis flore pleno* (Double Soapwort), pink, Aug., 2 to 3 ft., Europe (Britain).

**Sardinian Iris** (*Iris olbiensis*).—See Iris.

**Sarmienta** (Chilian Pitcher-flower).—Ord. Gesneraceæ. Greenhouse herbaceous creeper. First introduced 1862.

**CULTURE:** Compost, soft peat, charcoal, & chopped sphagnum moss. Position, teak baskets or pans, suspended from roof, or in pots with shoots growing up stems of dead tree ferns. Pot or plant, March. Water copiously, April to Oct.; moderately afterwards. Syringe freely daily, March to Oct. Shade from sun. Temp., March to Sept. 60° to 70°; Sept. to March 45° to 55°. Propagate by division of plants in March.

**SPECIES CULTIVATED:** *S. repens*, scarlet, summer, creeping, Chili.

**Sarracenia** (Huntsman's Horn; Indian Cup; N. American Pitcher Plant; Side-saddle Flower). — Ord. Sarraceniaceæ. Half-hardy herbaceous perennials. First introduced 1752. Leaves, tubular, pitcher-shaped, reticulated.

**INDOOR CULTURE:** Compost, equal parts fibry peat & chopped sphagnum moss. Position, cool moist corner of greenhouse or fernery, cold frame, or Wardian case in dwelling room. Pot, March. Pots to be two-thirds full of drainage. Place pot containing plant inside another pot two sizes larger, & fill space between with sphagnum moss. Water freely, April to Oct.; very little in winter. Syringe foliage gently daily in summer. Shade from bright sun. Top-dress in summer with a little decayed manure.

**OUTDOOR CULTURE OF S. PURPUREA:** Compost, equal parts peat & sphagnum moss. Position, fully exposed bog garden or moist

rockery. Plant, March or April. Keep surface of soil covered with layer of moss. Water freely in summer. Propagate all the species & hybrids by division in March or April.

**SPECIES CULTIVATED:** *S. Drummondii*, flowers purple, June, leaves white, green, and purple, 2 ft., N. America; *Claytoni*, leaves purple, 1 ft., hybrid; *flava* (Trumpet Leaf), yellow, June, 2 ft., N. America; *flava atrosanguinea*, lid of pitcher cream and yellow; *flava Catesbæi*, wings of pitcher veined with red; *flava limbata*, lid of pitcher margined crimson and brown; *psittacina*, flowers purple, leaves veined red or purple, N. America; *purpurea*, flowers purple, spring, leaves veined purple, N. America; *rubra*, flowers reddish, leaves veined purple, N. America; *variolaris*, flowers yellow, leaves spotted with white, N. America.

**Sarsaparilla** (*Smilax glauca*).—See *Smilax*.

**Satin-flower**.—See *Sisyrinchium*.

**Satin Poppy** (*Meconopsis Wallichii*).—See *Meconopsis*.

**Satureia** (Summer & Winter Savory).—Ord. Labiatae. Hardy annual & perennial evergreen herbs. First introduced 1562. Aromatic shoots used for flavouring soups & salads, & for boiling with peas & beans.

**CULTURE OF SUMMER SAVORY:** Hardy annual. Soil, ordinary. Position, sunny. Sow seeds  $\frac{1}{2}$  in. deep in drills 12 in. apart. Thin seedlings when 2 in. high to 6 in. apart. Water freely in dry weather. Pull plants up when in flower, & dry for winter use.

**CULTURE OF WINTER SAVORY:** Hardy evergreen shrub. Soil, ordinary. Position, sunny. Plant, March or April 12 in. apart in rows 15 in. asunder. Prune in closely in Oct., & top-dress with manure. Renew plantations every fourth year. Propagate by seeds sown as advised for annual species, also by cuttings of young shoots inserted in shady border in April, division of roots in March.

**ANNUAL SPECIES:** *S. hortensis* (Summer Savory), lilac, July, 6 to 8 in., Mediterranean Region.

**PERENNIAL SPECIES:** *S. montana* (Winter Savory), purple, June, 6 to 12 in., Europe.

**Satyrion**.—Ord. Orchidaceae. Half-hardy terrestrial tuberous-rooted orchids. First introduced 1842.

**CULTURE:** Compost, equal parts good turfy loam, sandy peat, leaf-mould, charcoal & coarse silver sand. Position, well-drained pots in cold shady frame. Pot, Aug. to Nov., placing tubers 1 in. below surface, & 3 to 5 in a 6-in. pot. Make compost firm. Plunge pots to rims in cinder ashes or cocoanut-fibre refuse. Water copiously from time growth begins till foliage fades; then keep nearly dry. Apply weak stimulants from April till flowers fade. Remove flower spikes when blooms fade. Repot every 2 or 3 years. Protect from Dec. to Feb. by covering of cocoanut-fibre refuse or cinder ashes. Propagate by division of tubers, Aug. to Nov.

**SPECIES CULTIVATED:** *S. candidum*, white, fragrant, Aug. and Sept., 1 ft., S. Africa; *carneum*, white and pink, June, 1 ft., S. Africa.

**Sauromatum** (Monarch of the East).—Ord. Aroideae. Half-hardy perennial, with tuberous roots & arum-like flower spathes.

**CULTURE:** Purchase tubers in autumn, place them in a dry saucer in a warm room, & in a few weeks the flower spathe will appear. No soil or water needed. After flowering, plant the tuber in a moist place outdoors to make its leaf growth. Lift in Aug., keep in a cool place, & again place in a saucer indoors. Repeat the operation year by year.

**SPECIES CULTIVATED:** *S. guttatum*, purple, yellow and green, winter or spring, 1 ft., Central Asia.

**Saussurea** (Saw-wort).—Ord. Compositae. Hardy perennial herbs. First introduced 1816.

**CULTURE:** Soil, ordinary. Position, sunny rockeries for *S. alpina*; sunny borders for *S. pulchella*, *S. pygmaea*, etc. Plant, Oct., Nov., March or April. Propagate by seeds sown  $\frac{1}{2}$  in. deep in ordinary soil in sunny position outdoors, April, transplanting seedlings when three or four leaves have formed.

**SPECIES CULTIVATED:** *S. japonica* (Syn. *Serratula japonica*), purple, summer, 2 ft., Japan.

**Savin-tree** (*Juniperus sabina*).—See *Juniperus*.

**Savory** (*Satureia hortensis* & *montana*).—See *Satureia*.

**Savoy**.—See *Brassica*.

**Sawfly Orchis** (*Ophrys tenthredinera*).—See *Ophrys*.

**Saw-wort** (*Saussurea japonica*).—See *Saussurea*.

**Saxifraga** (Rockfoil; London Pride). — Ord. Saxifragaceæ. Hardy & tender perennials. Interesting plants for rockeries and borders. Classes: (1) Encrusted Saxifrages, leaves silvery, borne in rosettes; (2) Moss Saxifrages, leaves green & moss-like; (3) Megasea Saxifrages, leaves, large & leathery; (4) Miscellaneous type, leaves varied in form.

**CULTURE OF ENCRUSTED SECTION:** Soil, gritty loam. Position, ledges or fissures of sunny rockeries or old walls. Plant in spring. Mix a little fresh cow dung with loam to fix plants in vertical rocks. *S. Cotyledon pyramidalis* a good plant for cool greenhouse. Grow in compost of two parts loam & one part of equal proportions of old mortar, leaf-mould, & sand. Five-inch pots suitable. Place in cold frame till March, then remove into greenhouse. Water moderately in winter. Propagate by seeds sown in gritty loam in well-drained pans in cold frame in spring; by offsets directly after flowering.

**CULTURE OF MOSSY SECTION:** Soil, ordinary moist loam. Position, ledges of rockeries for choice kinds, edgings to borders for commoner ones; or carpeting surface of beds of choice bulbs. Plant in autumn or spring. Propagate by seeds sown in pans of gritty soil in cold frame in spring; cuttings of shoots in cold frame in summer; division in spring.

**CULTURE OF MEGASEA SECTION:** Soil, ordinary. Position, sunny or shady borders. Plant in autumn or spring. Good town & suburban garden plants. Propagate by seeds sown in light soil in cold frame in spring; division in autumn or spring.

**CULTURE OF MISCELLANEOUS SECTION:** Soil, ordinary for *S. umbrosa*, & *Geum*; moist loam for other species. Position, shady borders for *S. umbrosa*, *Geum* & *Granulata* fl.-pl.; moist shady rockery for *Andrewsii*, *cunefolia*, *oppositifolia*, & *rotundifolia*; sunny rockery for *apiculata*, *burseriana* & *sancta*; margins of water-courses or damp borders for *peltata*; damp walls or rockeries for *Sibthorpii*; sunny walls for *sarmentosa*. Plant in autumn or spring. Propagate by seeds sown in gritty soil in pans in cold frame in spring; division in spring.

**CULTURE OF TENDER SPECIES:** Soil, equal parts loam, peat, leaf-mould & silver sand. Position, pots or baskets suspended near roof of greenhouse, or close to sunny window. Pot in spring. Water very moderately in autumn & winter. Temp., Oct. to March 55° to 60°; March to Oct. 65° to 70°. Propagate by offsets in spring.

**ENCRUSTED SPECIES:** *S. Aizoon*, creamy white, June, 3 to 6 in., Arctic Regions, and its varieties *balearica* (white and crimson), *carinthiaca* (white), *Griesbachii* (rose), *intaota* (white), *la graveana* (snowy white), *marginata* (white

and yellow); azoides, yellow and red, summer, 3 to 6 in., Britain; crustata, white and purple, summer, 1 ft., Alps; Hostii, white and purple, May, 6 to 12 in., Europe; cœsia, white, June, 1 in., Alps; cotyledon, white, June, 1 to 2 ft., Europe, and its variety pyramidalis (white); lingulata superba, white and rose, June, 18 in., S. Europe; longifolia, white, July, 12 to 18 in., Pyrenees; macnabiana, white and crimson, May and June, 4 in., hybrid; rocheliana, white, May, 3 in., Austria; valdensis, white, May, 3 in., S. France.

**MOSSY SPECIES:** *S. cœspitosa*, white, summer, 3 in., Britain; *hypnoides* (Dove-dale Moss), white, summer, 3 in., Europe (Britain); *muscoïdes*, yellow or purple, May, 3 in., Europe, and its varieties *atropurpurea* (red), *moschata* (white) and *Rhei superba* (rose); *tenella*, white, summer, Algeria; *trifurcata* (Stag's-horn Rock-foil), Syn. *S. ceratophylla*, white, summer, 6 in., N. Spain; *Wallacei* (Syn. *S. Camposi*), white, June, 4 to 6 in., garden origin.

**MEGASEA SPECIES:** *S. cordifolia* (Syn. *Megasea cordifolia*), pink, spring, 1 ft., Siberia, and its variety *purpurea* (crimson); *crassifolia* (Syn. *Megasea crassifolia*), red, spring, 1 ft., Siberia; and its varieties, *gigantea* (purple), *Progress* (rosy pink), and *Milesii* (white).

**MISCELLANEOUS SPECIES:** *S. ajugifolia*, white, July, Pyrenees; *Andrewsii*, white and purple, summer, 6 in., hybrid; *burseriana*, white and yellow, spring, 2 in., E. Europe; and its variety *major* (large-flowered); *cuneifolia*, white and yellow, May, 6 in., Europe; *granulata* fl. pl. (Double Meadow Saxifrage), white, double, May, 6 to 10 in., Europe (Britain); *oppositifolia*, purple, May, 3 in., Britain; and its varieties, *alba* (white) and *splendens* (rosy crimson); *peltata* (Umbrella Plant), white or pink, April, 2 to 3 ft., California; *rotundifolia*, white and scarlet, spring, 1 ft., Austria; *sancta*, yellow, spring, 3 in., Greece; *Sibthorpii* (Syn. *Cymbalaria*), yellow, March to Aug., Caucasus, annual; *sarmentosa* (Mother of Thousands), yellow, white and scarlet, summer, Japan; *umbrosa* (London Pride), white, pink, and red, summer, W. Europe.

**TENDER SPECIES:** *S. sarmentosa tricolor*, leaves creamy white and red.

**Scabiosa** (Scabious; Pincushion Flower; Mournful Widow; Sweet Scabious).—Ord. Dipsacææ. Hardy biennial & perennial herbs. Flowers, useful for cutting.

**CULTURE OF BIENNIAL SPECIES:** Soil, good rich ordinary. Position, sunny beds or borders. Sow seeds 1-16 in. deep in light sandy soil in temp. of 60° to 70° in Feb. or March, & plant out in May to insure plants flowering same year, or outdoors in June or July, transplanting again following March to flowering position. In cold districts lift the seedlings in Aug., & place in small pots; winter in cold frame & plant out in April.

**CULTURE OF PERENNIAL SPECIES:** Soil, ordinary deep rich. Position, sunny well-drained borders for *S. caucasica*; sunny rockeries for *S. graminifolia*; ordinary borders for *S. columbaria*, etc. Plant, Oct., Nov., March or April. Top-dress annually in Feb. or March with decayed manure. Lift, divide, & replant every three or four years.

Propagate by division of roots, Oct. or March.

**BIENNIAL SPECIES:** *S. atropurpureum* (Sweet Scabious or Mournful Widow), various colours, single and double, July, 1 to 3 ft., S. Europe.

**PERENNIAL SPECIES:** *S. caucasica* (Caucasian Scabious), blue, June, 1 ft., Caucasus; *caucasica alba*, white; *ochroleuca webbiana*, yellow, July, 6 in., Europe; *pterocephala*, purple, July, 3 to 4 ft., Greece.

**Scale Fern** (*Asplenium Ceterach*).—See *Asplenium*.

**Scallion** (*Allium ascalonicum majus*).—See *Allium*.

**Scarborough Lily** (*Vallota purpurea*).—See *Vallota*.

**Scarlet Avens** (*Geum coccineum*).—See *Geum*.

**Scarlet Bindweed** (*Ipomœa coccinea*).—See *Ipomœa*.

**Scarlet Clematis** (*Clematis cardinalis*).—See *Clematis*.

**Scarlet Fritillary** (*Fritillaria recurva*).—See *Fritillaria*.

**Scarlet-fruited Thorn** (*Cratægus coccinea*).—See *Cratægus*.

**Scarlet Fuchsia** (*Fuchsia coccinea*).—See *Fuchsia*.

**Scarlet Hawthorn** (*Cratægus oxyacantha coccinea*).—See *Cratægus*.

**Scarlet Lobelia.** (*Lobelia cardinalis*).—See *Lobelia*.

**Scarlet Lychnis** (*Lychnis chalcedonica*).—See *Lychnis*.

**Scarlet Maple** (*Acer rubrum*).—See *Acer*.

**Scarlet Martagon Lily** (*Lilium chalcedonicum*).—See *Lilium*.

**Scarlet Mexican Sage** (*Salvia fulgens*).—See *Salvia*.

**Scarlet Mitre-pod** (*Mitraria coccinea*).—See *Mitraria*.

**Scarlet Monkey-flower** (*Mimulus cardinalis*).—See *Mimulus*.

**Scarlet Musk** (*Mimulus cardinalis*).—See *Mimulus*.

**Scarlet Oak** (*Quercus coccinea*).—See *Quercus*.

**Scarlet Runner Bean** (*Phaseolus multiflorus*).—See *Phaseolus*.

**Scarlet Sage** (*Salvia coccinea* & *S. splendens*).—See *Salvia*.

**Scarlet Skull-cap** (*Scutellaria mocciniiana*).—See *Scutellaria*.

**Scarlet Twin-flower** (*Bravoa geminiflora*).—See *Bravoa*.

**Scarlet Wind-flower** (*Anemone fulgens*).—See *Anemone*.

**Scarlet Wound-wort** (*Stachys coccinea*).—See *Stachys*.

**Schismatoglottis**.—Ord. Aroidæ. Stove perennial herbs. Orn. foliage. First introduced 1862. Leaves, oblong or heart-shaped, green or striped with silver-grey, purple or yellow.

**CULTURE:** Compost, equal parts sandy loam, fibrous peat, leaf-mould, & silver sand. Position, well-drained pots in shady part of stove. Pot, Feb. or March. Water copiously, April to Sept.; moderately afterwards. Syringe daily, April to Sept. Apply stimulants occasionally during summer. Temp., Sept. to March 55° to 65°; March to Sept. 75° to 85°. Propagate by division, Feb. or March.

**SPECIES CULTIVATED:** *S. crispata*, leaves banded with silvery grey, Borneo; *Lavallei*, leaves mottled with grey, Malaya; *longispatha*, leaves banded with silvery grey, Borneo; *neoguineensis*, leaves blotched with yellow, New Guinea; *pulchra*, leaves spotted with silvery white, Borneo; *siamensis*, leaves spotted with white, Siam.

**Schizandra**.—Ord. Magnoliacæ. Hardy evergreen climbing shrubs. First introduced 1806. Leaves, large & handsome. Berries, scarlet.

**CULTURE:** Soil, loam & peat. Position, sunny walls or arbours. Plant, Sept. & Oct. or April. Prune straggly shoots, April. Propagate by cuttings of firm shoots inserted in sandy peat under bell-glass in cold frame, July to Oct.

**SPECIES CULTIVATED:** *S. sinensis*, rose, summer, 1 5 to 20 ft., China.

**Schizanthus** (*Butterfly or Fringe Flower*).—Ord. Solanacæ. Half-hardy annual herbs. First introduced 1822.

**OUTDOOR CULTURE:** Soil, good ordinary rich. Position, sunny beds or borders. Sow seeds thinly in pots, pans, or boxes filled with light soil, & place in temp. 65° to 75° in Feb. or March. Cover slightly with fine mould. Transplant seedlings when 1 in. high, 4 in a 3-in. pot, harden off in frame, & plant out in May. Sow also similarly in Aug., transplant 3 in a 3-in. pot, & place on shelf in light airy greenhouse until following May, then plant out. Sow likewise outdoors end of April where required to grow.

**POT CULTURE:** Compost, one part loam, half a part each of decayed manure & leaf-mould, little sand. Sow seeds thinly in above compost in cool greenhouse or frame in Aug. Transplant seedlings singly in 3-in. pots, & grow on shelf in greenhouse (temp. 45° to 55°) until Jan., then transfer to 6-in. pots, & grow in light position. Water mode-

rately in winter; freely other times. Apply weak stimulants occasionally whilst flowering. Support plants with stakes. For summer flowering, sow seeds in temp.  $55^{\circ}$  to  $65^{\circ}$  in Feb. or March, transplanting when 1 in. high to 3-in. pots, then into 5-in. pots.

**SPECIES CULTIVATED:** *S. Grahami*, lilac and orange, summer, 12 to 18 in., and its varieties, *carmineus* (carmine) and *lilacineus* (lilac and yellow); *pinnatus*, rose, purple and yellow, summer, 12 to 18 in., and its varieties, *atropurpureus* and *papilionaceus*, rose and violaceous; *retusus*, rose, crimson and orange, summer, 18 in., and its variety *alba*; *wisetonensis*, pink, white, and brown, summer, 1 ft. Natives of Chili and Peru.

**Schizocodon.**—Ord. Diapensiaceæ. Hardy perennial herb suitable for rocky culture.

**CULTURE:** Soil, equal parts sandy peat & leaf-mould. Position, partially shady border, rhododendron bed, or cold frame. Plant, April. Water freely in dry weather. Protect with thick layer of cocoanut-fibre refuse & dry bracken. Propagate by division of roots in April.

**SPECIES CULTIVATED:** *S. soldanelloides*, rose, March, 4 in., Japan.

**Schizopetalon.**—Ord. Cruciferae. Half-hardy annual. First introduced 1821.

**CULTURE:** Sow seeds in light warm rich soil in open border, April or May. Cover seeds lightly with fine soil. Thin seedlings when 1 to 2 in. high to 3 or 4 in. apart. Support plants when 6 to 12 in. high with small bushy twigs. Water freely in dry weather. Sow also thinly in well-drained pans filled with compost of loam, peat, & sand placed in temp. of  $55^{\circ}$  to  $65^{\circ}$ , Feb. or April; transplanting seedlings 3 or 4 in 3-in. pots filled with above compost; harden off in cold frame & plant out in May.

**SPECIES CULTIVATED:** *S. Walkeri*, white, almond scented, summer, 1 to 2 ft., Chili.

**Schizophragma** (Climbing Hydrangea).—Ord. Saxifragaceæ. Hardy evergreen self-clinging climbing flowering shrub. First introduced 1879.

**CULTURE:** Soil, ordinary. Position, sunny wall in warm districts only. Plant, Oct. or April. Prune straggly shoots into shape, April. Propagate by cuttings inserted in sand under a bell-glass in temp.  $55^{\circ}$  in spring.

**SPECIES CULTIVATED:** *S. hydrangeoides*, white or pink, autumn, 10 to 15 ft., Japan.

**Schizostylis** (Caffre Lily; Crimson Flag).—Ord. Iridaceæ. Hardy bulbous or rhizomatous-rooted perennial. First introduced 1864.

**OUTDOOR CULTURE:** Soil, moist loamy. Position, warm sunny border. Plant, Oct. to March. Protect in severe weather by covering of dry litter. Water freely in dry weather in summer & apply stimulants occasionally.

**POT CULTURE:** Compost, two parts loam, one part decayed manure, little sand. Pot, Nov. to March. Position, cold frame, Dec. to April; plunged to the rim of pots in sunny border, April to Sept.; cold greenhouse, Sept. to Dec. Water copiously summer; moderately other times. Apply stimulants occasionally in summer. Repot annually. Propagate by division of rhizomes or roots in March or April.

**SPECIES CULTIVATED:** *S. coccinea*, crimson, Oct. and Nov., 1 to 3 ft., S. Africa.

**Schomburgkia.**—Ord. Orchidaceæ. Stove epiphytal orchids. First introduced 1834.

**CULTURE:** Compost, sphagnum moss & fibrous peat. Position on

blocks suspended from roof or in well-drained pots or pans. Pot or re-block, Feb. or March. Water freely during growing period. Keep dry after growth has completed until flowers appear. Shade from sun. Moist atmosphere essential during growing period. Temp., March to Sept. 75° to 85°; Sept. to March 60° to 70°. Resting period, winter. Growing period, March to Oct. Flowers appear at apex of new pseudo-bulbs. Propagate by division.

SPECIES CULTIVATED: *S. Lyonsii*, white, brown, yellow, and purple, 1 ft., Jamaica; *thomsoniana*, sulphur yellow, purple, and white, summer, W. Indies; *Tibicinia* (Cow-horn Orchid), crimson, purple, orange, and white, summer, 1 ft., Honduras.

**Schubertia**.—See *Araujia*.

**Sciadopitys** (Parasol Fir Tree; Umbrella Pine).—Ord. Coniferæ. Hardy evergreen conifer. First introduced 1861. Leaves, long, tapering, borne in tufts at the end of shoots, parasol-like; green or variegated with pale yellow.

CULTURE: Soil, rich moist loam. Position, sheltered from piercing winds. Plant, Sept., Oct., March or April. Propagate by imported seeds sown  $\frac{1}{2}$  in. deep in pots filled with moist sandy loam, & placed in cold frame or greenhouse, transplanting seedlings outdoors following spring; or  $\frac{1}{4}$  in. deep outdoors in April in moist bed of sandy loam, transplanting seedlings next year.

SPECIES CULTIVATED: *S. verticillata*, 80 to 120 ft., Japan.

**Scilla** (Squill; Blue Bell).—Ord. Liliacæ. Greenhouse & hardy bulbous plants.

CULTURE OF HALF-HARDY SPECIES: Compost, two parts sandy loam, one part decayed cow manure & sand. Position, well-drained pots in light cool greenhouse. Pot, Aug. to Dec., large bulbs singly, or small ones in threes in 5-in. pots. Water freely when growth begins; keep dry after flowering ceases & leaves begin to decay. Temp., Oct. to March 40° to 50°; March to Oct. 55° to 65°. Stand pots in cold sunny frame, June to Sept.

CULTURE OF HARDY SPECIES: Soil, deep sandy loam. Position, sunny beds, borders, in grass on lawns, or rockeries. Plant, Aug. to Nov. in lines or masses. Depth for planting: Small bulbs 2 in. deep & 2 in. apart; large bulbs 4 in. deep & 3 to 4 in. apart. Mulch with decayed manure, Nov. Lift, divide, & replant every third year.

POT CULTURE: Compost, two parts sandy loam, one part leaf-mould or well-decayed cow manure, one part river sand. Pot, Aug. to Nov., placing small bulbs, 1 in. apart, in a 5-in. pot; or 3 to 5 large-sized bulbs 1 in. deep in similar pots. Position, under layer of cinder ashes from time of potting till growth commences, then in cold frame, cool greenhouse or window till past flowering, afterwards in sunny spot outdoors. Water moderately from time growth commences till foliage fades, then keep dry. Repot annually. Apply weak stimulants once or twice during flowering period. Propagate by seeds sown 1-16 in. deep in light sandy soil in boxes or cold frame, or outdoors in Sept.; offsets from old bulbs removed when lifting & planted, as advised for full-sized bulbs. Seedlings flower when 3 to 4 years old.

HALF-HARDY SPECIES: *S. peruviana*, lilac, May, 6 to 12 in., Algeria; *peruviana alba*, white.

HARDY SPECIES: *S. bifolia*, blue, March, 6 in., Europe; *bifolia alba*, white; *bifolia rosea*, rose; *festalis* (Syn. *S. nutans*), the Bluebell, blue, April, 8 to 15 in., W. Europe; *festalis alba*, white; *festalis rosea*, rose; *festalis cernua*, white; *hispanica* (Spanish Squill), blue, May, 1 ft., Europe; *hispanica alba*, white; *hispanica carnea*, flesh; *hispanica rosea*, rose; *hispanica rubra*, red; *sibirica* (Siberian Squill), blue, Feb., 3 to 6 in., Asia Minor; *sibirica alba*, white.



**Scirpus** (Club Grass; Rush).—Ord. Cyperaceæ. Greenhouse & hardy perennial marsh or water plants.

**CULTURE OF HARDY SPECIES:** Soil, ordinary. Position, margins of lakes, streams, & ponds. Plant, Oct. to April. Propagate by division, Oct. to April.

**CULTURE OF GREENHOUSE SPECIES:** Compost, equal parts loam, leaf-mould, & little sand. Position, small pots arranged along front of staging, or in hanging baskets. Pot, Feb. or March. Water abundantly March to Oct., moderately other times. Temp., March to Oct. 55° to 65°; Oct. to March 45° to 55°. Propagate by division of plants in March.

**HARDY SPECIES:** *S. lacustris* Tabernæmontani zebrina (Variegated Porcupine Rush), stems ringed with yellow, inflorescence reddish, 4 to 5 ft., Britain.

**GREENHOUSE SPECIES:** *S. nodosus* (Syn. *Isolepis gracilis*), the Club Rush, 3 to 6 in., leaves round, slender and drooping, Tropics.

**Scolopendrium** (Hart's-tongue Fern).—Ord. Filices. Hardy evergreen fern. Fronds, strap-shaped, crested, or contorted.

**OUTDOOR CULTURE:** Soil, one part each of fibrous peat & loam, & one of sand, broken oyster shells, & limestone or mortar rubbish. Position, shady borders, rockeries, chinks of old stone or brick walls, or banks. Plant, April. Water copiously in dry weather.

**INDOOR CULTURE:** Compost, as above. Position, pots in cold frame, greenhouse or dwelling-room. Shade from sun essential. Pot, Feb. or March. Water freely March to Oct., moderately afterwards. Propagate by spores sown on surface of fine peat in well-drained pans, placed in temp. of 75° any time; division of plants, March or April.

**SPECIES CULTIVATED:** *S. vulgare*, 6 to 18 in., Europe (Britain), etc., and its numerous varieties, as *crispum*, *cristatum*, *grandiceps*, *Kelwayi*, *marginatum*, *omniflorum*, *ramosum*, *undulatum*, *variegatum*, etc. See trade lists for other forms.

**Scolymus** (Spanish Oyster Plant; Golden Thistle).—Ord. Compositæ. Hardy annual, biennial, & perennial herbs. First introduced 1630.

**CULTURE:** Soil, ordinary. Position, sunny borders. Plant perennial species (*S. grandiflorus*), Oct. to April. Sow seeds of annual species (*S. maculatus*) & of biennial species (*S. hispanicus*)  $\frac{1}{2}$  in. deep where required to grow in March or April. Thin seedlings to 8 or 12 in. apart when 2 in. high. Propagate perennial species by seeds sown as above, or by division of roots in April.

**ANNUAL SPECIES:** *S. maculatus*, yellow, July, 2 to 3 ft., Europe.

**BIENNIAL SPECIES:** *S. hispanicus* (Spanish Oyster or Golden Thistle), yellow, Aug., 2 to 3 ft., roots edible, Europe.

**PERENNIAL SPECIES:** *S. grandiflorus*, yellow, May, 3 ft., N. Africa.

**Scorpion Grass** (*Myosotis dissitiflora*).—See *Myosotis*.

**Scorpion Iris** (*Iris alata*).—See *Iris*.

**Scorpion Senna** (*Coronilla Emerus*).—See *Coronilla*.

**Scorzonera** (Vipers' Grass).—Ord. Compositæ. Hardy herbaceous perennial with edible roots. First introduced 1576. Roots, carrot-shaped, white with dark skin, sweet-flavoured.

**CULTURE:** Soil, ordinary fine, rich, deeply trenched, free from stones. Position, sunny, open. Sow seeds in groups of three or four, 12 in. apart, in drills  $\frac{1}{2}$  in. deep, & 18 in. apart in April. Thin seedlings when 3 in. high to one in each group. Remove flower heads as soon as seen. Lift the roots in Oct., twist off their leaves, & store in layers with sand or soil between in cellar or outhouse until required for cooking. Artificial manures for: 2 $\frac{1}{2}$  lb. kainit, 1 lb. sulphate of am-

monia, 2½ lb. of guano, mixed, per square rod (30¼ sq. yards), applied before sowing in spring. Requires to be raised from seed annually for producing roots for culinary purposes. Seeds germinate in 7 to 12 days, and retain their vegetative powers for two to three years. Crop reaches maturity in 18 weeks.

**MARKET CULTURE:** Soil, deep, sandy; poor, shallow soils unsuitable. Manures: No farmyard dung, but 3 cwt. of kainit per acre, ploughed in during winter; 5 cwt. of superphosphate just before sowing, and 1 cwt. nitrate of soda six weeks after sowing. Sow in April, sowing seed thinly in drills 18 in. apart. Thin seedlings early to 9 in. apart. Lift roots in November and store in clumps outdoors. Market in bundles of 8 to 12 even straight roots. Quantity of seed to sow an acre: 8 to 12 lb. Average yield per acre, 200 to 300 bushels. Average life of seeds, 2 years. Average price per doz. bundles, 4s. to 4s. 6d.

**SPECIES CULTIVATED:** *S. hispanica*, yellow, June to Sept., 2 to 3 ft., S. Europe.

**Scotch Crocus** (*Crocus biflorus*).—See Crocus.

**Scotch Elm** (*Ulmus montana*).—See Ulmus.

**Scotch Fir** (*Pinus sylvestris*).—See Pinus.

**Scotch Heather** (*Erica cinerea*).—See Erica.

**Scotch Kale**.—See Brassica.

**Scotch Laburnum** (*Laburnum alpinus*).—See Laburnum.

**Scotch Primrose** (*Primula scotia*).—See Primula.

**Scotch Rose** (*Rosa spinosissima*).—See Rosa.

**Scotch Shamrock** (*Trifolium repens purpureum*).—See Trifolium.

**Scotch Thistle** (*Onopordon acanthium*).—See Onopordon.

**Screw Pine** (*Pandanus odoratissimus*).—See Pandanus.

**Scurvy Pea**.—See Psoralea.

**Scutellaria** (Helmet Flower; Skull Cap).—Ord. Scrophulariaceæ. Stove and herbaceous perennials.

**CULTURE OF STOVE SPECIES:** Compost, two parts loam, one part of equal proportions of leaf-mould, decayed manure, & sand. Position, light part of stove, Sept. to June; sunny cold frame remainder of year. Pot, Feb. or March. Prune shoots directly after flowering (Feb.) to within 3 in. of base. Good drainage essential. Nip off points of main shoots when 3 in. long, also of lateral shoots when of similar length, to induce bushy growth. Water freely April to Sept., moderately afterwards. Syringe daily April to Sept. Apply stimulants once a week May to Dec. Temp., Sept. to March 55° to 65°; March to June 70° to 80°.

**CULTURE OF HARDY SPECIES:** Soil, ordinary. Position, open sunny borders or rockeries. Plant, March or April. Lift, divide & replant only when overgrown. Propagate stove species by cuttings of firm shoots, 2 to 3 in. long, inserted in light sandy soil under bell-glass in temp. 75° to 85° in spring; hardy species by seeds sown outdoors in April; division of roots in March or April.

**STOVE SPECIES:** *S. coccinea*, scarlet, summer, 12 to 18 in., Colombia; *mocciniana*, scarlet and yellow, summer, 2 to 3 ft., Mexico.

**HARDY SPECIES:** *S. alpina*, purple, Aug., 6 to 8 in., S.E. Europe; *laterifolia*, blue, July, 1 ft., N. America.

**Scuticaria**.—Ord. Orchidacæ. Stove epiphytal orchids. First introduced 1834.

**CULTURE:** Compost, equal parts fibry peat & chopped sphagnum moss, with little sand & charcoal. Position, well-drained pots, paus.

or baskets in light part of greenhouse. Pot when new growth commences. Water freely from March to Nov., moderately Nov. to March. Syringe once or twice daily whilst making growth. Ventilate freely May to Sept. Temp., April to Oct. 55° to 65°; Oct. to April 45° to 55°. Growing period, Feb. to March; resting period, Oct. to Feb. Propagate by division of pseudo-bulbs immediately after flowering.

**SPECIES CULTIVATED:** *S. Hadweni*, greenish yellow, white, and rose, summer, 9 to 18 in., Brazil; *Steelii*, yellow, chocolate, creamy white and purple, various periods of the year, British Guiana.

**Scyphanthus.**—See *Grammatocarpus*.

**Sea Buckthorn** (*Hippophaë rhamnoides*).—See *Hippophaë*.

**Sea Bugloss.**—See *Anchusa*.

**Sea Daffodil** (*Pancreatum maritimum*).—See *Pancreatum*.

**Sea Eryngo** (*Eryngium maritimum*).—See *Eryngium*.

**Seaforthia.**—See *Archontophoenix*.

**Sea Heath** (*Frankenia lævis*).—See *Frankenia*.

**Sea Holly** (*Eryngium maritimum*).—See *Eryngium*.

**Seakale.**—See *Crambe*.

**Seakale Beet** (*Beta Cicla*).—See *Beta*.

**Sea Lavender** (*Statice Limonium*).—See *Statice*.

**Seal Flower** (*Dicentra spectabilis*).—See *Dicentra*.

**Sea Oat** (*Uniola latifolia*).—See *Uniola*.

**Sea Pink** (*Armeria maritima*).—See *Armeria*.

**Sea-shore Daffodil** (*Narcissus odoratus*).—See *Narcissus*.

**Sea-side Poppy** (*Glaucium luteum*).—See *Glaucium*.

**Sea-side Rocket** (*Cakile maritima*).—See *Cakile*.

**Sea-side Spleenwort** (*Asplenium marinum*).—See *Asplenium*.

**Sea-side Stock** (*Matthiola sinuata*).—See *Matthiola*.

**Sea Starwort** (*Aster tripolium*).—See *Aster*.

**Sedge.**—See *Carex*.

**Sedum** (Stonecrop).—Ord. *Crassulacææ*. Greenhouse & hardy evergreen & herbaceous perennials, biennials, & annuals. Flowering & orn. foliage.

**CULTURE OF GREENHOUSE SPECIES:** Compost, two parts sandy loam, one part brick rubbish, one part of equal proportions of dried cow dung & sand. Position, pots or pans in sunny greenhouse. Pot, Feb. to April. Water freely April to Oct., very little afterwards. Temp., Oct. to March 40° to 50°; March to Oct. 45° to 55°.

**CULTURE OF HARDY PERENNIAL SPECIES:** Soil, ordinary or sandy loam. Position, sunny or shady dryish rockeries & borders. Plant Nov. to April. Lift, divide & replant triennially.

**CULTURE OF ANNUAL SPECIES:** Soil, ordinary. Position, sunny dryish banks, rockeries, or borders. Sow seeds thinly in April where required to grow, and lightly cover with fine soil. Thin 3 to 6 in. apart when 2 in. high. Propagate greenhouse species named below by seeds sown in well-drained pots or pans filled with fine compost of equal parts brick rubble, sandy loam & sand, & placed in temp. of 55° Feb. to May; also by cuttings of shoots inserted in brick rubble, loam, & sand, in temp. 45° to 55° in summer; division of roots at potting time. Hardy species by seeds sown outdoors in April, or division of the roots in March or April.

**ANNUAL SPECIES:** *S. cœruleum*, blue, July, 3 in., *S. Europe*.

**HARDY PERENNIAL SPECIES:** *S. acre* (Stonecrop), yellow, June, 3 in., Britain; *acre aureum*, golden foliage; *Aizoon*, yellow, summer, 1 ft., Siberia; *album*

(Worm Grass), white, summer, 4 in., Europe (Britain); *brevifolium*, white, June, 3 in., Mediterranean Region; *Ewersii*, pink, Aug., 4 to 6 in., Siberia; *hispanicum* (Syn. *S. glaucum*), pink and white, July, 3 in., S. Europe; *dasyphyllum*, pink, July, 3 in., Europe; *kamtschaticum*, yellow, autumn, 6 in., Kamtschatka; *lydium*, pink, summer, 3 in., pink, Aug., 2 in., Asia Minor; *maximum*, white and red, Aug., 1 to 2 ft., Europe; *Maximowiczii*, yellow, summer, 1 ft., Japan; *oppositifolia*, white, July, 6 in., Caucasus; *populifolium*, pink, Aug., 8 to 10 in., Siberia; *pulchellum*, rosy purple, summer, 4 to 6 in., N. America; *reflexum*, yellow, summer, 8 to 10 in., Europe; *roseum* (Rose Root), reddish purple, summer, 6 to 10 in., N. Temperate Zone; *spectabile*, pink, autumn, 1 to 2 ft., Japan; *stoloniferum* (Syn. *S. spurium*), pink, summer, 6 in., Caucasus, and its varieties *album* (white) and *splendens* (red); *telephium* (Orpine or Live-long), pink, summer, 1 ft., Pyrenees.

GREENHOUSE SPECIES: *S. Sieboldii medio-pictum*, pink, summer, leaves blotched with white, 9 in., Japan; *sarmentosum variegatum* (Syn. *S. carneum variegatum*), leaves green striped with white, stems pink, China.

**Selaginella** (Creeping Moss; Tree Club Moss).—Ord. Lycopodiaceæ. Stove & greenhouse orn. foliage plants. Evergreen. First introduced 1860. Fronds, creeping or erect; branched; green or variegated.

CULTURE: Compost, equal parts fibrous peat & chopped sphagnum moss. Position, pots, pans, or rockeries in shade. Pot or plant Feb. or March. Water copiously April to Sept., moderately afterwards. Syringe daily April to Sept. Shade from sun. Temp., Sept. to March 55° to 65°; March to Sept. 70° to 80° for stove species; Sept. to March 40° to 50°; March to Sept. 55° to 65° for greenhouse species. Propagate by cuttings about 3 in. long inserted in above compost in well-drained pots, & plunged in cocoanut-fibre refuse in a temp. of 80° at all seasons.

STOVE SPECIES: *S. canaliculata*, creeping, Trop. Asia; *cuspidata*, W. Indies; *erythropus*, W. Indies; *Galeolottii*, C. America; *grandis*, Borneo; *hæmatodes*, W. Indies; *Wildenovi*, climbing, Trop. Asia.

GREENHOUSE SPECIES: *S. apus* (Syn. *S. apoda* or *densa*), N. America; *Braunii*, 12 to 18 in., China; *kraussiana* (Syn. *Lycopodium denticulatum*), creeping or trailing, S. Africa; *kraussiana aurea*, foliage golden; *Martensii*, 6 to 12 in., Mexico; *Martensii variegata*, variegated; *uncinata* (Syn. *S. cæsia*), trailing, China.

**Selenipedium**.—Ord. Orchidaceæ. Stove terrestrial orchids allied to *Cypripediums*, but differing from the latter in their long, narrow green leaves, and bearing several flowers on a stem. The sepals, moreover, are mostly long and twisted.

CULTURE: Compost, two parts rough fibry peat, one part sphagnum moss & sand. Position, pots or pans drained one-third of their depth. Repot, March or April. Water freely March to Oct., moderately afterwards. Temp., March to Sept. 65° to 85°; Sept. to March 60° to 65°. Shade desirable. Resting period, none. Flowers appear in centre of last made growths after growth has finished. Propagate all the species by division of the roots at potting or planting time.

SPECIES CULTIVATED: *S. boisserianum*, yellow, green and white, autumn, Peru; *carionum*, white, rose, yellow and green, various seasons, Bolivia; *caudatum*, creamy white, crimson, bronze and green, spring, Central America; *lindleyanum*, green and red, winter, British Guiana; *longifolium*, green, rose, yellow, and white, various seasons, Costa Rica; *Sohlimii*, white, rose, and yellow, all the year, Colombia. Also many hybrids for which see trade lists.

**Sempervivum** (House-leek).—Ord. Crassulaceæ. Greenhouse & hardy succulent-leaved perennials. Leaves, fleshy, green or variegated.

CULTURE OF HARDY SPECIES: Soil, ordinary light, sandy, containing a little old mortar. Position, open & sunny; chinks, crevices, or ledges of rockeries; edgings to borders. Plant, March to June. If used for edgings, plant close together in single or double rows. Top-dress annually in March with old & dried cow dung. Common House-

leek (*S. Tectorium*) adapted for growing on sunny roofs or in crevices of old walls. Plant in a mixture of cow dung & clay in March or April.

**CULTURE OF GREENHOUSE SPECIES:** Compost, equal parts sandy loam, leaf-mould, & brick rubbish. Position, well-drained pots or pans in sunny part of greenhouse or window. Pot, March. Water moderately April to Oct.; keep nearly dry remainder of year. No stimulants, shading, or syringing needed. Temp., March to Oct. 55° to 75°; Oct. to March 40° to 50°. Propagate by seeds sown in spring in a compost of equal parts sandy loam, leaf-mould, & old mortar, in well-drained shallow pans, slightly covered with fine mould, & placed in temp. 55° to 65°; cuttings of shoots or leaves dried for a day or so after removal from the plant & inserted in above compost in summer; division of offsets in March.

**HARDY SPECIES:** *S. arachnoideum* (Cobweb Houseleek), red, June, 3 to 4 in., Europe; and its varieties, *Laggeri*, 6 in., and *webbianum*, 6 in.; *globiferum* (Hen and Chickens Houseleek), yellow, summer, 4 in., Europe; *montanum*, purple, June, 6 in., Alps; *calcareum* (Syn. *S. californicum*), red, summer, 8 to 10 in., Dauphiny; *Tectorium* (Houseleek), red, July, 1 ft., Europe.

**GREENHOUSE SPECIES:** *S. arboreum*, yellow, summer, 4 to 6 ft., Mediterranean Region; *arboreum variegatum*, leaves variegated; *tabuleforme*, 1 ft., Madeira; *tabuleforme variegatum*, variegated. Last species used for carpet bedding.

**Senecio** (*Jacobæa*; *Cineraria*; Ragwort).—Ord. *Compositæ*. Greenhouse & hardy annuals, evergreen herbs or climbers, & herbaceous perennials.

**CULTURE OF ANNUAL SPECIES:** Soil, ordinary rich. Position, sunny beds or borders. Sow seeds in April  $\frac{1}{2}$  in. deep in patches or lines where required to grow. Thin seedlings 3 to 6 in. apart when 1 in. high.

**POT CULTURE:** Compost, two parts sandy loam, one part leaf-mould, or well-decayed manure, & one part sand. Place in 6-in. pots, well drained, press firmly, & sow seeds thinly in April, covering with fine mould. Stand pots in cold greenhouse, window, or frame. Thin seedlings when 1 in. high to 2 in. apart. Water moderately & apply stimulants when flowers show.

**CULTURE OF CLIMBING SPECIES:** Compost, two parts sandy loam, one part well-decayed manure or leaf-mould, and one part sand. Position, well-drained pots in sunny greenhouse or window; dwarf kinds on staging or inside window sills; tall kinds trained up roof of greenhouse or round window frames. Pot, March or April. Water freely, April to Oct., very little afterwards. Apply stimulants occasionally in summer. Temp., March to Oct. 55° to 65°; Oct. to March 40° to 50°.

**CULTURE OF FLOWERING CINERARIAS** (*S. cruentus*): Compost, two parts yellow loam, one part leaf-mould and coarse silver sand. Sow seeds 1-16 in. deep in well-drained pans or pots of above finely sifted compost. Cover top of pot with square of glass, keep soil moist, & shade from sun. Transplant seedlings when three leaves are formed singly in small pots, keep in cold frame and shaded. Shift into 4½-in. pots in July, 6-in. size in August. Remove to greenhouse in Oct., near glass. Apply weak liquid manure twice weekly from Sept. onwards. Liquid cow manure best for cinerarias. Fumigate frequently to destroy aphids. Temp., Oct. to time plants have ceased flowering, 45° to 50°. Sow in May for winter-flowering; June for spring flowering. Double-flowered or choice single sorts may be increased by cuttings.

**CULTURE OF S. CINERARIA:** Compost, same as above. Pot, March. Plant outdoors in June. Lift in Sept. Water moderately if grown in pots. Propagate by cuttings of side shoots inserted in pots of sandy soil in temp. 65° in March; seeds sown  $\frac{1}{2}$  in. deep same time and soil, transplanting seedlings into small pots and growing in greenhouse till June.

**CULTURE OF HARDY SPECIES:** Soil, deep rich loam. Position, partially shady moist border. Plant, March or April. Mulch with decayed manure annually in March. Water freely in dry weather. Propagate greenhouse species by seeds sown in April 1-16 in. deep in a compost of equal parts loam, leaf-mould, & sand, in well-drained pots or pans in temp. 65° to 75°; by cuttings inserted in similar soil & temp. in spring or summer. Hardy species by seeds sown  $\frac{1}{2}$  in. deep outdoors in April; division of the roots in March or April.

**ANNUAL SPECIES:** *S. elegans* (Syn. *Jacobæa elegans*), varicous colours, single and double, summer, 1 to 2 ft., S. Africa.

**GREENHOUSE SPECIES:** *S. cineraria* (Syn. *Cineraria maritima*), the "Dusty Miller," yellow, summer, leaves silvery, 1 to 2 ft., used also for carpet bedding, Mediterranean Region; *cruentus* (Syn. *Cineraria cruenta*), parent of the well-known cinerarias, purple, summer, 1 to 2 ft., perennial, but grown as an annual, Canaries; *macroglossus* (Cape Ivy), yellow, summer, climber, S. Africa; *mikanioides* (German Ivy), yellow, winter, climber, S. Africa.

**HARDY SPECIES:** *S. doronicum* (Leopard's Bane), yellow, summer, 1 ft., Europe; *argenteus*, foliage silvery, 1 ft., Chili; *japonicus* (Syn. *Ligularia japonica*), orange, yellow, autumn, 4 to 5 ft., Japan; *Kumpferi aureo-maculatus* (Syn. *Farfugium grande*), leaves blotched with yellow, white and rose, 1 ft., Japan; *macrophyllus* (Syn. *Ligularia macrophylla*), golden yellow, summer, 4 to 5 ft., Caucasus.

**Senna Plant.**—See Cassia.

**Sensitive Fern** (*Onoclea sensibilis*).—See Onoclea.

**Sensitive Plant** (*Mimosa sensitiva*).—See Mimosa.

**Sequoia** (Mammoth Tree; Californian Red-wood).—Ord. Coniferæ. Hardy evergreen coniferous trees. First introduced 1853.

**CULTURE:** Soil, sandy loam or reclaimed bog. Position, sunny sheltered. Plant, Sept. Oct., April, or May. Propagate by seeds sown  $\frac{1}{2}$  in. deep in well-drained pans of sandy loam placed in cold frames in spring; transplanting seedlings when large enough to handle, 6 in. apart in nursery rows 6 in. asunder; by cuttings of shoots inserted in sandy loam under bell-glass, hand-light, or cold frame, Sept. & Oct.; variegated kinds by grafting on common species in spring.

**SPECIES CULTIVATED:** *S. gigantea* (Syn. *Wellingtonia gigantea*), Mammoth Tree of California, 300 ft., California; *sempervirens* (California Redwood), 200 to 250 ft., California.

**Serapias** (Tongue-flowered Orchid).—Ord. Orchidaceæ. Hardy terrestrial orchids. First introduced 1786.

**CULTURE:** Compost, calcareous loam or clay mixed with pieces of limestone. Position, sunny deep well-drained borders. Plant, August to Nov., placing tubers 2 in. below surface. Water freely during growing period. Mulch with decayed manure annually in March or April. Lift & replant when unhealthy only. Propagate by division of tubers, Aug. to Nov.

**SPECIES CULTIVATED:** *S. cordigera*, lavender and brown, summer, 1 ft., Europe; *lingua*, red and brown, spring, 1 ft., Europe.

**Seratula.**—See Saussurea.

**Sericographis.**—See Jacobinia.

**Serpent Gourd** (*Trichosanthes Anguina*).—See *Trichosanthes*.

**Serpent's Beard** (*Ophiopogon japonicus*).—See *Ophiopogon*.

- Serpent's-tongue** (*Erythronium americanum*).—See *Erythronium*.
- Service-berry** (*Amelanchier canadensis*).—See *Amelanchier*.
- Service-tree** (*Pyrus Sorbus*).—See *Pyrus*.
- Seven Sisters Rose** (*Rosa multiflora Grevillea*).—See *Rosa*.
- Seville Orange-tree** (*Citrus aurantium amara*).—See *Citrus*.
- Shaddock-tree** (*Citrus decumana*).—See *Citrus*.
- Shaggy-fruited Rose** (*Rosa villosa*).—See *Rose*.
- Shaggy-leaved Primrose** (*Primula villosa*).—See *Primula*.
- Shaggy Lychnis** (*Lychnis haageana*).—See *Lychnis*.
- Shaggy Windflower** (*Anemone vernalis*).—See *Anemone*.
- Shallon-Shrub** (*Gaultheria Shallon*).—See *Gaultheria*.
- Shallot** (*Allium ascalonicum*).—See *Onion*.
- Shamrock Pea** (*Parochetus communis*).—See *Parochetus*.
- Shanghai Jasmine** (*Trachelospermum jasminoides*).—See *Trachelospermum*.
- Shasta Daisy** (*Chrysanthemum maximum*).—See *Chrysanthemum*.
- Sheep's-bit Scabious** (*Jasione montana*).—See *Jasione*.
- Sheep's-poison Laurel** (*Kalmia angustifolia*).—See *Kalmia*.
- Shell-flower** (*Chelone obliqua*).—See *Chelone*.
- Shepherdia** (*Beef Suet Tree*; *Rabbit Berry*; *Buffalo Berry*).—*Ord. Elæagnacæ*. Hardy deciduous shrub. *Orn. foliage & fruiting*. First introduced 1759. Fruit, scarlet & yellow. Leaves, ovate & silvery.
- CULTURE**: Soil, ordinary. Position, open or shady shrubberies & inland or seaside gardens. Plant, Oct. to Feb. Propagate by seeds sown  $\frac{1}{2}$  in. deep outdoors in Nov. or Dec.; by cuttings of roots inserted in Feb. or March in ordinary soil outdoors; layering shoots in autumn.
- SPECIES CULTIVATED**: *S. argentea* (*Beef Suet Tree*, *Rabbit Berry*, *Buffalo Berry*), yellow, spring, 8 to 10 ft., N. America; *canadensis*, yellow, spring, 3 to 6 ft., N. America.
- Shield Fern** (*Aspidium aculeatum angulare*).—See *Aspidium*.
- Shield-leaved Saxifrage** (*Saxifraga peltata*).—See *Saxifraga*.
- Single-plant** (*Monstera deliciosa*).—See *Monstera*.
- Shirley Poppy**.—See *Papaver*.
- Shoe-black-plant** (*Hibiscus rosa-sinensis*).—See *Hibiscus*.
- Shooting Stars** (*Dodecatheon Meadia*).—See *Dodecatheon*.
- Shortia**.—*Ord. Diapensiaceæ*. Hardy perennial herb. First introduced 1888.
- CULTURE**: Soil, equal parts sandy peat & leaf-mould. Position, partially shady border, rhododendron bed, or cold frame. Plant, April. Water freely in dry weather. Protect with thick layer of cocoanut-fibre refuse & dry bracken. Propagate by division of roots in April.
- SPECIES CULTIVATED**: *S. galacifolia*, white, spring, 3 to 6 in., N. Carolina; *uniflora*, pink, spring, 6 in., Japan.
- Shrubby Cinquefoil** (*Potentilla fruticosa*).—See *Potentilla*.
- Shrubby Meadow-sweet** (*Spiræa arifolia*).—See *Spiræa*.
- Siberian Iris** (*Iris sibirica*).—See *Iris*.
- Siberian Lady's-slipper** (*Cypripedium macranthum*).—See *Cypripedium*.

**Siberian Larkspur** (*Delphinium grandiflorum*).—See *Delphinium*.

**Siberian Orange Lily** (*Lilium dauricum*).—See *Lilium*.

**Siberian Squill** (*Scilla sibirica*).—See *Scilla*.

**Sibthorpia** (Cornish Money-wort).—Ord. Scrophulariaceæ. Greenhouse & hardy creeping perennial herb. A pretty plant for hanging baskets. Leaves, small, round, variegated with white.

**CULTURE**: Compost, equal parts loam, leaf-mould, & little sand. Position, moist partially shady borders or rockeries outdoors, or in pots or pans in cold frame, or cool shady indoor fernery or greenhouse under bell-glass. Pot or plant, March or April. Water copiously in dry weather outdoors; also indoors, April to Sept.; moderately other times. Moist atmosphere essential for indoor culture. Propagate by cuttings inserted in pots of light soil placed under bell-glass in cold greenhouse or frame in summer; division of plants in April.

**SPECIES CULTIVATED**: *S. europæa variegata*, pink, July, N. Europe (Britain).

**Sidalcea**.—Ord. Malvaceæ. Hardy perennial herbs. First introduced 1838.

**CULTURE**: Soil, ordinary. Position, sunny borders. Plant, Oct. to April. Lift, divide, & replant every three or four years. Propagate by seeds sown  $\frac{1}{2}$  in. deep in light soil in April, transplanting seedlings when 1 in. high; division of roots, Oct. to April.

**SPECIES CULTIVATED**: *S. candida*, white, summer, 3 ft., New Mexico; *malvæflora*, lilac, summer, 3 ft., N.W. America, and its varieties, *atropurpureum* (purple) and *Listeri* (pink).

**Side-saddle-flower** (*Sarracenia purpurea*).—See *Sarracenia*.

**Sieber's Crocus** (*Crocus Sieberi*).—See *Crocus*.

**Siebold's Plantain Lily** (*Funkia Sieboldi*).—See *Funkia*.

**Siebold's Primrose** (*Primula Sieboldi*).—See *Primula*.

**Siebold's Stonecrop** (*Sedum Sieboldi*).—See *Sedum*.

**Sikkim Cowslip** (*Primula sikkimensis*).—See *Primula*.

**Sikkim Rhubarb** (*Rheum nobile*).—See *Rheum*.

**Silene** (Campion; Catchfly).—Ord. Caryophyllaceæ. Hardy annuals & herbaceous perennials.

**CULTURE OF ANNUAL AND BIENNIAL SPECIES**: Soil, ordinary light or sandy. Position, sunny beds or borders. Sow seeds in August or Sept.,  $\frac{1}{2}$  in. deep in a bed of light rich soil; transplanting seedlings when 1 in. high, 2 to 3 in. apart; & plant 6 in. apart in flowering position in March for spring blooming. Sow also in similar depth & position in April, transplant when 1 in. high to flowering positions for summer blooming. Or sow where required to grow & flower in April, thinning out seedlings in May or June to 6 in. apart.

**CULTURE OF PERENNIAL SPECIES**: Soil, sandy loam, enriched with decayed cow dung;  $\frac{1}{3}$  loam,  $\frac{1}{3}$  peat,  $\frac{1}{3}$  stones for *S. Elisabethæ*, *acaulis*, and *rupestris*; ordinary soil for other kinds. Position, sunny crevices or ledges of rockeries for *S. acaulis*, *S. alpestris*, *S. rupestris*, *S. virginica*, *S. pennsylvanica*, & *S. Elisabethæ*; open borders for *S. maritima* fl. pl. Plant, March or April. Top-dress annually in March with decayed cow dung & sandy loam. Lift & replant only when absolutely necessary. Propagate perennials by seeds sown in pans or boxes of sandy loam & leaf-mould, lightly covered with fine mould, & placed in cold frame in March or April; by cuttings of young shoots inserted in sandy loam in cold frame in summer; by division in March or April.

**ANNUAL SPECIES**: *S. pendula*, pink, spring, 6 in., Mediterranean Region; many varieties; *armeria* (Sweet William Catchfly), pink, July, 1 ft., Europe.



BIENNIAL SPECIES: *S. compacta*, pink, summer, 18 in., Asia Minor.

PERENNIAL SPECIES: *S. acaulis* (Cushion Pink; Moss Pink), pink, June, 2 in., N. Temperate Zone; *acaulis alba*, white; *acaulis grandiflora*, crimson; *alpestris* (Alpine Catchfly), white, May, 6 in., Alps; *S. Elisabethæ*, rose, summer, 6 to 9 in., Tyrol; *maritima flore pleno* (Witch's Thimble); white, double, summer, trailing, Europe; *pennsylvanica* (American Wild Pink), pink, spring, 6 to 8 in., U. States; *rupestris*, white, May, 4 to 6 in.; *Schafta*, purple, summer, 4 to 6 in., Caucasus; *virginica* (Fire Pink), crimson, June, 12 to 18 in., N. America.

**Silk-bark Oak** (*Grevillea robusta*).—See *Grevillea*.

**Silk-vine** (*Periploca græca*).—See *Periploca*.

**Silk-weed** (*Asclepias tuberosa*).—See *Asclepias*.

**Silphium** (Compass Plant; Cup Plant).—Ord. Compositæ. Hardy perennial herbs.

CULTURE: Soil, ordinary. Position, sunny borders. Plant, Oct. to April. Lift, divide, & replant every two or three years. Propagate by division of roots, Oct. to April.

SPECIES CULTIVATED: *S. laciniatum* (Compass Plant), yellow, July, 4 to 6 ft., N. America; *perfoliatum* (Cup Plant), yellow, July, 6 to 8 ft., N. America.

**Silver Bell Tree** (*Halesia tetraptera*).—See *Halesia*.

**Silver-edged Primrose** (*Primula marginata*).—See *Primula*.

**Silver Fir** (*Abies pectinata*).—See *Abies*.

**Silver Grass** (*Phalaris arundinacea variegata*).—See *Phalaris*.

**Silver-leaved Beech** (*Fagus sylvatica argentea-variegatis*).

—See *Fagus*.

**Silver Maiden-hair Fern** (*Nothochlæna nivea*).—See *Nothochlæna*.

**Silver Maple** (*Acer dasycarpum*).—See *Acer*.

**Silver Rod** (*Asphodelus ramosus*).—See *Asphodelus*.

**Silver Thatch-palm** (*Thrinax argentea*).—See *Thrinax*.

**Silver-tree** (*Elæagnus argentea*).—See *Elæagnus*.

**Silver-variegated Yew** (*Taxus baccata argentea*).—See *Taxus*.

**Silver Vine** (*Pothos argentea*).—See *Pothos*.

**Silver Wattle** (*Acacia dealbata*).—See *Acacia*.

**Silvery Cedar** (*Cedrus altantica*).—See *Cedrus*.

**Silvery Clary** (*Salvia argentea*).—See *Salvia*.

**Silvery-leaved Cineraria** (*Senecio Cineraria*).—See *Senecio*.

**Silvery-leaved Oleaster** (*Elæagnus argentea*).—See *Elæagnus*.

**Silvery-leaved Sage** (*Salvia argentea*).—See *Salvia*.

**Silvery-leaved Salt-tree** (*Halimodendron argenteum*).—See *Halimodendron*.

**Silvery Reed** (*Cortadeira conspicua*).—See *Cortadeira*.

**Silvery Tree Fern** (*Cyathea dealbata*).—See *Cyathea*.

**Silybum** (Milk Thistle).—Ord. Compositæ. Hardy perennial herb. Orn. foliage. Leaves, large, variegated with broad white veins.

CULTURE: Soil, ordinary. Position, open borders. Propagate by seeds sown  $\frac{1}{2}$  in. deep in March where plants are to grow.

SPECIES CULTIVATED: *S. Marianum* (Blessed, Holy or Milk Thistle), 3 to 5 ft., Europe.

**Simpson's Hardy Hedgehog Cactus** (*Echinocactus Simpsoni*).—See *Echinocactus*.

**Sinningia** (*Gloxinia*).—Ord. Gesneriaceæ. Stove tuberous-rooted flowering plants. Deciduous. First introduced in 1739. Plants better known under the name of *Gloxinia*.

CULTURE: Compost, equal parts fibrous peat, fibrous loam, leaf-mould, well-decayed manure, & a little silver sand. Position, well-

drained pots close to glass in plant stove while growing; greenhouse or conservatory when in flower. Pot, Jan., Feb., or March. Place tubers singly, & just below surface, in 3 or 4-in. pots, shifting into 5 or 6-in. pots when tubers have started growth. Water moderately till growth is well advanced, then freely. Apply weak liquid manure when flowers show. After flowering, gradually withhold water till foliage dies down, then keep quite dry till potting time. Temp., Jan. to Oct. 65° to 75°; Oct. to Jan. 50° to 55°. Propagate by seeds sown on surface of fine sandy peat & leaf-mould, in well-drained pots or pans in temp. 65° to 75° in March; cuttings of shoots 1 to 2 in. long inserted in small pots of sandy peat under bell-glass in temp. of 65° to 75°; young leaves with stalk inserted in small pots of sandy soil treated as cuttings; matured leaves with mid-ribs cut & laid on surface of sandy peat in temp. 55° to 75°.

SPECIES CULTIVATED: *S. speciosa* (Gloxinia), violet, autumn, 6 to 12 in., Brazil. Latter species parent of the lovely strain of Gloxinias grown in gardens of present day.

**Sisyrinchium** (Satin-flower; Rush Lily; Spring Bell).—Ord. Iridaceæ. Hardy & half-hardy perennials. First introduced 1693.

CULTURE OF HARDY SPECIES: Soil, two parts sandy loam, one part peat. Position, sunny rockery. Plant, Oct. or May.

CULTURE OF HALF-HARDY SPECIES: Compost, equal parts sandy loam, leaf-mould, & sand. Position, sunny cold frame or greenhouse all the year round. Pot, Oct. to March. Water freely, March to Sept.; keep nearly dry afterwards. Repot annually. Propagate by offsets, removed & potted in March.

SPECIES CULTIVATED: *S. angustifolium*, blue, summer, 6 to 8 in., N. America; *grandiflorum* (Spring Bell), purple, spring, 1 ft., N.W. America; *grandiflorum album*, white.

**Sitcha Water-leaf** (*Romanzoffia sitchensis*).—See *Romanzoffia*.

**Sium** (Skirret).—Ord. Umbelliferæ. Hardy esculent-rooted perennial. First introduced 1548. Roots, cylindrical, clustered, white, sweet-flavoured.

CULTURE: Soil, ordinary fine, rich, deeply trenched, free from stones. Position, sunny, open. Sow seeds in groups of three or four, 12 in. apart, in drills  $\frac{1}{2}$  in. deep & 18 in. apart in April. Thin seedlings when 3 in. high to one in each group. Remove flower heads as soon as seen. Lift the roots in Oct., twist off their leaves, & store in layers with sand or soil between in cellar or outhouse until required for cooking. Artificial manures: 2½ lb. kainit, 1 lb. sulphate of ammonia, 2½ lb. of guano mixed per square rod (30¼ sq. yards), applied before sowing in spring. Requires to be raised from seed annually for producing roots for culinary purposes.

SPECIES CULTIVATED: *S. Sisarum*, white, Aug., 1 ft., E. Asia.

**Skimmia**.—Ord. Rutaceæ. Hardy evergreen berry-bearing & orn. foliage shrubs. First introduced 1845. Flowers fragrant. Male & female flowers form on separate plants. Berries scarlet; autumn.

CULTURE: Soil, stiff loam or loam & peat. Position, partially shady or open sheltered borders. Plant, Sept., Oct., March, or April. Propagate by seeds sown when ripe in sandy loam & peat in cold frame; by cuttings of firm shoots inserted under bell-glass in temp. 55° to 65° in spring or summer; layering shoots in autumn.

SPECIES CULTIVATED: *S. Fortunei*, white, spring, 3 ft., China; *japonica*, white, spring, 4 ft., Japan; *japonica*, variegata, variegated.

- Skinner's Columbine** (*Aquilegia Skinneri*).—See *Aquilegia*.
- Skirret** (*Sium Sisarum*).—See *Sium*.
- Slipper Flower**.—See *Calceolaria*.
- Slipper Sponge** (*Pedilanthus tithymaloides*).—See *Pedilanthus*.
- Slippery Elm** (*Fremontia californica*).—See *Fremontia*.
- Sloe** (*Prunus spinosa*).—See *Prunus*.
- Sloe-tree** (*Prunus spinosa*).—See *Prunus*.
- Smilacina** (False Spikenard).—Ord. Liliacæ. Hardy perennials. Nat. N. America, Sikkim. First introduced 1633.
- CULTURE: Soil, ordinary light deep, rich. Position, partially shady, moist shrubberies, woodlands, banks or borders. Plant, Oct. to March. Propagate by division of roots, Oct. to March.
- SPECIES CULTIVATED: *S. racemosa* (False Spikenard), white, May, 3 ft., N. America; *stellata* (Star-flowered Lily of the Valley), white, May, 2 ft., N. America. See also the genus *Maianthemum*.
- Smilax** (*Sarsaparilla* Plant; Prickly Ivy).—Ord. Liliacæ. Hardy evergreen climbers. Orn. foliage. First introduced 1648.
- CULTURE: Soil, ordinary. Position, sunny walls, arbours, trellises, or banks. Plant, Sept. or Oct.; March or April. Propagate by division of roots at planting time.
- SPECIES CULTIVATED: *S. aspera* (Prickly Ivy), white, insignificant, July, 10 to 15 ft., Mediterranean Region; *aspera mauritanica*, improved variety; China (*China Root*), 20 to 30 ft., China and Japan; *glauca* (*Sarsaparilla*), 3 ft., N. America; *rotundifolia*, 10 to 15 ft., N. America. For greenhouse *Smilax* see the genus *Asparagus*.
- Smoke-tree** (*Rhus cotinus*).—See *Rhus*.
- Snail-flower** (*Phaseolus caracalla*).—See *Phaseolus*.
- Snake Fern** (*Lomaria Spicant*).—See *Lomaria*.
- Snake Gourd** (*Trichosanthes anguina*).—See *Trichosanthes*.
- Snake-root** (*Cimicifuga racemosa*).—See *Cimicifuga*.
- Snake's-beard** (*Ophiopogon japonicus*).—See *Ophiopogon*.
- Snake's-head Fritillary** (*Fritillaria meleagris*).—See *Fritillaria*.
- Snake's-tongue Fern** (*Lygodium japonicum*).—See *Lygodium*.
- Snapdragon** (*Antirrhinum majus*).—See *Antirrhinum*.
- Snow-ball-tree** (*Viburnum Opulus*).—See *Viburnum*.
- Snow-berry-tree** (*Symphoricarpos racemosus*).—See *Symphoricarpos*.
- Snowdrop** (*Galanthus nivalis*).—See *Galanthus*.
- Snowdrop Anemone** (*Anemone sylvestris*).—See *Anemone*.
- Snowdrop-tree** (*Halesia tetraptera*).—See *Halesia*.
- Snowdrop Windflower** (*Anemone sylvestris*).—See *Anemone*.
- Snowflake** (*Leucojum vernum*).—See *Leucojum*.
- Snowflower** (*Chionanthus virginica*).—See *Chionanthus*.
- Snow-glory** (*Chionodoxa Luciliæ*).—See *Chionodoxa*.
- Snow-in-Summer** (*Cerastium tomentosum*).—See *Cerastium*.
- Snow Pear-tree** (*Pyrus sinensis*).—See *Pyrus*.
- Snow-tree** (*Pyrus nivalis*).—See *Pyrus*.
- Snow-white Primrose** (*Primula nivalis*).—See *Primula*.
- Snowy Mespilus** (*Amelanchier canadensis*).—See *Amelanchier*.
- Soap Plant** (*Chlorogalum pomeridium*).—See *Chlorogalum*.
- Soap-tree** (*Gymnocladus chinensis*).—See *Gymnocladus*.
- Soap-wood** (*Clethra alnifolia*).—See *Clethra*.

**Soap-wort** (*Saponaria officinalis*).—See *Saponaria*.

**Sobralia**.—Ord. Orchidaceæ. Stove terrestrial orchids. First introduced 1836.

**CULTURE**: Compost, two parts strong turfy loam; one part of equal proportions of coarse sand & broken charcoal. Position, light part of house at all seasons. Pot, Feb. or March, filling pot  $\frac{1}{3}$  of its depth with coarse crocks, then add a layer of sphagnum moss & sufficient compost to fill pot to within 1 in. of its rim. Press soil moderately firm. Water copiously, April to Sept.; moderately other times. Apply weak stimulants to established plants in summer. Shade from sun unnecessary. Repot only when soil is overcrowded with roots. Temp., Oct. to April 55° to 65°; April to Oct. 65° to 75°. Growing period all the year round. Flowers appear at apex of new growths. Propagate by division at potting time.

**SPECIES CULTIVATED**: *S. leucocantha*, white and golden yellow, summer, 1½ to 2 ft., Costa Rica; *Lowii*, purple, summer, 12 to 18 in., Colombia; *macrantha*, purple and yellow, May to July, 4 to 7 ft., Mexico; *sessilis*, yellow and rose pink, Oct. to Jan., 1 to 2 ft., British Guiana.

**Soft-leaved Azalea** (*Rhododendron sinensis*).—See *Rhododendron*.

**Soft Prickly Shield Fern** (*Aspidium aculeatum angulare*).—See *Aspidium*.

**Solandra**.—Ord. Solanaceæ. Stove climbing flowering shrubs. First introduced 1781.

**CULTURE**: Compost, two parts sandy loam, one part equal proportions fibrous peat & dry cow manure, & little sand. Position, pots or beds with shoots trained up rafters or round trellises. Pot or plant, Feb. or March. Water freely, April to Oct. Keep almost dry remainder of time. Syringe daily, April to Sept. Prune weak shoots in moderately close & remove tips of stronger ones in Feb. Temp., Oct. to March 50° to 55°; March to Oct. 65° to 85°. Propagate by cuttings inserted in light soil or cocoanut-fibre refuse in temp. of 65° to 75° in spring.

**SPECIES CULTIVATED**: *S. grandiflora* (Peach Trumpet Flower), cream and purple, spring, 10 to 15 ft., Trop. America; *longiflora*, white and purple, autumn, 4 to 6 ft., W. Indies.

**Solanum** (Potato; Egg Plant, etc.).—Ord. Solanaceæ. Greenhouse & half-hardy flowering, berry-bearing, and ornamental-leaved plants or shrubs, including the Potato. Potato first introduced in 1597; Egg Plant in 1597.

**CULTURE OF THE POTATO**: Classification: Kidney—oblong, white or coloured; round—roundish, white or coloured; pebble-shaped—flattish oblong, white or coloured. First earlies: varieties maturing in June; second earlies: varieties maturing in July & August; late or main-crop; varieties maturing in Sept. & Oct. Soil, deep, rich loam or any kind except very heavy clay or bog land. Light soils best for very early crops. Position, sloping borders facing south for earlies, & open garden for second early & main crops. Manures: (1) 1½ cwt. farmyard dung & 1 lb. of muriate of potash per square rod (30½ sq. yards) applied in autumn; 3 lb. of superphosphate per sq. rod applied at planting time; & 1 lb. of nitrate of soda applied per sq. rod when shoots are 6 in. high. (2) No farmyard manure. 1 lb. of kainit per sq. rod applied in autumn; 1½ lb. of superphosphate per sq. rod at planting time; & 1 lb. of nitrate of soda & 6 oz. of sulphate of iron per sq. rod applied when shoots are 6 in. high. (3) 3 lb. of superphos-

phate &  $1\frac{1}{2}$  lb. of sulphate of potash per sq. rod applied at planting time; & 1 lb. of nitrate of soda per sq. rod applied when shoots are 6 in. high. (4) Special for heavy damp soils: 9 lb. of basic slag & 4 lb. of kainit per sq. rod applied in autumn; & 1 lb. of sulphate of ammonia per sq. rod applied when shoots are 6 in. high. Sour or old garden soils should also be dressed with 3 bushels of fresh lime per sq. rod in Feb. Never plant sets direct on farmyard manure in drills. If applied in spring cover slightly with soil. Seaweed an excellent manure if dug in in autumn. "Sets" for planting: Best average size,  $1\frac{1}{2}$  to 2 in. wide & 3 in. long; weight, 2 to 3 oz. Larger tubers to be divided into three or four parts, each furnished with one good "eye." Rub cut surfaces of sets in lime and expose a few hours before planting. Treatment of sets: Place tubers close together on their narrow ends in shallow boxes in a cool, light spot early in the year, & allow each tuber to develop two strong shoots only, rubbing off all others. Plant early sorts in Feb.; second earlies in March; late ones in April. Draw drills 6 in. deep on heavy & 7 in. deep on light soils. Rows to run N. and S. if possible, & be 15 in. apart for first earlies; 2 ft. 6 in. for second earlies; & 3 ft. 6 in. for late kinds. Distances apart for early kinds, 6 to 8 in.; 12 in. for medium growers; & 18 in. for robust kinds. Never plant with a dibble; a bad practice. Fork or stir up soil between rows when shoots are 6 in. high; mould up when 6 to 8 in. high. Lift crop when haulm assumes a yellowish tinge. Avoid exposing tubers for eating too long to the light. Store in clamps in the open air or in cool cellars or dark sheds. Tubers for seed store in boxes as above advised in light, frost-proof position. Quantities of seed required:  $\frac{1}{2}$  peck for a row 50 ft. long; 1 bushel for row 250 ft. long.

**CULTURE IN POTS:** Compost, two parts loam and one part leaf-mould. Place one large crock over drainage hole, then add 2 in. of turf and enough compost to half fill a 10-in. pot. Place one tuber in centre and fill pot to rim with soil pressed down moderately firm. Place pots in temp. of  $55^{\circ}$ . Water carefully till shoots appear, then keep soil uniformly moist. When shoots are 6 in. high fill up remaining space in pot with compost. Increase temp. to  $65^{\circ}$ , and feed twice a week with liquid manure. Expose plants fully to light. Time to plant, Jan. Crop ready for use in April or May.

**CULTURE IN FRAMES:** Early crops may be grown in frames on hot-beds, or without heat. Compost, good loam two parts, well-rotted manure or leaf-mould one part, with a little wood ashes and bonemeal added. Depth of compost, 1 ft. Surface of soil from glass, 1 ft. Plant sets 1 ft. apart in rows 15 in. asunder; tubers 4 in. deep. Time to plant, Feb. Earth up when 6 in. high. Give air when sun is shining. Keep soil uniformly moist, using tepid water. Protect frames at night in cold weather by means of mats or litter. Crop ready for use in May.

**MARKET CULTURE:** Soil as for ordinary culture. Manures: 10 tons of farmyard manure per acre applied in autumn; and 4 cwt. of superphosphate,  $\frac{3}{4}$  cwt. of sulphate of ammonia, & 2 cwt. of sulphate of potash per acre applied at planting time. Plant early sorts in Feb., second earlies in March, & late ones in April. Distances for planting: 12 in. apart in rows 20 in. asunder for early sorts, & later sorts 18 in. apart in rows 27 to 30 in. asunder. Hoe or scuffle between the rows when the shoots are through the soil, & mould up

when 6 in. high. Spray late crops just after earthing up with Bordeaux Mixture, & again ten days later. Sets to plant an acre: 14 to 16 cwt. Average yield per acre: 6 to 12 tons. Average returns per acre (gross): £26 to £30. Average cost of cultivation per acre, including seeds, rates, taxes, etc.: £18 to £20. Useful data: Early crops reach maturity 16 weeks after planting; late sorts, 18 to 24 weeks. Peck of tubers weighs 20 lb.; hundredweight, 112 lb. if clean, but 120 lb. if unclean; sack of potatoes, 168 lb.; bag, 112 lb.; ton, 49 bushels. Propagate potatoes by seeds sown in heat in early spring, planting seedlings out end of May; cuttings of young shoots inserted in light soil in heat in spring, & planting out late in May; division of the tubers in spring.

**CULTURE OF THE EGG PLANT:** Soil, light rich. Position, in pots in sunny greenhouses (temp. 65° to 75°). Sow seeds in light soil in temp. 75° to 85° in Feb. or March. Transplant seedlings to 3-in. when third leaf forms, & into 6-in. pots in May. Syringe foliage twice daily, & water freely. When fruit forms give weak liquid manure occasionally. Fruit ready to gather when fully coloured.

**CULTURE OF BERRY-BEARING SPECIES:** Compost, equal parts loam, leaf-mould, & silver sand. Pot, Feb. or March. Syringe daily, water freely, & grow in temp. of 55° to 65°. Pinch off points of shoots when 3 in. long. Transfer to cold frame in June, syringe morning & evening & keep well watered. When berries set give liquid manure twice a week. Admit air freely after first week. Remove to greenhouse middle of Sept., & grow in a temp. of 55°. Prune shoots back to 2 in. in Feb., & when new growth begins repot & grow as before. May also be planted outdoors in rich soil early in June, points of shoots removed early in July, & plants carefully lifted, placed in pots, & stood in shady cold frame for a fortnight, then removed to greenhouse. Propagate by seeds sown in a temp. of 65° to 75° in Feb., transplanting seedlings into small pots, removing points of shoots when 3 in. high, & later transferring to 5-in. pots. When shoots are 3 in. long remove their points, then allow them to grow naturally. From June onwards treat as advised for plants. Also increased by cuttings inserted in sandy soil in temp. of 65° in spring, afterwards treating rooted cuttings as advised for seedlings.

**CULTURE OF CLIMBING SPECIES:** Compost, equal parts peat, loam, leaf-mould, & silver sand. Position, pots, beds, or tubs, shoots trained up rafters of greenhouse. Plant or pot in March. Prune away weak growths & shorten soft points of other shoots in Feb. Water freely in spring & summer; moderately in autumn & winter. Temp., Oct. to March 45° to 55°; March to Oct. 55° to 65°. Propagate by cuttings of young shoots in sandy peat in heat in spring. *S. jasminoides* may be grown against S. or S.W. wall outdoors in warm districts.

**CULTURE OF HARDY SHRUBBY SPECIES:** Soil, sandy loam & peat. Position, sunny wall in Midlands & cold districts; shrubberies in mild districts. Requires protection from cold winds. Plant, Oct. or March. Prune previous year's growth fairly close in Feb. when grown against walls; thin out weak growths & cut off dead ends of shoots when grown otherwise. Propagate by cuttings of young shoots in sandy soil in cold frame in summer.

**CULTURE OF ORNAMENTAL-LEAVED SPECIES:** Soil, ordinary. Position, sunny beds or borders. Plant out in June. Sow seeds

annually in light soil in temp. of 75° in spring, grow seedlings on in pots in heat till May, then harden for planting out in June.

**TUBEROUS-ROOTED SPECIES:** *S. tuberosum* (Potato), white, violet, etc., summer, S. America. First intro. 1597. Perennial.

**FRUIT-BEARING SPECIES:** *S. Melongena* (Aubergine or Egg Plant), flowers blue, summer, 2 to 3 ft., fruit egg-shaped, white, yellow, or purple, Tropics. Annual.

**BERRY-BEARING SPECIES:** *S. capsicastrum* (Star Capsicum; Jerusalem or Winter Cherry), flowers white, summer, berries scarlet, winter, 1 to 2 ft., Brazil; *capsicastrum* (or pseudo-capsicum) *Weatherillii*, berries oval, and orange-coloured. Greenhouse evergreen shrubs.

**CLIMBING SPECIES:** *S. jasminoides* (Jasmine Nightshade), blue and white, summer, 15 to 20 ft., Brazil; *jasminoides floribundum*, free-flowering form; *Wendlandii*, lilac and blue, summer, 10 ft., Costa Rica. Greenhouse evergreen shrubs.

**SHRUBBY SPECIES:** *S. crispum* (Potato Tree), blue and purple, summer, 10 to 15 ft., Chili. Hardy deciduous shrub.

**ORNAMENTAL-LEAVED SPECIES:** *S. atropurpureum*, stems purplish, midribs white, leaves prickly, Brazil; *marginatum*, stems woolly and prickly, leaves prickly, white beneath, green above and margined with white; *robustum*, stems woolly, leaves velvety above, woolly beneath and spiny, Brazil; *Warszewiczii*, stems red, hairy and prickly, leaves green, midribs prickly, S. America. Perennials, but best grown as half-hardy annuals.

**Soldanella** (Blue Moon-wort).—Ord. Primulacæ. Hardy perennial herbs. First introduced 1656.

**CULTURE:** Compost, equal parts peat & loam & sharp sand. Position, sheltered open moist rockery. Plant, March or April. Mulch surface of soil in dry weather with layer of cocoanut-fibre refuse. Propagate by seeds sown in well-drained pans filled with equal parts sandy loam, peat, & sand, & lightly covered with fine soil placed in a cold shady frame, March or April; division of plants in March or April.

**SPECIES CULTIVATED:** *S. alpina*, blue, April and May, 3 in., Alps; *alpina alba*, white; *alpina pyrolæfolia*, flowers more freely than the species; *hybrida*, blue, April, 3 in., hybrid; *minima*, lilac and purple, April, 2 in., Europe; *montana*, purple, April, 3 in., E. Europe; *pusilla*, blue, April, 2 in., Alps.

**Solidago** (Golden Rod).—Ord. Compositæ. Hardy herbaceous perennials.

**CULTURE:** Soil, ordinary. Position, sunny or shady borders or banks or margins of water. Plant Oct. to April. Lift, divide, & replant every 3 or 4 years. Propagate by division of roots, Oct. to April; seeds sown outdoors in April.

**SPECIES CULTIVATED:** *S. canadensis*, yellow, Aug., 4 to 6 ft., N. America; *Drummondii*, yellow, summer, 2 to 3 ft., N. America; *lanceolata*, yellow, Sept., 4 to 6 ft., N. America; *virgaurea* (Common Golden Rod), yellow, Aug., 2 to 3 ft., Europe (Britain).

**Sollya** (Australian Bluebell Creeper).—Ord. Pittosporacæ. Greenhouse evergreen twining shrubs. First introduced 1830.

**CULTURE:** Compost, two parts peat, one part turfy loam & half a part silver sand. Position, well-drained pots or beds with shoots trained to wire trellis or up rafters or pillars. Pot, Feb. or March. Water freely, April to Sept.; moderately afterwards. Syringe daily, April to Aug. Shade not necessary. Temp., March to Sept. 55° to 65°; Sept. to March 40° to 50°. Propagate by cuttings of shoots inserted in sand under bell-glass in temp. 65° to 75° in spring or summer.

**SPECIES CULTIVATED:** *S. heterophylla*, blue, July, 4 to 6 ft., Australia.

**Solomon's Seal** (*Polygonatum officinalis*).—See *Polygonatum*.

**Sonerila**.—Ord. Melastomacæ. Stove perennials. Flowering & orn. foliage. First introduced 1848. Leaves, ovate or lanceolate, green, or spotted with silvery white.

Compost, equal parts fibry peat, chopped sphagnum, charcoal, &

sand. Position, well-drained pots or pans fully exposed to light. Pot, Feb. or March. Water freely, April to Sept.; moderately afterwards. Shade from sun & moist atmosphere highly essential. Temp., March to Sept. 70° to 85°; Sept. to March 55° to 65°. Propagate by seeds sown in above compost, & lightly covered with fine mould, Jan. to April in a temp. of 75° to 85°; cuttings inserted in small pots under bell-glass in temp. 75° to 85°, Jan. to May.

**SPECIES CULTIVATED:** *S. maculata*, rosy purple, summer, 6 to 12 in., leaves crimson and white, Himalayas; *margaritacea*, rose, summer, leaves white and green above, purplish beneath, Burma; *margaritacea argentea*, leaves silvery grey; *Hendersonii*, lilac rose, summer, 1 ft., leaves green and white; *speciosa* (Syn. *S. orbiculata*), mauve, Nov., 9 to 12 in., leaves green, E. Indies.

**Sophora** (Chinese Pagoda Tree; New Zealand Laburnum).—Ord. Leguminosæ. Half-hardy evergreen & deciduous trees & shrubs. Flowering & orn. foliage. First introduced 1739.

**CULTURE OF HALF-HARDY SPECIES:** Compost, two parts loam, one of leaf-mould, & little sand. Pot, Oct. to Feb. Position, in pots or tubs in light airy part of greenhouse, Oct. to May; or against S. walls outdoors in warm districts. Protect in cold weather with mats. Water freely, April to Oct.; very little afterwards. Prune, Feb. or March. Temp., Oct. to April 40° to 45°; April to May 50° to 65°.

**CULTURE OF HARDY SPECIES:** Soil, deep rich loam. Position, open sheltered lawns. Plant, Oct. to Feb. Prune into shape, Jan. or Feb. Propagate by seeds sown  $\frac{1}{4}$  in. deep in light soil in temp. of 55° in April; cuttings inserted in sandy soil in temp. of 55° in March. *S. japonica pendula* & *S. j. p. variegata* by grafting on common species in March.

**HALF-HARDY SPECIES:** *S. tetraptera* (New Zealand Laburnum), Syn. *Edwardsia grandiflora*, yellow, May, 6 to 10 ft., New Zealand; and its varieties *grandiflora* (large flowered) and *microphylla* (narrow leaved). Evergreen.

**HARDY SPECIES:** *S. japonica* (Chinese Pagoda Tree), white, Aug., 30 ft., China; *japonica pendula*, branches weeping, very graceful. Deciduous.

**Sophro-Cattleya**.—Ord. Orchidaceæ. A race of bigeneric hybrid orchids, the result of a cross between *Sophronitis grandiflora* & several species of *Cattleyas*. Habit, dwarf. Flowering in winter.

**CULTURE:** Compost, two parts coarse fibry peat, one part chopped living sphagnum moss, charcoal & sand. Position, well-drained pots, hanging baskets, blocks. Pot, Feb. or March. Keep plants well above rim of pot. Partial shade desirable. Water three times weekly March to Aug.; once weekly Aug. to Nov. & Feb. to March; once a month other times. Syringe freely in summer. Temp., March to Sept. 65° to 85°; Sept. to March 60° to 70°. Growing period, March to Sept.; resting period, winter. Flowers appear at top of new growth. Propagate by division of pseudo-bulbs at potting time.

**HYBRIDS CULTIVATED:** *S. batemanniana*, rose, scarlet, crimson, and white; *Calypso*, rosy purple and yellow; *Chamberlainii triumphans*, rosy purple and yellow; *hardyana*, red, purple, and yellow; *eximia*, purple, rose and yellow; *Queen Empress*, rose, crimson, and purple.

**Sophro-Lælia**.—Ord. Orchidaceæ. Another race of bigeneric hybrid orchids, the result of crossing *Sophronitis grandiflora* with several species of *Lælias*. Habit, dwarf.

**CULTURE:** Compost, two parts coarse fibrous peat, one part living sphagnum moss, charcoal, & sand. Position, pots, pans, or hanging baskets, or on blocks with moss only. Pot or re-block, Feb. or March. Fill pots two-thirds with broken crocks, & keep plants well above rim of pot. Secure plants & moss to blocks by means of copper wire. Water pot & basket plants three times weekly, March to Aug.; once



weekly, Aug. to Nov. & Feb. to March; once a month other times. Plants on blocks daily, March to Aug.; & twice a week, Aug. to Nov. & Feb. & March; once a week other times. Syringe freely in summer. Temp., March to Sept. 75° to 85°; Sept. to March 60° to 70°. Resting period, none. Flowers appear at top of new pseudo-bulb. Propagate by division of pseudo-bulbs at potting time.

HYBRIDS CULTIVATED: *S. Leta*, pink, rosy purple and yellow, *Marriottii*, orange, yellow, and scarlet; *Veitchii*, rosy carmine, magenta and yellow.

**Sophronitis** (Scarlet-flowered Orchid).—Ord. Orchidaceæ. Dwarf evergreen epiphytal orchids. First introduced 1837.

CULTURE: Compost, equal parts peat, sphagnum moss, & charcoal. Position, shallow small pans or baskets suspended from roof. Pot, Feb. or March. Shade from sun most essential. Water freely, April to Oct.; moderately afterwards. Temp., Oct. to April 55° to 65°; April to Oct. 65° to 75°. Growing period, May to Feb. Resting period, March to May. Flowers appear at apex of new pseudo-bulb. Propagate by division of pseudo-bulbs, Feb. or March.

SPECIES CULTIVATED: *S. oernua*, rosy red and yellow, winter, 3 in., Brazil; *grandiflora*, scarlet, winter, 3 to 6 in., Brazil; *violacea*, violet, winter, 3 in., Brazil.

**Sorrel**.—See *Rumex*.

**Sour Sop** (*Anona muricata*).—See *Anona*.

**South African Hare-bell** (*Roella ciliata*).—See *Roella*.

**Sow-bread** (*Cyclamen europæum*).—See *Cyclamen*.

**Spanish Bayonet** (*Yucca aloifolia*).—See *Yucca*.

**Spanish Broom** (*Spartium junceum*).—See *Spartium*.

**Spanish Chestnut** (*Castanea vesca*).—See *Castanea*.

**Spanish Fennel-flower** (*Nigella hispanica*).—See *Nigella*.

**Spanish Furze** (*Genista hispanica*).—See *Genista*.

**Spanish Gorse** (*Genista hispanica*).—See *Genista*.

**Spanish Hyacinth** (*Hyacinthus amethystinus*).—See *Hyacinthus*.

**Spanish Iris** (*Iris Xiphium*).—See *Iris*.

**Spanish Jasmine** (*Jasminum grandiflorum*).—See *Jasminum*.

**Spanish Moss** (*Tillandsia usneoides*).—See *Tillandsia*.

**Spanish Oyster-plant** (*Scolymus hispanicus*).—See *Scolymus*.

**Spanish Potato** (*Ipomœa batatus*).—See *Ipomœa*.

**Spanish Silver Fir** (*Abies pinsapo*).—See *Abies*.

**Spanish Squill** (*Scilla hispanica*).—See *Scilla*.

**Spanish Traveller's Joy** (*Clematis cirrhosa*).—See *Clematis*.

**Spanish-tuft** (*Thalictrum aquilegifolium*).—See *Thalictrum*.

**Sparaxis** (African Harlequin Flower).—Ord. Iridaceæ. Half-hardy bulbous plants. First introduced 1758.

OUTDOOR CULTURE: Soil, light, rich sandy. Position, sunny well-drained border. Plant, Sept. to Jan., placing bulbs 4 in. deep & 2 in. apart. Lift & replant bulbs annually. Mulch surface of bed in March with cow manure.

POT CULTURE: Compost, two parts sandy loam, one part leaf-mould or decayed cow manure. Pots, 4½ in. in diameter, well drained. Place five bulbs, 3 in. deep, in each pot in Nov., & cover with cocconut-fibre refuse in cold frame or under cool greenhouse stage until growth begins. Water moderately from time bulbs begin to grow until flowers fade, then gradually cease, keeping bulbs dry till Jan.

Temp., Sept. to March 40° to 50°; other times 50° to 60°. Propagate by offsets treated as advised for bulbs.

**SPECIES CULTIVATED:** *S. grandiflora*, purple and white, spring, 1 to 2 ft., S. Africa; tricolor (Syn. *Ixia tricolor*), orange, yellow, and black, May, 1 to 2 ft., S. Africa. For varieties see trade lists. See also the genus *Dierama*.

**Sparmannia** (African Hemp).—Ord. Tiliaceæ. Greenhouse evergreen shrub. First introduced 1790.

**CULTURE:** Compost, two parts loam, one part peat, & little sand. Position, pots in light airy greenhouse, Sept. to June; sunny spot outdoors remainder of time. Pot, Feb. or March. Prune moderately close, Nov. to Dec. Water copiously, April to Oct.; moderately afterwards. Apply stimulants, April to Sept. No shade or syringing required. Temp., March to Sept. 55° to 65°; Sept. to March 40° to 50°. Propagate by cuttings inserted singly in small pots filled with sandy soil under bell-glass in temp. 55° to 65°, spring or summer.

**SPECIES CULTIVATED:** *S. africana*, white, summer, 10 to 15 ft., S. Africa; *africana flore pleno*, double flowered.

**Spartium** (Spanish Broom).—Ord. Leguminosæ. Hardy deciduous flowering shrub. First introduced 1548.

**CULTURE:** Soil, ordinary. Position, sunny open borders or dry banks. Plant, Oct. to March. Propagate by seeds sown  $\frac{1}{4}$  in. deep in drills in fine soil in sunny position outdoors, autumn or spring; cuttings of young shoots inserted in sandy soil under bell-glass or in cold frame in summer.

**SPECIES CULTIVATED:** *S. junceum* (Yellow Spanish Broom), yellow, summer, 6 to 10 ft., S. Europe; *junceum flore pleno*, double flowered.

**Spathoglottis**.—Ord. Orchidaceæ. Stove terrestrial orchids. First introduced 1837.

**CULTURE:** Compost, equal parts leaf-mould & fibrous loam, or equal parts of leaf-mould, peat, sphagnum moss & silver sand. Repot in spring. Grow in partial shade. Water freely April to Oct, moderately afterwards. Growing period, spring & summer; resting period, winter. Flowers appear at top of last-made pseudo-bulb. Temp., March to Oct. 75° to 85°; Oct. to March 55° to 65°. Propagate by division in spring.

**SPECIES CULTIVATED:** *S. aurea*, yellow and red, autumn, Malacca; *Fortunei*, yellow and red, autumn, Hong Kong; *gracilis*, golden, yellow, and red, winter, Borneo; *kimballiana*, golden, yellow, and red, summer, Borneo; *Lobbii*, sulphur yellow and red, autumn, Burma; *plicata*, rosy purple, summer, Malaya; *Viellardii*, white, rose, and red, autumn, New Caledonia.

**Spatium** (*Lewisia rediviva*).—See *Lewisia*.

**Spear-flower** (*Ardisia crenulata*).—See *Ardisia*.

**Spear Grass** (*Aciphylla squarrosa*).—See *Aciphylla*.

**Spear Lily** (*Doryanthes Palmeri*).—See *Doryanthes*.

**Spear Mint** (*Mentha viridis*).—See *Mentha*.

**Spear-wort** (*Ranunculus lingua*).—See *Ranunculus*.

**Specularia** (Venus's Looking Glass). — Ord. Campanulaceæ. Hardy annuals.

**CULTURE:** Soil, ordinary. Position, sunny beds or borders. Sow seeds in April thinly 1-16 in. deep in patches or lines where required to grow. Thin seedlings when 1 or 2 in. high to 3 to 6 in. apart. Support plants with small twigs when 3 to 6 in. high.

**SPECIES CULTIVATED:** *S. hybrida* (Syn. *Campanula hybrida*), the Corn Violet, blue and lilac, July, 1 ft., Europe; *pentagonia* (Syn. *Campanula pentagonia*), blue, summer, 1 ft., Asia Minor; *perfoliata*, blue, June, 12 to 18 in., N. America; *speculum* (Syn. *Campanula Speculum*), Venus's Looking Glass, purple, summer, 1 ft., Europe.

**Speedwell.**—See *Veronica*.

**Spergula.**—See *Sagina*.

**Spice-bush** (*Lindera Benzoin*).—See *Lindera*.

**Spider Fern** (*Pteris serrulata*).—See *Pteris*.

**Spider-flower.**—See *Cleome*.

**Spider Orchis** (*Orchis arachnites*).—See *Orchis*.

**Spiderwort** (*Tradescantea virginiana*).—See *Tradescantea*.

**Spigelia** (*Carolina Pink*; *Maryland Pink-root*). — Ord. *Loganiaceæ*. Hardy herbaceous perennials. First introduced 1694.

**CULTURE:** Soil, equal parts loam, leaf-mould, peat, & sand. Position, partially shady border containing 2ft. in depth of above compost. Plant, March or April. Water copiously during summer. Propagate by division of roots, March or April.

**SPECIES CULTIVATED:** *S. marilandica*, red and yellow, summer, 1 ft., N. America.

**Spignel** (*Meum athamanticum*).—See *Meum*.

**Spinach** (*Spinacia oleracea*).—See *Spinacia*.

**Spinacia** (*Spinach*). — Ord. *Chenopodiaceæ*. Hardy annual. Esculent-leaved vegetable. First introduced 1568.

**CULTURE:** Soil, deep, rich moist ordinary for summer spinach; rich, moderately dry for winter kind. Position, sunny. Sow seeds of summer spinach at intervals of a fortnight, Feb. to Aug., in drills 1 in. deep & 12 in. apart; winter spinach, Aug. & Sept. in drills 1 in. deep & 15 in. asunder. Thin winter spinach to 6 in. apart when three leaves form. Manures: 1½ lb. kainit, 1½ lb. sulphate of soda; 1½ lb. sulphate of ammonia; 2 lb. superphosphate per sq. rod, applied when plants are 2 in. high. Seeds germinate in 10 to 15 days; retain their germinating powers for 5 years. Crop reaches maturity 11 weeks after sowing.

**MARKET CULTURE:** Soil, deep, moist & cool; light soils unsuitable. Manures: Well-rotted dung at rate of 12 tons & superphosphate 3 tons per acre applied just before sowing. When plants appear apply 1 cwt. of nitrate of soda per acre. Sow seeds 1 in. deep in drills 1 ft. apart. Sow summer spinach in Feb., & successional batches at intervals of a fortnight; winter spinach in Aug. Quantity of seed required per acre, ¾ lb. Market large leaves only in bushel baskets. Average yield per acre, 500 bushels. Average prices per bushel, 1s. to 5s.

**SPECIES CULTIVATED:** *S. oleracea glabra* (Summer Spinach), 2 ft., S.E. Europe; *oleracea spinosa* (Prickly or Winter Spinach).

**Spindle-tree** (*Euonymus europæus*).—See *Euonymus*.

**Spiræa** (*Meadow Sweet*).—Ord. *Rosaceæ*. Hardy deciduous & evergreen flowering shrubs & herbaceous perennials.

**CULTURE OF HARDY HERBACEOUS SPECIES:** Soil, ordinary rich, well manured. Position, moist, partially shady or sunny borders; margins of streams, etc., for *S. Ulmaria*, *astilboides*, *palmata*, *kamtschatica*, and *Aruncus*. Plant, Oct., Nov., March or April. Top-dress annually in April with decayed manure. Water copiously in dry weather. Lift, divide, & replant every three or four years.

**CULTURE OF DECIDUOUS AND EVERGREEN SPECIES:** Soil, good ordinary or loamy. Position, open sunny borders or shrubberies. Plant, Sept. to March. Prune straggly shoots moderately close directly after flowering.

**CULTURE OF S. ASTILBOIDES IN POTS:** Compost, equal parts loam & leaf-mould. Pot roots, Oct. or Nov., singly in 5 or 6 in. pots.

Place in cold frame until required for forcing, or remove to ordinary heated greenhouse in Jan., cold house in Feb. Temp. for forcing 55° to 65°. Water moderately when first brought into forcing or greenhouse; freely when growth begins. Apply weak stimulants— $\frac{1}{4}$  oz. of guano to gall. of water—when flower spikes show. Remove to cold frame after flowering & plant out in sunny position in June. Let plants remain thus for two years, then lift, place in pots, & use for forcing. Plants will not flower freely two years in succession when grown in pots. Propagate herbaceous kinds by division of the roots, Oct. to March; shrubby ones by cuttings of young shoots inserted in sandy soil under hand-light or in frame in shade, summer; also by offsets removed & planted in autumn.

**HARDY HERBACEOUS SPECIES:** *S. aruncus* (Goat's Beard), white, summer, 4 to 6 ft., N. Temperate Regions; *astilboides* (Syn. *Astilbe astilboides*), white, June, 2 ft., Japan; and its varieties *floribunda* (free flowering), and *Lemoinei* (a hybrid); *kamtschatica* (Syn. *S. gigantea*), white, June, 6 to 8 ft., Kamtschatka; and its hybrid, *hybrida*, pink; *Filipendula flore pleno* (Double Dropwort), white, double, summer, 1 ft., Britain; *lobata* (Queen of the Prairies), pink, June, 2 ft., N. America; *palmata*, crimson, June, 1 to 2 ft., Japan; and its varieties *alba* (white), *elegans* (white and red), and *purpurea* (purple-leaved); *Ulmaria* (Meadow Sweet), white, June, 3 ft., Britain; *Ulmaria fl. pl.*, double flowered; *Ulmaria aurco-variegata*, variegated.

**HARDY EVERGREEN SPECIES:** *S. japonica*, rose, June, 3 to 6 ft., Japan, and its varieties, *alba* (white), *Bumaldi* (crimson). Shrub. The plant commonly called *S. japonica* is really *Astilbe japonica*; see *Astilbe*.

**HARDY DECIDUOUS SPECIES:** *S. arguta*, white, summer, 2 to 3 ft., hybrid; *bella*, red, July, 3 ft., Himalayas; *discolor* (Syn. *S. ariæfolia*), white, June, 6 to 8 ft., N.W. America; *Douglassii*, rose, Aug., 3 to 6 ft., N.W. America; *lindleyana*, white, Aug., 6 to 10 ft., Himalayas; *prunifolia flore pleno*, white, double, spring, 3 ft., China and Japan; *Thunbergii*, white, spring, 3 ft., China and Japan; *salicifolia*, pink, July, 4 ft., E. Europe and Japan; *Van Houttei*, white, May, 4 ft.

**Spire Lily** (*Galtonia candicans*).—See *Galtonia*.

**Spleenwort** (*Asplenium trichomanes*).—See *Asplenium*.

**Spotted Dead-Nettle** (*Lamium maculatum*).—See *Lamium*.

**Spotted Laurel**.—See *Aucuba*.

**Spraguea**.—Ord. *Portulacaceæ*. Half-hardy perennial herb. First introduced 1858.

**CULTURE:** Soil, ordinary. Position, edges of sunny well-drained borders or rockeries. Plant, April or May. Propagate by seeds, sown Feb. or March, in well-drained pots or pans in above compost, in temp. of 55° to 60°; transplanting seedlings an inch apart in 3-in. pots when large enough to handle, afterwards hardening off in cold frame & planting out in May; cuttings of shoots inserted in sandy peat under bell-glass in temp. of 55° to 65° in spring.

**SPECIES CULTIVATED:** *S. umbellata*, white and purple, summer, 1 to 2 in., New Mexico.

**Sprekelia** (*Jacobean Lily*).—Ord. *Amaryllidaceæ*. Stove deciduous bulbs. First introduced 1658.

**CULTURE:** Compost, two parts turfy loam, one part river sand, & a few crushed bones. Position, well-drained pots in light part of stove. Pot, Feb., burying bulb about two-thirds of its depth. Water freely from time growth begins (about Feb.) until Sept., when keep quite dry. Apply liquid manure when flower spike shows. Top-dress large bulbs annually & repot every three or four years only. Temp., Feb. to Sept. 65° to 75°; Sept. to Feb. 50° to 55°. Propagate by seeds sown 1-16 in. deep in well-drained pots of sandy loam in temp. 65° to 70° in March, placing seedlings singly in 2-in. pots, & keeping them moderately moist all the year round for three years; by offsets treated as old bulbs. Seedlings are six to seven years before they flower.

**SPECIES CULTIVATED:** *S. formosissima* (Syn. *Amaryllis formosissima*), crimson, June, 2 ft., Mexico and Guatemala.

**Spring Beauty** (*Claytonia virginica*).—See *Claytonia*.

**Spring Bell** (*Sisyrinchium grandiflorum*).—See *Sisyrinchium*.

**Spring Bitter Vetch** (*Lathyrus vernus*).—See *Lathyrus*.

**Spring Crocus** (*Crocus vernus*).—See *Crocus*.

**Spring Cyclamen** (*Cyclamen vernum*).—See *Cyclamen*.

**Spring-flowering Squill** (*Scilla verna*).—See *Scilla*.

**Spring Gentian** (*Gentiana verna*).—See *Gentian*.

**Spring Meadow-Saffron** (*Bulbocodium vernum*).—See *Bulbocodium*.

**Spring Satin-flower** (*Sisyrinchium grandiflorum*).—See *Sisyrinchium*.

**Spring Snowflake** (*Leucojum vernum*).—See *Leucojum*.

**Spring Star-flower** (*Brodiaea uniflora*).—See *Brodiaea*.

**Spring Vetch** (*Vicia lathyroides*).—See *Vicia*.

**Spruce** (*Picea excelsa*).—See *Picea*.

**Spurge Flax** (*Daphne mezereum*).—See *Daphne*.

**Spurge Laurel** (*Daphne laureola*).—See *Daphne*.

**Spur Valerian** (*Centranthus rubes*).—See *Centranthus*.

**Squash**.—See *Cucurbita*.

**Squaw-root** (*Caulophyllum thalictroides*).—See *Caulophyllum*.

**Squill**.—See *Scilla*.

**Squinancy-wort** (*Asperula cyananchica*).—See *Asperula*.

**Squirrel's-foot Fern** (*Davallia bullata*).—See *Davallia*.

**Squirrel-tail-Grass** (*Hordeum jubatum*).—See *Hordeum*.

**Stachys** (Woundwort; Chinese Artichoke).—Ord. Labiatae.  
Hardy perennials & tuberous-rooted vegetables.

**CULTURE OF CHINESE ARTICHOKE:** Soil, ordinary, deeply dug. Position, sunny. Plant tubers 9 in. apart, 4 in. to 6 in. deep, in rows 18 in. asunder in March or April. Stir surface of soil between rows frequently. No earthing up required. Lift tubers in autumn as required for use. Cover surface of ground in severe weather with litter.

**CULTURE OF HARDY PERENNIALS:** Soil, ordinary. Position, shady border for *S. coccinea*; edgings to borders or beds for *S. lanata*. Plant autumn or spring. Propagate by division in autumn or spring.

**SPECIES CULTIVATED:** *S. coccinea*, scarlet, summer, 2 ft., Mexico; *lanata* (Lamb's Ear), leaves, white and woolly, 1 ft., Caucasus; *Sieboldii* (Syn. *S. tuberosa*), pink, summer, 1 ft., roots white, spiral in shape and edible, Japan (Chinese Artichoke).

**Staff-tree** (*Celastrus scandens*).—See *Celastrus*.

**Stag's-horn Fern** (*Platycerium alaicorne*).—See *Platycerium*.

**Stag's-horn Moss** (*Lycopodium Clavatum*).—See *Lycopodium*.

**Stag's-horn Saxifrage** (*Saxifraga ceratophylla*).—See *Saxifraga*.

**Stag's-horn Sumach** (*Rhus typhina*).—See *Rhus*.

**Stanhopea**.—Ord. Orchidaceae. Stove epiphytal orchids. First introduced 1824.

**CULTURE:** Compost, two parts fresh sphagnum moss, one part lumps of turfy peat & charcoal. Position, teak baskets suspended from roof. Plant, Feb., March or April. Water copiously, March to Sept.; moderately, Sept. to Nov.; keep almost dry remainder of year. Syringe foliage daily, summer. Shade from sun. Temp., May to Sept. 70° to 85°; Sept. to May 60° to 70°. Growing period, spring & summer. Resting period, winter. Flowers appear at base of

matured pseudo-bulbs. Propagate by division of pseudo-bulbs in spring.

**SPECIES CULTIVATED:** *S. bucephalus*, yellow and crimson, very fragrant, Aug., 1 to 2 ft., Peru and Mexico; *devoniensis*, cream, yellow, purple, and crimson, fragrant, July, Peru; *eburnea*, white and purple, June, Trinidad; *grandiflora*, white and crimson, summer, Central America; *insignis*, yellow and purple, fragrant, August, S. America; *oculata*, yellow, lilac, purple, white, and crimson, summer, Mexico; *tigrina*, orange, yellow, and purple, fragrant, summer, Mexico; *Wardii*, yellow, orange and crimson, fragrant, summer, Guatemala.

**Stanleya**.—Ord. Cruciferæ. Hardy perennial herb. First introduced 1816.

**CULTURE:** Soil, ordinary. Position, sunny border. Plant, Oct. or April. Propagate by seeds sown in gentle heat in spring, planting out in May or June; also by division of the roots in Oct. or March.

**SPECIES CULTIVATED:** *S. pinnatifida*, yellow, summer, 4 ft., California.

**Stapelia** (Carrion Flower; Toad Flower; Star-fish Flower).—Ord. Asclepiadaceæ. Greenhouse evergreen succulent-stemmed plants. First introduced 1790. Flowers, disagreeably scented.

**CULTURE:** Compost, two parts sandy loam, one part broken rubbish or old mortar, & one part sand. Position, well-drained pots close to glass in light sunny greenhouse. No shade required. Pot, March or April. Water moderately, April to Oct.; keep nearly dry remainder of year. Temp., Oct. to March 40° to 50°; March to Oct. 55° to 75°. Repot only when absolutely necessary. Top-dress annually in March with compost of two parts well-decayed cow dung & one part sandy loam. Propagate by cuttings of stems exposed to air on shelf in greenhouse for two or three days, then inserted singly in 2-in. pots half filled with drainage, remainder with sand & brick rubbish; spring.

**SPECIES CULTIVATED:** *S. Asterias* (Star-fish Flower), violet, yellow and purple, summer, 6 in.; *gigantea*, yellow, red, brown, and purple, summer, 6 in.; *grandiflora*, purple, autumn, 1 ft.; *variegata*, various colours, Aug., 1 ft. All natives of S. Africa.

**Staphylea** (Bladder Nut).—Ord. Sapindaceæ. Hardy deciduous flowering shrubs. First introduced 1640.

**CULTURE:** Soil, ordinary. Position, sunny borders or shrubberies. Plant, Oct. to Feb. Prune straggling shoots moderately close immediately after flowering.

**CULTURE OF S. COLCHICA FOR FORCING:** Compost, two parts sandy loam, one part leaf-mould. Pot, Oct. to Jan. Place in sheltered position outdoors, or in cold frame until Jan., then remove into forcing house, or end of Jan. into cold greenhouse. Temp., 65° to 75°. Water moderately when first placed in heat, afterwards more freely. Syringe daily until leaves expand. Transfer to cold frame after flowering. Harden & stand outdoors, May to Oct. Propagate by seeds sown in sandy soil in sheltered position outdoors in Sept. or Oct.; cuttings of firm shoots, 6 to 8 in. long, inserted in sandy soil in cold frame or in sheltered corner outdoors in Sept.; layering shoots, Sept. or Oct.; suckers removed & planted, Oct. to Feb.

**SPECIES CULTIVATED:** *S. colchica*, white, summer, 5 ft., Caucasus; *pinnata* (Job's Tears; St. Anthony's Nut), white, May, 8 to 10 ft., S. Europe.

**Star Aniseed-tree** (*Illicium anisatum*).—See *Illicium*.

**Star Capsicum Nightshade** (*Solanum capsicastrum*).—See *Solanum*.

**Starch Hyacinth** (*Muscari racemosum*).—See *Muscari*.

**Star-fish Flower** (*Stapelia Asterias*).—See *Stapelia*.

**Star-flower** (*Trientalis europæa*).—See *Trientalis*.

**Star Glory** (*Ipomæa coccinea*).—See *Ipomæa*.

**Star Grass** (*Hypoxis erecta*).—See *Hypoxis*.

**Star Hyacinth** (*Scilla amœna*).—See *Scilla*.

**Star of Bethlehem** (*Ornithogalum umbellatum*).—See *Ornithogalum*.

**Star Pine** (*Pinus Pinaster*).—See *Pinus*.

**Star Tulip**.—See *Calochortus*.

**Star Windflower** (*Anemone hortensis*).—See *Anemone*.

**Star-wort**.—See *Aster*.

**Statice** (Sea Lavender; Sea Pink). — Ord. *Plumbaginacæ*. Greenhouse evergreens & half-hardy & hardy herbaceous perennials.

**CULTURE OF GREENHOUSE SPECIES:** Compost, two parts sandy fibrous loam, one part fibrous peat, & one part sand. Pot, March or April. Position, light airy sunny greenhouse, Sept. to May; cold frame, May to Sept. Water freely, April to Sept.; moderately afterwards. Apply weak stimulants occasionally in summer to healthy established plants. Temp., Sept. to April 40° to 50°; April to May 55° to 65°. Good drainage in pots indispensable.

**CULTURE OF PERENNIAL SPECIES:** Soil, sandy loam. Position, sunny rockeries or borders. Plant, March or April. Top-dress annually with decayed manure & loam in April.

**CULTURE OF ANNUAL SPECIES:** Soil, ordinary sandy. Position, sunny borders or rockeries. Sow seeds in well-drained pots filled with sandy loam, cover slightly with fine soil, & place in temp. of 55° to 65°, Feb. or March. Transplant when large enough to handle; harden off & plant outdoors in May. Propagate by seeds sown as above; cuttings inserted singly in 2-in. pots well drained & filled with sandy soil, & placed in temp. 55° to 65° in spring; division of roots, March or April.

**GREENHOUSE SPECIES:** *S. profusa*, blue, Aug., 1 to 2 ft., hybrid; fruticans, blue, summer, Canaries; macrophylla (*Syn. S. Halfordii*), blue, June, 1 to 2 ft., Canaries.

**HARDY PERENNIAL SPECIES:** *S. Bonduelli*, yellow, June, 1 to 2 ft., Algeria; *Gmelini*, blue, summer, 1 to 2 ft., Caucasus; *incana*, pink, summer, 6 to 9 in., Tauria; *latifolia*, blue, June, 1 ft., Bulgaria; *Limonium* (Common Sea Lavender), purple, summer, 1 ft., Europe (Britain); *tartarica*, red and blue, summer, 1 ft., Caucasus.

**ANNUAL SPECIES:** *S. Suworowi*, lilac and pink, summer, 18 in., C. Asia.

**Stauntonia**.—Ord. *Berberidacæ*. Hardy evergreen climbing shrub. First introduced 1876.

**CULTURE:** Soil, deep sandy loam. Position, S. wall or trellis. Plant, Sept., Oct., March or April. Prune trailing shoots, not required to produce flowers following season, back to two-thirds of their length in autumn. Propagate by cuttings of firm young shoots inserted in sandy soil under bell-glass in shady position outdoors in summer.

**SPECIES CULTIVATED:** *S. hexaphylla*, white, fragrant, spring, 10 to 20 ft., China and Japan. See also the genus *Holboëllia*.

**Steeple Bells** (*Campanula pyramidalis*).—See *Campanula*.

**Stenotaphrum** (*Variiegated Grass*).—Ord. *Graminæ*. Greenhouse orn.-leaved grass. First introduced 1822. Leaves, narrow, grass-like, striped with yellow.

**CULTURE:** Compost, equal parts peat, loam, leaf-mould, & sand or Jadoo fibre. Position, warm & moist part of greenhouse. Pot, March. Water copiously March to Sept., fairly freely Sept. to March. Temp., Sept. to March 50° to 55°; March to Sept. 55° to 65°. Propagate by cuttings of shoots, or by division of roots in spring.

**SPECIES CULTIVATED:** *S. glabrum variegatum*, 1 ft., Carolina.

**Stephanotis** (Clustered Wax-flower; Madagascar Chaplet Flower; Madagascar Jasmine).—Ord. Asclepiadaceæ. Stove evergreen twining shrubs. First introduced 1839.

**CULTURE:** Compost, equal parts good light fibrous loam or peat, & one part equal proportions leaf-mould, well-decayed manure, & coarse silver sand. Position, pots, tubs, or beds, well drained, with shoots trained to wire trellis, or up rafters of stove. Pot or plant, Feb. or March. Shade from sun. Water copiously, March to Oct.; moderately afterwards. Syringe daily, March to Oct., except when in bloom. Apply stimulants once a week to healthy established plants between May & Sept. Prune straggling shoots in moderately close, & thin out weak shoots freely, Jan. or Feb. Temp., March to Oct. 70° to 85°; Oct. to March 55° to 65°. Propagate by cuttings of the shoots of the previous year's growth, inserted singly in 2-in. pots, filled with equal parts sand, peat, & loam, placed under bell-glass in temp. 65° to 75° in spring.

**SPECIES CULTIVATED:** *S. floribunda*, white, fragrant, Feb. to Dec., 20 to 30 ft., Madagascar; and its variety *Elvastonii*, a dwarfier and more free-flowering form.

**Sternbergia** (Winter Daffodil; Yellow Star-flower).—Ord. Amaryllidaceæ. First introduced 1596. Leaves produced usually late in autumn or early in spring after flowering.

**CULTURE:** Soil, deep, fairly dry, good ordinary. Position, sunny sheltered border. Plant bulbs, Oct. or Nov., 4 in. deep, & 2 or 3 in. apart. Plant surface of soil over bulbs with *Saxifraga hypnoides* or *Sedum acre* to form green carpet & afford protection. Lift & replant when bulbs show signs of deterioration. May also be grown in pots in cold greenhouses as advised for *Amaryllis belladonna*. Propagate by offsets removed & planted, Oct. or Nov.

**SPECIES CULTIVATED:** *S. lutea* (Syn. *Amaryllis lutea*), yellow, Oct., 6 to 8 in., Central Europe.

**Stevensonia**.—Ord. Palmaceæ. Stove orn foliage palm. First introduced 1865. Leaves, once divided, wedge-shaped, green.

**CULTURE:** Compost, two parts fibrous peat, one part equal proportions charcoal, turfy loam, & sand. Position, moist shady part of stove. Pot, Feb. or March. Syringe freely twice daily, Feb. to Oct.; once daily afterwards. Water freely at all times. Shade & moist atmosphere essential. Temp., March to Oct. 70° to 85°; Oct. to March 65° to 75°. Propagate by seeds sown 1 in. deep in peat & loam in small pots in temp. 75° to 85°, spring.

**SPECIES CULTIVATED:** *S. grandifolia*, 10 to 20 ft., Seychelles.

**Stigmaphyllon** (Golden Vine).—Ord. Malpighiaceæ. Stove evergreen climbing shrubs. First introduced 1796.

**CULTURE:** Compost, equal parts loam, leaf-mould, peat, and sand. Position, well-drained pots with shoots trained up roof or round trellis. Pot, Feb. or March. Prune away weak growths & shorten strong ones moderately, Jan. Water freely, March to Sept.; moderately afterwards. Syringe daily in summer. Temp., March to Sept. 70° to 85°; Sept. to March 55° to 65°. Propagate by cuttings of firm shoots inserted singly in small pots of sandy soil under bell-glass in temp. 65° to 75°, spring or summer.

**SPECIES CULTIVATED:** *S. ciliatum*, yellow, June, 8 to 10 ft., Brazil.

**Stinking Cedar** (*Torreya taxifolia*).—See *Torreya*.

**Stinking Gladwyn** (*Iris foetidissima*).—See *Iris*.



**Stipa** (Feather Grass).—Ord. Graminacæ. Hardy perennial flowering grasses. Inflorescence borne in feathery panicles; summer.

**CULTURE:** Soil, ordinary. Position, dryish sunny borders. Plant, March or April. Gather inflorescence for drying for winter decoration in July. Propagate by seeds sown  $\frac{1}{2}$  in. deep in shallow boxes or pots filled with light soil placed in temp. of  $55^{\circ}$  to  $65^{\circ}$ , Feb. or March, hardening off seedlings and planting outdoors, May or June; or by sowing similar depth in ordinary soil in sunny position outdoors in April; also by division of roots in March or April.

**SPECIES CULTIVATED:** *S. pennata*, 2 ft., Europe.

**Stock Gilliflower** (*Matthiola incana*).—See *Matthiola*.

**Stokesia** (Stokes' Aster).—Ord. Compositæ. Hardy perennial herb. First introduced 1766.

**CULTURE:** Soil, ordinary. Position, sunny well-drained borders. Plant, April. Protect in winter by covering with hand-light. Plants may be lifted in Sept., placed in pots, & removed to greenhouse for flowering during autumn and winter, afterwards planting outdoors following April. Propagate by division of roots, March or April.

**SPECIES CULTIVATED:** *S. cyanea*, blue, August, 18 in., N. America.

**Stonecrop** (*Sedum acre*).—See *Sedum*.

**Stone Fern** (*Asplenium Ceterach*).—See *Asplenium*.

**Stone Pine** (*Pinus cembra*).—See *Pinus*.

**Storax-plant** (*Styrax officinalis*).—See *Styrax*.

**Stratiotes** (Water Soldier; Crab's Claw).—Ord. Hydrocharidacæ. Hardy aquatic perennial.

**CULTURE:** Soil, ordinary. Position, shallow lakes or ponds. Plant, March or April; enclosing roots & small quantity of mould in pieces of old sacking tied securely round base of stem and dropped into water where required to grow. Propagate by division in spring.

**SPECIES CULTIVATED:** *S. aloides*, white, June, 1 to 2 ft., Britain.

**Strawberry**.—See *Fragaria*.

**Strawberry-raspberry** (*Rubus rosæflorus flore simplici*).—See *Rubus*.

**Strawberry Tree** (*Arbutus unedo*).—See *Arbutus*.

**Strelitzia** (Bird of Paradise Flower; Bird's Tongue Flower).—Ord. Scitaminacæ. Greenhouse orn. foliage & flowering perennials. First introduced 1791.

**CULTURE:** Compost, two parts loam, one part peat, & half a part silver sand. Position, pots or bed in sunny part of warm greenhouse. Pot or plant, Feb. or March. Water copiously, April to Sept.; moderately, Sept. to Nov.; keep nearly dry afterwards. No shade required. Temp., March to Oct.  $65^{\circ}$  to  $75^{\circ}$ ; Oct. to March,  $55^{\circ}$  to  $65^{\circ}$ . Propagate by seeds sown in compost of leaf-mould, peat, & loam, in temp. of  $65^{\circ}$  to  $75^{\circ}$ , spring; offsets or division of old plants, Feb. or March.

**SPECIES CULTIVATED:** *S. Regina*, orange and blue, spring, 3 to 4 ft., S. Africa; *Reginæ citrina*, yellow and blue.

**Streptocarpus** (Cape Primrose).—Ord. Gesneriacæ. Greenhouse herbaceous perennials. First introduced 1824.

**CULTURE:** Compost, two parts loam, one part of equal proportions of leaf-mould, decayed manure, & silver sand. Position, pots in light greenhouse. Pot, March or April. Temp,  $40^{\circ}$  to  $50^{\circ}$ , Oct. to April;  $55^{\circ}$  to  $65^{\circ}$ , April to Oct. Shade from sun. Water freely, April to Oct.; keep nearly dry afterwards. Apply weak stimulants when plants are in flower. Admit air freely in summer. Cold shady frame good position for young plants during summer. Propagate by seeds sown

in well-drained pots, pans, or boxes, with equal parts of finely-sifted loam, leaf-mould, peat, and sand. Cover the seeds thinly with a sprinkle of fine silver sand. Moisten the soil by holding the pot, pan, or box nearly to its rim or edge in tepid water. Place a pane of glass over top of pot, pan, or box, & put in a temp. 55° to 65°. Transplant seedlings as soon as large enough to handle 1 in. apart in above compost, in pans or pots, & when seedlings touch each other place them singly in 3-in. pots, & ultimately into 5 or 6-in. pots. Seeds sown in Feb. will produce plants for flowering following July; in March or April, following August or September.

**SPECIES CULTIVATED:** *S. Dunnii*, rose, summer, 12 to 18 in.; *Galpini*, white and mauve, summer; *Rexii*, blue, summer, 6 in.; *Sandersii*, blue, summer, 1 ft.; *Wendlandii*, blue, spring, 18 to 30 in. All natives of S. Africa. Many beautiful hybrid and strains, for which see trade lists.

**Streptosolen.**—Ord. Solanaceæ. Greenhouse evergreen flowering shrub. First introduced 1847.

**CULTURE:** Compost, two parts sandy loam, one part leaf-mould, & half a part silver sand. Position, well-drained pots close to glass in light sunny greenhouse. Pot, Feb. to April. Prune shoots moderately close after flowering. Water freely, April to Oct.; moderately afterwards. Apply weak stimulants occasionally during summer. Shade only from bright sunshine. Temp., March to Oct., 60° to 70°; Oct. to March, 50° to 60°. Propagate by cuttings inserted in light sandy soil under bell-glass, in temp. 55° to 65°, spring or summer.

**SPECIES CULTIVATED:** *S. Jamesoni*, orange, summer, 3 to 4 ft., Colombia.

**Striped Squill** (*Puschkinia scilloides*).—See *Puschkinia*.

**Strobilanthes** (Cone-head).—Ord. Acanthaceæ. Stove evergreen flowering shrubs. First introduced 1823.

**CULTURE:** Compost, equal parts loam & leaf-mould, with a little silver sand. Pot, March or April. Position, well-drained pots in moist part of stove, March to June; sunny cold frame, June to Sept.; light stove, Sept. to March. Prune shoots in closely, Feb. Water moderately, Sept. to April; freely other times. Apply liquid manure twice a week to plants in flower. Propagate by cuttings of moderately firm shoots, 2 to 3 in. long, inserted in light sandy compost under bell-glass in temp. 75°, Feb., March, or April.

**SPECIES CULTIVATED:** *S. anisophyllus* (Syn. *Goldfussia anisophylla*), lavender, blue, Oct. to March, 1 to 3 ft., Himalayas; *dyerianus*, violet and blue, autumn, 2 ft., Burma; *isophylla* (Syn. *Goldfussia isophylla*), lavender, blue, winter, 1 to 2 ft., India.

**Struthiopteris.**—See *Onoclea*.

**Stuartia.**—Ord. Ternströmiaceæ. Hardy deciduous flowering shrubs. First introduced 1743.

**CULTURE:** Soil, two parts moist sandy loam, one part peat. Position, open sunny borders sheltered on N. & E. by walls, trees, or shrubs. Plant, Oct. to Feb. Propagate by cuttings of firm shoots inserted in sandy soil under hand-light in sheltered position outdoors in autumn; layering shoots in Sept. or Oct.

**SPECIES CULTIVATED:** *S. pentagyna*, cream, summer, 6 to 10 ft., N. America; *pseudo-camellia*, creamy white, July, 6 to 10 ft., Japan; *virginica*, white, June, 6 to 8 ft., N. America.

**Stud-flower** (*Hellonias bullata*).—See *Helonias*.

**Sturt's Desert Pea** (*Clianthus Dampieri*).—See *Clianthus*.

**Stylophorum** (Celandine Poppy).—Ord. Papaveraceæ. Hardy perennial herb. First introduced 1854.

**CULTURE:** Soil, ordinary light. Position, sunny beds or borders.

Plant, March or April. Propagate by seeds sown  $\frac{1}{2}$  in. deep in ordinary soil in sunny position outdoors, March or April; division of roots, March.

SPECIES CULTIVATED: *S. diphyllum*, yellow, June, 9 in., N.W. America.

**Styrax** (*Storax*).—Ord. *Styracaceæ*. Hardy deciduous flowering shrubs. First introduced 1597.

CULTURE: Soil, light ordinary. Position, sunny borders or shrubberies, or against S. walls. Plant, Oct. to Feb. Propagate by layering shoots in spring or autumn.

SPECIES CULTIVATED: *S. obassia*, white, June, 15 ft., Japan; *japonica*, white, summer, 8 to 10 ft., Japan.

**Sugar Cane** (*Saccharum officinarum*).—See *Saccharum*.

**Sugar Maple** (*Acer saccharinum*).—See *Acer*.

**Sugar Pea** (*Pisum sativum saccharatum*).—See *Pisum*.

**Sumach**.—See *Rhus*.

**Summer Cypress** (*Kochia scoparia*).—See *Kochia*.

**Summer Heliotrope**.—See *Tournefortia*.

**Summer Pheasant's-eye** (*Adonis æstivalis*).—See *Adonis*.

**Summer Savory** (*Satureia hortensis*).—See *Satureia*.

**Summer Snowdrop** (*Leucojum æstivum*).—See *Leucojum*.

**Summer Snowflake** (*Leucojum æstivum*).—See *Leucojum*.

**Sun Cress**.—See *Heliophila*.

**Sundew** (*Drosera rotundifolia*).—See *Drosera*.

**Sun-drops** (*Oenothera fruticosa*).—See *Oenothera*.

**Sunflower** (*Helianthus annuus*).—See *Helianthus*.

**Sun-plant** (*Portulacca grandiflora*).—See *Portulacca*.

**Sun-rose**.—See *Helianthemum*.

**Supple Jack** (*Berchemia volubilis*).—See *Berchemia*.

**Surinam Tea-plant** (*Lantana hybrida*).—See *Lantana*.

**Sutherlandia** (*Cape Bladder Senna*).—Ord. *Leguminosæ*. Half-hardy evergreen flowering shrub. First introduced 1683.

CULTURE: Compost, equal parts loam, peat, & silver sand. Position, against S. walls outdoors, S. & S.W. England only, or in pots in cold greenhouse any part of kingdom. Plant, Sept., Oct., or April. Pot, March. Water plants in pots freely, April to Sept.; moderately afterwards. Prune, April, shortening straggling shoots only. Propagate by seeds sown in compost of equal parts peat, loam, leaf-mould, & sand, lightly cover with fine soil, & place in temp. of 45° to 55° in spring; by cuttings of young shoots in May under bell-glass or hand-light.

SPECIES CULTIVATED: *S. frutescens*, scarlet, June, 4 ft., S. Africa.

**Swainsonia** (*Darling River Pea*).—Ord. *Leguminosæ*. Greenhouse evergreen flowering shrubs. First introduced 1800.

CULTURE: Compost, two parts fibrous loam, one part peat, & half a part silver sand. Position, well-drained pots in light sunny greenhouse. Pot, Feb. or March. Water freely, March to Oct.; moderately afterwards. Apply weak stimulants occasionally in summer. Remove to cold frame or pit, June; replace in greenhouse, Sept. Temp., Sept. to March 35° to 45°; March to June 55° to 65°. Propagate by seeds soaked for about an hour in tepid water, then sown  $\frac{1}{2}$  in. deep in light soil in tempt. 55° to 65°, March or April; cuttings of young shoots, 2 to 3 in. long, inserted in silver sand under bell-glass in cool shady part of greenhouse in summer.

SPECIES CULTIVATED: *S. coronillifolia*, rosy purple, summer, 3 to 4 ft.,

Australia; coronillifolia galegæfolia, reddish purple, summer, 4 to 6 ft.; coronillifolia alba, white, summer, 4 to 6 ft.

**Swainson's Pea.**—See Swainsonia.

**Swallow-wort** (*Chelidonium majus* & *Asclepias tuberosa*).—See *Chelidonium* & *Asclepias*.

**Swamp Dogwood** (*Ptelea trifoliata*).—See *Ptelea*.

**Swamp Globe-flower** (*Cephalanthus occidentalis*).—See *Cephalanthus*.

**Swamp Hellebore** (*Veratrum viride*).—See *Veratrum*.

**Swamp Honeysuckle** (*Rhododendron viscosum*).—See *Rhododendron*.

**Swamp Laurel.**—See *Kalmia*.

**Swamp Lily** (*Lilium superbum*).—See *Lilium*.

**Swamp Sunflower** (*Helenium autumnale*).—See *Helenium*.

**Swan Orchid.**—See *Cycnoches*.

**Swan River Daisy** (*Brachycome iberidifolia*).—See *Brachycome*.

**Swan River Everlasting** (*Helipterum Manglesii*).—See *Helipterum*.

**Swan River Fern Palm** (*Macrozamia Fraseri*).—See *Macrozamia*.

**Swan's Neck Orchid** (*Cycnoches aurea*).—See *Cycnoches*.

**Sweet Alyssum** (*Alyssum maritima*).—See *Alyssum*.

**Sweet Amber** (*Hypericum Androsæmum*).—See *Hypericum*.

**Sweet Basil** (*Ocimum Basilium*).—See *Ocimum*.

**Sweet Bay-tree** (*Laurus nobilis*).—See *Laurus*.

**Sweet Briar** (*Rosa rubiginosa*).—See *Rosa*.

**Sweet Cicely** (*Myrrhis odorata*).—See *Myrrhis*.

**Sweet Cumin** (*Pimpinella anisum*).—See *Pimpinella*.

**Sweet Fennel** (*Fœniculum officinale*).—See *Fœniculum*.

**Sweet Fern** (*Myrrhis odorata*).—See *Myrrhis*.

**Sweet Flag** (*Acorus calamus*).—See *Acorus*.

**Sweet Gale** (*Myrica Gale*).—See *Myrica*.

**Sweet Gum-tree** (*Liquidambar styraciflua*).—See *Liquidambar*.

**Sweet John** (*Dianthus barbatus*).—See *Dianthus*.

**Sweet Marjoram** (*Origanum marjorana*).—See *Origanum*.

**Sweet Maudlin** (*Achillea Ageratum*).—See *Achillea*.

**Sweet Orange-tree** (*Citrus aurantium*).—See *Citrus*.

**Sweet Pea.**—See *Lathyrus*.

**Sweet Pepper Bush** (*Clethra alnifolia*).—See *Clethra*.

**Sweet Potato** (*Ipomœa batatas*).—See *Ipomœa*.

**Sweet Rocket** (*Hesperis matronalis*).—See *Hesperis*.

**Sweet Scabious** (*Scabiosa atropurpurea*).—See *Scabiosa*.

**Sweet-scented Bramble** (*Rubus odoratus*).—See *Rubus*.

**Sweet-scented Clematis** (*Clematis flammula*).—See *Clematis*.

**Sweet-scented Crab** (*Pyrus coronaria*).—See *Pyrus*.

**Sweet-scented Daphne** (*Daphne odora*).—See *Daphne*.

**Sweet-scented Hellebore** (*Helleborus odoratus*).—See *Helleborus*.

**Sweet-scented Olive-tree** (*Olea fragrans*).—See *Olea*.

**Sweet-scented Tulip** (*Tulipa fragrans*).—See *Tulipa*.

**Sweet-scented Verbena** (*Lippia citriodora*).—See *Lippia*.

**Sweet-scented Water Lily** (*Nymphæa odorata*).—See *Nymphæa*.

**Sweet Sedge** (*Acorus calamus*).—See *Acorus*.

**Sweet-sop** (*Anona squamosa*).—See *Anona*.

**Sweet Sultan** (*Centaurea moschata* & *C. suaveolens*).—See *Centaurea*.

**Sweet Vernal Grass** (*Anthoxanthum odoratum*).—See *Anthoxanthum*.

**Sweet William** (*Dianthus barbatus*).—See *Dianthus*.

**Sweet William Catchfly** (*Silene armeria*).—See *Silene*.

**Sweet Woodruff** (*Asperula odorata*).—See *Asperula*.

**Swertia** (*Marsh Fel-wort*).—Ord. *Gentianaceæ*. Hardy perennial herbs.

**CULTURE:** Soil, equal parts peat & leaf-mould. Position, moist rockeries or damp places. Plant, March or April. Water copiously in dry weather. Propagate by seeds sown in well-drained pans filled with moist peat, placed in shady cold frame, March or April, transplanting seedlings outdoors in June, & division of roots in March.

**SPECIES CULTIVATED:** *S. perennis*, blue, July, 9 in., N. Europe.

**Swiss Stone Pine** (*Pinus Cembra*).—See *Pinus*.

**Sword Lily**.—See *Gladiolus*.

**Sycamore Tree** (*Acer pseudo-platanus*).—See *Acer*.

**Symphoricarpus** (*Snow-berry Tree*).—Ord. *Caprifoliaceæ*. Hardy deciduous shrubs. Flowering & berry-bearing. First introduced 1730. Flowers much sought after by bees. Berries, white, red; autumn.

**CULTURE:** Soil, ordinary. Position, sunny or shady borders, copses or woodlands. Plant, Oct. to Feb. Prune, Oct. to Feb., simply thinning out old or decayed wood. Propagate by cuttings, 6 to 8 in. long, of firm wood inserted in ordinary soil in shady position outdoors, Oct. to Feb.; suckers removed & planted, Oct. to Feb.

**SPECIES CULTIVATED:** *S. occidentalis* (*Wolf Berry*), pink, July, berries white, 4 to 6 ft., N. America; *racemosus* (*Snow-berry*), pink or rose, July, berries white, 4 to 6 ft., N. America.

**Symphandra** (*Pendulous Bell-flower*).—Ord. *Campanulaceæ*. Hardy perennials. First introduced 1823.

**CULTURE:** Soil, ordinary rich. Position, sunny well-drained borders or rockeries. Plant, Oct., Nov., March, or April. Propagate by seeds sown 1-16 in. deep in ordinary light sandy soil outdoors, April to May; cuttings of young shoots inserted in sandy soil in cold frame, March or April; division of roots, March.

**SPECIES CULTIVATED:** *S. pendula*, white, summer, trailing, Orient.

**Symphytum** (*Comfrey*).—Ord. *Boraginaceæ*. Hardy herbaceous perennials. Common *Comfrey* (*S. officinale*) not adapted for garden culture.

**CULTURE:** Soil, ordinary. Position, sunny or shady moist borders or margins of water-courses or streams. Plant, Oct., Nov., March, or April. Lift, divide, or replant every three or four years. Propagate by division of roots in spring.

**SPECIES CULTIVATED:** *S. asperimum aureo-variegatum*, leaves variegated with yellow and green, 4 ft., Caucasus; *officinale bohemicum*, crimson, June, 3 ft., Europe; *officinale luteo-marginatum*, leaves bordered with yellow.

**Syrian Silk-plant** (*Periploca græca*).—See *Periploca*.

**Syringa** (*Lilac*).—Ord. *Oleaceæ*. Hardy deciduous flowering shrubs. First introduced 1597.

**CULTURE:** Soil, ordinary good. Position, sunny borders or shrubberies. Plant, Oct. to Feb. Prune, moderately after flowering (June), removing or shortening shoots that have flowered only. Allow no suckers to grow from roots. Apply house slops or liquid manure in summer to plants growing in poor soils.

**POT CULTURE FOR FORCING:** Compost, two parts good sandy loam, one part leaf-mould, & little sand. Pot, Oct. or Nov. Place plants after potting in sheltered corner outdoors, protecting pots from frost with litter until required for forcing. Transfer to temp of 55°, Nov. to Feb. Syringe daily. Water moderately. Directly buds burst place in temp. of 60° to 65°, when expanded replace in temp. of 55°. Prune shoots that have flowered to within 2 in. of base directly after blooming. Keep plants in heat until May, then gradually harden and plant outdoors. Plants must not be forced two years in succession. Lilacs may be grown in cold greenhouse for flowering in April and May. Place in greenhouse in Nov. Propagate by seeds sown in sunny position outdoors in autumn or spring; suckers removed & planted from Oct. to Feb.; layering shoots in Sept.; choice varieties by budding on common species in July, or by grafting on common species on the ash in March or April.

**SPECIES CULTIVATED:** *S. sinensis* (Rouen Lilac), violet, May and June, 4 to 6 ft., hybrid; *Emodi* (Indian Lilac), purplish or white, May, 6 to 9 ft., Himalayas; *japonica* (Japanese Lilac), crimson, July, 15 to 20 ft., Japan; *Josikæa* (Hungarian Lilac), bluish purple, May, 8 ft., Hungary; *persica* (Persian Lilac), bluish purple, May, 4 to 6 ft., Afghanistan; *persica alba*, white; *vulgaris* (Common Lilac), lilac, May, 8 to 12 ft., E. Europe. Also many charming varieties, for which see trade lists.

**Syringa** (*Philadelphus coronarius*).—See *Philadelphus*.

**Tabernæmontana** (Adam's Apple; East Indian Rose Bay).—Ord. Apocynacæ. Stove evergreen flowering shrubs. First introduced 1770.

**CULTURE:** Compost, two parts sandy loam, one part fibry peat, half a part silver sand. Position, well-drained pots in light stove. Pot, Feb. to April. Prune straggling shoots moderately close immediately after flowering. Water freely, March to Oct.; moderately afterwards. Syringe daily, March, & until flowers appear. Temp., March to Sept. 70° to 80°; Sept. to March 65° to 75°. Propagate by cuttings of ripe shoots, 2 to 3 in. long, inserted in small pots filled with sand under bell-glass in temp. 65° to 75° in Feb.

**SPECIES CULTIVATED:** *T. coronaria*, white, summer, 4 to 8 ft., India; and its varieties *crispa* (Crisp petalled) and *flore pleno* (double).

**Table Mountain Orchid** (*Disa grandiflora*).—See *Disa*.

**Table-shaped Houseleek** (*Sempervivum tabulæforme*).—See *Sempervivum*.

**Tacsonia** (Blood-red Passion-flower; Van Volxem's Passion-flower).—Ord. Passifloræ. Greenhouse evergreen flowering climbers. First introduced 1828.

**CULTURE:** Compost, equal parts fibrous loam & peat, one fourth silver sand. Pot or plant, Feb. or March. Position, well-drained tubs or pots, or beds 18 in. deep & 2 ft. wide; shoots to be trained up rafters or walls; sunny. Prune, Feb., thinning out weak shoots & shortening strong ones one-third. Water copiously, March to Sept.; moderately afterwards. Syringe twice daily, April to Sept. Apply stimulants occasionally to healthy plants when in flower only. Temp., March to Oct. 60° to 70°; Oct. to March 40° to 50°.

**SPECIES CULTIVATED:** *T. exoniensis*, rose or pink, summer, 20 to 30 ft.,

hybrid; insignis, crimson, autumn, 20 to 30 ft., S. America; manicata, scarlet, autumn, 30 ft., Peru; Van-Volxemii, crimson, autumn, 30 ft., Colombia.

**Tagetes** (African Marigold; French Marigold; Mexican Marigold).—Ord. Compositæ. Half-hardy annuals. First introduced 1596.

**CULTURE:** Soil, ordinary, well-enriched with decayed manure. Position, sunny borders for African Marigold; sunny beds or borders for French and Mexican Marigold; edgings to beds or borders for *T. signata pumila*. Sow seeds 1-16 in. deep in light soil in temp. 55° to 65° in March, or in unheated greenhouse in April. Transplant seedlings when three leaves form, 3 in. apart, in light soil in shallow boxes, or in bed of rich soil in cold frame, gradually harden off in May, and plant out in June. Plant African Marigolds in groups of three or six, or 16 in. apart in rows; French Marigolds singly, or in groups in borders, or 12 in. apart in rows; Dwarf Marigolds (*T. signata pumila*) 6 in. apart in rows. African Marigold for exhibition to carry four blooms only. Thin shoots to four on each plant, each carrying one bloom. Water freely in dry weather. Apply stimulants occasionally to plants in flower. Suitable stimulants: (1) 1 oz. of Peruvian guano to a gallon of water. (2) ¼ oz. sulphate of ammonia to a gallon of water.

**SPECIES CULTIVATED:** *T. erecta* (African Marigold), yellow, summer, 2 ft., Mexico; *lucida* (Mexican Marigold), yellow, summer, 1 ft., Mexico; *patula* (French Marigold), orange, red and brown, summer, 1 ft., Mexico; *signata*, yellow, summer, 1 ft., Mexico; *signata pumila*, yellow, 6 in.

**Tail Flower.**—See Anthurium.

**Tamarind-tree** (*Tamarindus indica*).—See *Tamarindus*.

**Tamarind** (Tamarind Tree; Indian Date).—Ord. Leguminosæ. Stove evergreen flowering tree. First introduced 1633.

**CULTURE:** Compost, two parts fibrous loam, one part sand. Position, large well-drained pots or tubs in lofty stove. Pot or plant, Feb. Water copiously, April to Oct.; moderately afterwards. Syringe daily, April to Sept. Shade from sun. Temp., April to Oct. 70° to 85°; Oct. to April 60° to 70°. Propagate by seeds steeped for a few hours in tepid water, and then sown ¼ in. deep in light soil in temp. 75° to 85° in spring; cuttings of shoots inserted singly in small well-drained pots placed under bell-glass in temp. 65° to 75°, March to August.

**SPECIES CULTIVATED:** *T. indica*, yellow and red, summer, 20 to 40 ft., Tropics.

**Tamarisk** (*Tamarisk gallica*).—See *Tamarix*.

**Tamarix** (Tamarisk; Manna Plant).—Ord. Tamaricaceæ. Hardy evergreen shrubs. Flowering & orn. foliage.

**CULTURE:** Soil, ordinary or sandy. Position, shrubberies or hedges in seaside gardens, S. & S.W. England; sunny banks or sheltered shrubberies in inland gardens south of the Trent. Plant, Sept. to April. Prune, Oct. to March, shortening straggling shoots only. Propagate by cuttings of shoots, 4 to 6 in. long, inserted in sandy soil in sheltered position under hand-light or in cold frame, Sept. or Oct.

**SPECIES CULTIVATED:** *T. sinensis* (Chinese Tamarisk), pink, summer, 8 to 10 ft., China; *gallica*, pink, summer, 6 to 8 ft., S. Europe; *anglica* (Common Tamarisk), pink, summer, 8 to 10 ft., W. Europe.

**Tanacetum** (Tansy; Alecost).—Ord. Compositæ. Hardy herbaceous perennials.

**CULTURE:** Soil, ordinary. Position, sunny. Plant, 12 in. apart in rows 18 in. asunder in March or Oct. Remove flower stems as they form. Replant every three or four years. Leaves aromatic, used for

flavouring puddings, etc., & for garnishing. Propagate by seeds sown outdoors in spring; division of the roots in Oct. or March.

SPECIES CULTIVATED: *T. vulgare crispum*, yellow, summer, 3 ft., Britain.

**Tangerine Orange-tree** (*Citrus nobilis*).—See *Citrus*.

**Tangier Iris** (*Iris Tingitana*).—See *Iris*.

**Tansy** (*Tanacetum vulgare*).—See *Tanacetum*.

**Tansy-leaved Hawthorn** (*Cratægus tanacetifolia*).—See *Cratægus*.

**Tape Grass** (*Vallisneria spiralis*).—See *Vallisneria*.

**Taraxacum** (*Dandelion*).—Ord. *Compositæ*. Hardy perennial herb. Cultivated solely for its blanched leaves for saladings.

CULTURE: Soil, ordinary deep, free from recent manure. Position, sunny. Sow seeds 1 in. deep in drills 12 in. apart in April. Thin seedlings to 6 in. apart in rows in May. Remove flower stems directly they form. Lift roots in Nov., & store in sand in cool place. Plant roots almost close together in boxes or large pots in ordinary soil. Cover pots, etc., to exclude light. Place in warm greenhouse between Nov. & April. Keep soil moist & cut leaves when 3 to 6 in. long, for salads. Destroy roots afterwards. Make a fresh sowing annually.

SPECIES CULTIVATED: *T. officinale*, yellow, spring, Britain.

**Taro-root**.—See *Colocasia*.

**Tarragon** (*Artemisia dranunculoides*).—See *Artemisia*.

**Tartarian Honeysuckle** (*Lonicera tartarica*).—See *Lonicera*.

**Tartarian Ixia-lily** (*Ixiolirion tartaricum*).—See *Acer*.

**Tasmanian Currant** (*Coprosma Baueri*).—See *Coprosma*.

**Tasmanian Laurel** (*Anopterus glandulosa*).—See *Anopterus*.

**Tasmanian Tree Fern** (*Dicksonia antarctica*).—See *Dicksonia*.

**Tasmanian Water Pimpernel** (*Samolus repens*).—See *Samolus*.

**Tassel Cotton-grass** (*Eriophorum polystachyon*).—See *Eriophorum*.

**Tassel Hyacinth** (*Muscari comosum*).—See *Muscari*.

**Tawny Day-lily** (*Hemerocallis fulva*).—See *Hemerocallis*.

**Taxodium** (*Deciduous Cypress*).—Ord. *Coniferæ*. Hardy deciduous coniferous trees; orn. foliage. First introduced 1640. Leaves, feather-shaped, deciduous, bright green, changing to dull red in autumn. Habit, pyramidal when young; broad, cedar-like when full grown.

CULTURE: Soil, moist loam. Position, margins of ponds & rivers or in damp places. Dry position quite unsuitable. Plant, Oct. to Feb. Propagate by seeds sown  $\frac{1}{2}$  in. deep in pans of light soil in cold frame in April, transplanting seedlings singly into small pots following spring, & planting outdoors the year after; cuttings of shoots inserted in water in cold greenhouse or frame in spring or summer; layering branches in Sept. or Oct.

SPECIES CULTIVATED: *T. distichum*, 70 to 100 ft., S.W. States; *distichum pendula*, pendulous branches.

**Taxus** (*Yew Tree*).—Ord. *Coniferæ*. Hardy evergreen trees. Orn. foliage. Timber used for cabinet making, but too slow in growth to cultivate for that purpose. Leaves poisonous to cattle. Estimated average age, 1,000 to 2,000 years. Average rate of growth, 2 to 3 in. per year.

CULTURE: Soil, good deep ordinary, moist. Position, sunny or



shady shrubberies for common kinds; sunny shrubberies, lawns, or borders for variegated & Irish yews. Plant, Sept. to Nov., Feb. to May. Prune April.

**WINTER BEDDING**: Sort best adapted for the purpose—*T. baccata elegantissima*. Plant, Oct. or Nov. Lift & replant in reserve border in May.

**POT CULTURE**: Most suitable kind—*T. baccata elegantissima*. Pot, Oct. or Nov. Compost, two parts good ordinary mould, one part leaf-mould. Water moderately, Nov. to April; freely afterwards. Keep in cold greenhouse, balcony, or corridor Oct. to May; outdoors afterwards, pots plunged to rims in cinders or soil.

**HEDGE CULTURE**: Suitable kinds—Common, gold & silver striped, upright English & Irish yews. Position, sunny. Soil, good moist ordinary, previously trenched 3 spits deep & 3 ft. wide. Plant, Oct., Nov., March, or April. Distance for planting: 12 in. for trees 18 in. high; 18 in. for trees 3 ft. high; 2 ft. for trees 3 ft. 6 in. to 5 ft. high. Average cost of plants per 100, 21s. to 30s. Cost of preparing soil and planting hedge, per lineal yard, 9d. to 1s. Prune, trim, or clip in April or Sept. Propagate by seeds sown 1 in. deep in light soil outdoors in March, or  $\frac{1}{4}$  in. deep in pans or boxes of light soil, in cold frame or greenhouse, in March, transplanting seedling in nursery bed when large enough to handle; by cuttings of shoots inserted in sandy soil under hand-light, or in cold frame in September; grafting variegated kinds on common upright yew in March; layering in Sept.

**SPECIES CULTIVATED**: *T. baccata* (Common Yew), 50 ft., Europe and N. Asia. Also the following varieties: *adpressa*, 8 ft.; *albo variegata*, leaves edged with silver; *argentea*, leaves striped with silver; *aurea*, leaves golden (Golden Yew); *Dovastoni aurea pendula*, leaves edged with yellow; *elegantissima*, leaves edged with creamy white; *erecta* (Fulham Yew), erect habit; *fastigiata* (Irish Yew), columnar habit; *fastigiata variegata*, leaves edged and striped with white; *fastigiata aureo-variegata*, leaves, green and yellow; *T. canadensis* (Canadian Yew), 3 ft., Canada; *cuspidata* (Japanese Yew), 20 ft., Japan.

**Tea-berry** (*Gaultheria procumbens*).—See *Gaultheria*.

**Tea-plant** (*Camellia theifera*).—See *Camellia*.

**Tea-scented Rose** (*Rosa indica*).—See *Rosa*.

**Tea Tree** (*Lycium barbarum*).—See *Lycium*.

**Tecoma** (Trumpet Flower; Moreton Bay Trumpet Jasmine).—Ord. Bignoniaceæ. Stove greenhouse & hardy evergreen climbing flowering shrubs. First introduced 1640.

**CULTURE OF STOVE SPECIES**: Compost, two parts loam, one part peat & silver sand. Position, pots or beds with shoots trained up roof. Pot or plant, Feb. or March. Prune, Feb., shortening strong shoots  $\frac{1}{2}$ , and weak shoots  $\frac{3}{4}$ . Water freely, April to Sept.; keep nearly dry afterwards. Expose shoots fully to sun during August & Sept. in order to ripen them thoroughly for flowering next season. Temp., March to Sept. 65° to 85°; Sept. to Nov. 60° to 70°; afterwards 55° to 65°.

**CULTURE OF GREENHOUSE SPECIES**: Compost, two parts loam, one part peat & silver sand. Position, large well-drained pots, or beds 3 ft. square, 18 in. deep, for one plant, in light sunny greenhouse; shoots trained up roof. Pot or plant, Feb. or March. Good drainage absolutely necessary. Prune away  $\frac{1}{2}$  of strong shoots,  $\frac{3}{4}$  of weak shoots, in Feb. Water copiously, April to Oct. Keep nearly dry, Oct. to April. Apply weak stimulants occasionally to healthy established

plants in summer. No shade required at any time. Admit air freely during summer & early autumn to thoroughly ripen wood for insuring abundance of flowers. Temp., April to Oct, 55° to 65°; Oct. to April 40° to 50°.

**CULTURE OF HARDY SPECIES:** Soil, two parts loam, one part peat & silver sand. Position, well-drained border against S. wall. Plant, Sept. to March. Prune as for greenhouse species in March. Propagate by cuttings of firm young shoots, 3 in. long, inserted in well-drained pots of sandy soil placed under bell-glass in temp. of 55° to 65° in summer; cuttings of roots, 1 to 2 in. long, planted an inch deep in sandy soil in temp. of 55° to 65°, spring; layering shoots in March, April, Sept., or Oct.

**STOVE SPECIES:** *T. amboinensis*, orange-red, summer, 10 to 20 ft., Amboina.

**GREENHOUSE SPECIES:** *T. australis Manglesii*, white, purple and red, summer, 10 to 20 ft., Australia; *capensis*, orange-scarlet, summer, 10 to 20 ft., S. Africa; *jasminoides*, white and red, Aug., 10 to 20 ft., Australia; *Smithii*, orange, autumn, 2 to 3 ft.

**HARDY SPECIES:** *T. grandiflora* (Syn. *Bignonia grandiflora*), scarlet, summer, 10 to 20 ft., China and Japan; *radicans* (Syn. *Bignonia radicans*), scarlet, summer, 10 to 20 ft., N. America.

**Tecophilæa** (Chilian Crocus).—Ord. *Hæmodoracæ*. Greenhouse bulbous plants. First introduced 1872.

**CULTURE:** Compost, two parts sandy loam, one part decayed cow manure. Position, well-drained bed in cold frame or pots in cool greenhouse. Plant bulbs 3 in. deep & 6 in. apart in frame, Aug. to Nov. Pot, singly in 3½-in. pots or three in a 5-in. pot & 2 in. deep. Cover pot with ashes or fibre refuse till growth begins. Water moderately; keep dry after foliage turns yellow until growth recommences. No artificial heat required. Admit air freely to plants in pots & frames after February. Propagate by offsets removed at potting time.

**SPECIES CULTIVATED:** *T. Cyanocrocus*, blue and white, fragrant, spring, 6 in., Chili, and its variety *Leichtlinii*, blue.

**Telanthera** (Joy-weed).—Ord. *Amarantacæ*. Half-hardy perennials. Orn. foliage. Better known under the generic name of *Alternanthera*. Used for carpet bedding. Foliage, crimson, red.

**CULTURE:** Soil, ordinary. Position, sunny beds outdoors, May to Sept. Plant, May, 2 in. apart. Lift in Sept., store in pots or boxes in temp. 55° to 65° during winter. Propagate by cuttings inserted in sandy soil, temp. 75°, March.

**SPECIES CULTIVATED:** *T. flooidea* (Syn. *Alternanthera amabilis*), leaves, orange scarlet, 3 in., Trop. America, and its varieties, *amæna* (leaves orange, red, bronze, and green), and *tricolor* (leaves green, rose, purple and yellow); *bettichiana* (Syn. *Alternanthera paronychoides*), leaves brown and scarlet, and its varieties *major* (larger leaves) and *major aurea* (red and yellow foliage).

**Telegraph-plant** (*Desmodium gyrans*).—See *Desmodium*.

**Tenore's Candytuft** (*Iberis Tenoreana*).—See *Iberis*.

**Ten-week Stock** (*Matthiola annua*).—See *Matthiola*.

**Testudinaria** (Hottentot's Bread; Elephant's Foot).—Ord. *Dioscoreacæ*. Greenhouse deciduous climber. First introduced 1774.

**CULTURE:** Compost, equal parts fibrous loam, turfy peat, & sand. Position, well-drained in sunny greenhouse. Pot, Feb. or March. Water moderately, April to Sept.; keep nearly dry afterwards. No shade required. Temp., March to Sept. 55° to 65°; Sept. to March 40° to 50°. Propagate by cuttings of firm side shoots inserted in sandy loam under bell-glass in temp. 45° to 55° in spring, or cuttings of young shoots when 1 to 2 in. long inserted in sandy loam under bell-glass in similar temp., spring or summer.

SPECIES CULTIVATED: *T. elephantipes*, yellow, summer, 5 to 10 ft., S. Africa.

**Tetragonia** (New Zealand Spinach).—Ord. Ficoideæ. Hardy annual. Cultivated in gardens as a substitute for summer spinach—especially on light dry soils. First introduced 1772. Leaves, large, thick, succulent.

**CULTURE:** Soil, ordinary. Position, sunny. Sow seeds, previously soaked for 24 hours in tepid water, singly 1 in. deep in 2-in. pots filled with light soil in March. Place pots in temp. 55° to 65° & keep soil moist. Transfer seedlings to 5-in. pots when seedlings form four leaves, harden off in cold frame, & plant out 3 ft. apart in rows 4 ft. asunder. Gather the leaves only for cooking. Water freely in dry weather. Seeds may be sown in open ground in May if unable to sow them in heat.

SPECIES CULTIVATED: *T. expansa*, yellow, summer, 3 in., New Zealand.

**Tetramicra**.—Ord. Orchidaceæ. Stove epiphytal orchids. First introduced 1831.

**CULTURE:** Compost, equal parts fibrous peat, sphagnum moss, & charcoal. Position, light, fastened by copper wire to small blocks of teak, & roots covered with sphagnum moss; or in small well-drained pots or teak baskets. Place on blocks, or in pots or baskets in March. Temp., Nov. to Feb. 45° to 55°; March to May 50° to 60°; May to Nov. 55° to 65°. Water once a week, Nov. to Feb.; twice Feb. to April; daily April to Nov. Propagate by division of plants in March.

SPECIES CULTIVATED: *L. bicolor* (Syn. *Leptotes bicolor*), white and purple, winter, 2 in., Brazil; *rigida*, rosy purple, spring, 1 ft., W. Indies.

**Tetratheca**.—Ord. Tremandraceæ. Greenhouse evergreen flowering shrubs. First introduced 1803.

**CULTURE:** Compost, two parts fibrous peat, one part turfy loam, one part equal proportions charcoal, broken pots, & silver sand. Position, well-drained pots in light airy greenhouse. Pot, Feb. or March. Water moderately at all seasons; rain water only to be used. Shade from sun, June to Sept. Temp., Oct. to April, 40° to 50°; April to Oct. 50° to 65°. Propagate by cuttings of side shoots inserted in sand under bell-glass in shade in temp. 55° to 65°, summer.

SPECIES CULTIVATED: *T. ericifolia*, rose, summer, 1 ft.; *glandulosa*, purple, summer, 1 ft.; *hirsuta*, pink, spring, 2 ft.; *junceæ*, purple, summer, 2 ft. All natives of Australia.

**Teucrium** (Germander; Cat Thyme).—Ord. Labiatae. Hardy herbaceous perennials.

**CULTURE:** Soil, ordinary. Position, sunny borders; sunny dryish rockeries or old walls for *T. marum*, etc. Plant, March or April. Propagate by division of roots in March or April.

SPECIES CULTIVATED: *T. marum* (Cat Thyme), purple, summer, 1 ft., S. Europe; *Scorodonia variegatum*, variegated foliage, 1 ft., Britain.

**Thalia**.—Ord. Scitamineæ. Hardy and half-hardy perennials. First introduced 1791.

**CULTURE OF HARDY SPECIES:** Soil, sandy loam. Position, tub or shallow pond of water. Plant in March. Requires a warm, sheltered spot. In N. of England best grown in greenhouse.

**CULTURE OF HALF-HARDY SPECIES:** Soil, light, rich loam. Position, pots in moist shady part of greenhouse. Pot in March. Water freely in spring and summer. Temp., Oct. to March, 45° to 55°; March to Sept., 55° to 65°. Propagate by division in spring.

HARDY SPECIES: *T. dealbata*, blue, July, 6 ft., S. California.

HALF-HARDY SPECIES: *T. geniculata*, blue, summer, 2 ft., W. Indies.

**Thalictrum** (Meadow Rue; Tufted Columbine).—Ord. Ranunculaceæ.

culacææ. Hardy herbaceous perennials. Leaves, finely divided, green; excellent substitute for maiden-hair fern.

CULTURE: Soil, ordinary. Position, sunny borders for tall species, *T. aquilegifolium*, etc.; sunny rockeries for dwarf species, *T. anemonoides* & *T. minus*. Plant, Oct. to March. Top-dress annually in Feb. or March with decayed manure. Lift, divide, & replant only when absolutely necessary. Propagate by division of roots in March or April.

SPECIES CULTIVATED: *T. anemonoides* (Rue Anemone), yellow, spring, 2 to 3 ft., N. America; *angustifolium*, yellow, summer, 3 ft., Europe; *aquilegifolium*, purple, summer, 3 ft., Europe; *minus*, yellow, summer, 1 ft., Europe; *minus adiantifolia*, Maiden-hair-like foliage.

**Theobroma** (Cocoa Tree; Chocolate Tree).—Ord. Sterculiacææ. Stove evergreen trees. First introduced 1739. Fruit, oval, yellow, or reddish.

CULTURE: Compost, equal parts fibrous loam & sand. Position, well-drained pots in moist warm stove. Pot, Feb. Water freely, March to Oct.; moderately afterwards. Syringe daily, April to Sept. Shade from sun. Prune into shape, Feb. Temp., Oct. to March 55° to 65°; March to Oct. 70° to 85°. Propagate by cuttings of half-ripened shoots inserted in sand under bell-glass in temp. of 75° to 85°, April to August.

SPECIES CULTIVATED: *T. cacao*, rose and yellow, summer, 15 to 20 ft., Trop. America.

**Thermopsis**.—Ord. Leguminosæ. Hardy herbaceous perennials. First introduced 1799.

CULTURE: Soil, ordinary. Position, open sunny borders. Plant, March or April. Propagate by seeds sown  $\frac{1}{2}$  in. deep in light rich soil in sunny position outdoors in April, transplanting seedlings when large enough to handle.

SPECIES CULTIVATED: *T. caroliniana*, golden yellow, summer, 4 to 5 ft., N. America; *montana*, golden yellow, summer, 1 to 2 ft., N. America.

**Thimble Cactus** (*Mammillaria dasycarpa*). — See *Mammillaria*.

**Thistle Oil-plant** (*Argemone mexicana*).—See *Argemone*.

**Thladiantha**.—Ord. Cucurbitacææ. Half-hardy annual climber. First introduced 1864. Fruit, green, oblong, netted, & ribbed.

CULTURE: Soil, ordinary. Position, well-drained border against sunny wall. Sow seeds in light soil in temp. 55° to 65°, March or April, transplanting seedlings singly into small pots when three leaves form, harden in cold frame or greenhouse, & plant outdoors, May or June.

SPECIES CULTIVATED: *T. dubia*, golden yellow, summer, 5 to 10 ft., China.

**Thong Lily** (*Clivia miniatum*).—See *Clivia*.

**Thorn Apple** (*Datura Stramonium*).—See *Datura*.

**Thrift** (*Armeria vulgaris*).—See *Armeria*.

**Thrinax** (Silver Thatch Palm).—Ord. Palmacææ. Stove orn. foliage plant. First introduced 1778. Leaves, fan-shaped, green.

CULTURE: Compost, two parts loam, one part peat, & little sand. Position, well-drained pots in moist part of stove. Water copiously, April to Oct.; moderately afterwards. Syringe daily, April to Sept. Moist atmosphere highly essential. Shade from sun. Temp., March to Oct. 70° to 85°; Oct. to March 55° to 65°. Propagate by seeds soaked for a few hours in tepid water & then sown  $\frac{1}{2}$  in. deep in sandy loam in temp. of 75° to 85° any time.

SPECIES CULTIVATED: *T. argentea* (Broom or Silver Thatch Palm), 10 to

15 ft., W. Indies; *excelsa*, 6 to 8 ft., Jamaica; *multiflora*, 6 to 10 ft., Dominica; *parviflora* (Royal Palmetto Palm), 8 to 12 ft., W. Indies; *radiata*, 6 to 8 ft., W. Indies.

**Thunbergia.**—Ord. Acanthaceæ. Stove and greenhouse evergreen flowering shrubs and perennials, mostly of climbing habit. First introduced 1796.

**CULTURE OF T. ALATA:** Compost, two parts loam, one part leaf-mould or decayed manure, & one part sand. Sow seeds thinly in light compost in a well-drained pot, pan, or box, in temp. 65° to 75°, in Feb. or March. Transplant seedlings when three leaves form singly in 3½-in. pots, & later on into 5-in. size. Place pots afterwards along-side of staging, & let shoots hang down; or in baskets suspended from roof. May also be planted outdoors in June against sunny walls, in window boxes, or in vases. Water freely. Apply weak stimulants occasionally when in flower.

**CULTURE OF OTHER SPECIES:** Compost, equal parts leaf-mould or well-decayed manure, peat, fibrous loam, & silver sand. Position, well-drained pots in shady part of stove during growing period; light part during the resting period for *T. erecta*; well-drained beds with shoots trained up roof for *T. mysorensis*, etc. Pot, Feb. or March. Prune moderately, Feb. Water freely, March to Sept.; moderately, Sept. to Nov.; keep nearly dry, Nov. to March. Syringe daily, March to Sept. Apply stimulants occasionally, May to Sept. Temp., Feb. to Oct. 65° to 75°; Oct. to Feb. 55° to 65°. Propagate by seeds sown 1-16 in. deep in sandy peat & leaf-mould in temp. 75° to 85°, Jan. to May; cuttings of firm young shoots, 2 to 3 in. long, inserted in leaf-mould, peat, & sand under bell-glass in temp. 75° to 85°, Feb. to June.

**SPECIES CULTIVATED:** *T. alata*, yellow, summer, 4 to 6 ft., Trop. Africa; *alata alba*, white; *alata aurantiaca*, orange; *coccinea*, scarlet, summer, 4 to 6 ft., India; *erecta* (Syn. *Meyenia erecta*), blue and orange, summer, 6 ft., Trop. Africa; *erecta alba*, white and yellow; *fragrans*, white, fragrant, summer, 5 ft., Trop. Asia; *mysorensis* (Syn. *Hexacentris mysorensis*), yellow and purple, spring, 8 to 10 ft., S. India.

**Thunberg's Lily** (*Lilium elegans*).—See *Lilium*.

**Thunia.**—See *Phaius*.

**Thuya** (*Arbor-vitæ*).—Ord. Coniferæ. Hardy evergreen trees & shrubs. Orn. foliage. First introduced 1596. Leaves, small, scale-like. Habit, pyramidal.

**CULTURE:** Soil, deep, moist loam. Position, open sunny shrubberies, lawns, banks, or margins of water. Plant, Sept. to Nov., & Feb. to April. Prune, April or Sept. Depth for planting roots, 6 to 8 in.

**IN POTS:** Compost, two parts loam & one part leaf-mould. Pot, Sept. or Oct. Position, cold frame, window sill, or cold greenhouse, Nov. to May; plunged to rim of pots in ashes or fibre refuse in sunny spot outdoors afterwards. Water freely, April to Oct.; moderately afterwards.

**HEDGE CULTURE:** Suitable kinds—*T. plicata*, *T. occidentalis*, & *T. orientalis*. Soil, ordinary moist, previously trenched 3 spits deep & 3 ft. wide. Plant, Sept., Oct., March, or April. Distance apart for planting: 15 to 18 in. Height of trees: 18 in. to 4 ft. Prune, trim, or clip, April or Sept. Average cost of trees per 100, 35s. to 50s. Average cost of preparing & planting, per lineal yard, 9d. to 1s. Propagate by seeds sown ½ in. deep in sandy soil in temp. 55° in

spring, transplanting seedlings in open ground when large enough to handle; by cuttings of shoots, 2 to 3 in. long, inserted in sandy soil under bell-glass or in cold frame in Sept.; grafting in March.

**SPECIES CULTIVATED:** *T. dolobrata* (Syn. *Thuyopsis dolobrata*), 30 to 50 ft., Japan; *dolobrata latevirens*, dwarf form; *dolobrata variegata*, variegated form; *japonica* (Syn. *Thuya Standishii*), Japanese Arbor-vitæ, 20 to 30 ft., Japan; *occidentalis* (American Arbor-vitæ), 50 to 60 ft., N.E. America; and its varieties *argenteo-variegata* (variegated white); *aureo-variegata* (yellow), *ellwangeriana* (dwarf form), *ericoides* (dwarf habit), *lutea* (ends of branches yellow tinted), *pendula* (branches drooping), *Späthii* (branchlets clustered), *vervaneana* (branchlets tinged with yellow or brown), and *wareana* (dwarf, dense growing); *orientalis* (Chinese arbor-vitæ), Syn. *Biota orientalis*, 20 to 25 ft., China and Japan; and its varieties *argenteo-variegata* (variegated with white), *aurea* (golden), *aureo-variegata* (variegated with yellow), *decussata* (dwarf form), *elegantissima* (dwarf, graceful habit), *pendula* (branches drooping), and *pygmaea* (dwarf form); *plicata* (Syn. *T. gigantea* and *T. Lobbii*), Red or Canoe Cedar, 100 to 150 ft., N.W. America, a very handsome tree.

**Thyme** (*Thymus vulgaris*).—See *Thymus*.

**Thyme-leaved Fuchsia** (*Fuchsia thymifolia*).—See *Fuchsia*.

**Thyme-leaved Rhododendron** (*Rhododendron chamæcistus*).—See *Rhododendron*.

**Thymus** (Garden & Lemon-scented Thyme).—Ord. Labiatae. Hardy aromatic shrubby perennial.

**CULTURE OF GARDEN THYME:** Shoots used largely for culinary purposes. Soil, light, rich ordinary. Position, sunny warm border. Plant, 4 in. apart in rows 8 in. asunder, March or April. Replant every three or four years. Gather shoots when blossoms appear, & dry for winter use.

**CULTURE OF OTHER SPECIES:** Soil, ordinary. Position, sunny rockeries. Plant, Oct. or March. Excellent plants for carpeting bare spots over spring bulbs. Propagate by seeds sown  $\frac{1}{2}$  in. deep in lines 8 in. apart in April, thinning seedlings to 4 in. apart in May or June; by division of the plant in March or April, each portion being furnished with a few roots; gold & silver kinds by cuttings in cold frames in summer.

**SPECIES CULTIVATED:** *T. azoricus*, purple, summer, 3 in., Azores; *serphyllum citriodorus* (Lemon Thyme), rosy purple, June, 6 to 9 in., Europe; *serphyllum lanuginosus* (Woolly-leaved Thyme); *serphyllum citriodorus aureum* (Golden-leaved Thyme); *serphyllum citriodorus argenteus* (Fraser's Silver-leaved Thyme); and *Serphyllum coccineus* (Crimson-flowered Thyme); *vulgaris* (Garden Thyme), purple, June, 6 in., S. Europe.

**Thysacanthus** (Thyrse Flower).—Ord. Acanthaceae. Stove evergreen flowering shrubs. First introduced 1823.

**CULTURE:** Compost, equal parts peat, loam, leaf-mould, & sand. Position, well-drained pots in light stove, Sept. to June; sunny frame. June to Sept. Pot, March or April. Water moderately, Sept. to March; freely other times. Temp., Sept. to March 55° to 65°; March to June 65° to 75°. Prune shoots to 1 in. of base after flowering. Nip off points of young shoots occasionally, May to August, to induce bushy growth. Apply liquid or artificial manure twice a week to plants in flower. Propagate by cuttings of young shoots inserted singly in small pots of sandy soil under bell-glass in temp. 75°, March to July.

**SPECIES CULTIVATED:** *T. rutilans*, crimson, winter, 2 to 3 ft., Colombia.

**Tiarella** (False Mitre-wort; Foam Flower).—Ord. Saxifragaceae. Hardy perennial herb. First introduced 1731.

**CULTURE:** Soil, ordinary. Position, sunny rockeries or flower

borders. Plant, March or April. Propagate by division of roots in March or April.

SPECIES CULTIVATED: *T. cordifolia*, white, April, 6 in., N. America.

**Tibouchina** (Brazilian Spider-flower).—Ord. Melastomaceæ. Greenhouse flowering shrubs. Evergreen. First introduced 1864.

CULTURE: Compost, two parts turfy loam, one part peat, & one part charcoal & sand. Position, well-drained pots, tubs, or beds, with shoots trained to trellis, or up pillars, rafters, or walls. Pot, or plant, Feb. or March. Prune into shape, Feb. Water freely, April to Sept.; moderately afterwards. Apply stimulants once a week, May to Sept. Temp., March or Sept. 60° to 70°; Sept. to March 50° to 60°. Propagate by cuttings of firm side shoots 3 in. long inserted singly in small pots of sandy soil, under bell-glass or in propagator, in temp. of 70° to 80°; Feb. to Sept.

SPECIES CULTIVATED: *T. elegans*, purple, June, 6 ft., Brazil; semi-decandra (*Syn. Lasiandra* or *Pteroma macranthum*), purple, summer, 10 to 15 ft., Brazil.

**Tick-seed** (*Coreopsis tinctoria*).—See *Coreopsis*.

**Tidy-tips** (*Layia platyglossa*).—See *Layia*.

**Tiger-chop** (*Mesembryanthemum tigrinum*).—See *Mesembryanthemum*.

**Tiger Flower** (*Tigrida Pavonia*).—See *Tigridia*.

**Tiger Iris**.—See *Tigridia*.

**Tiger Lily** (*Lilium tigrinum*).—See *Lilium*.

**Tigridia** (Tiger Flower; Tiger Iris).—Ord. Iridaceæ. Half-hardy or greenhouse bulbs. First introduced 1796. Blooms last in perfection but one day only.

OUTDOOR CULTURE: Soil, equal parts rich loam & leaf-mould with little sand, in partially shaded bed prepared by digging out soil to depth of 24 in.; place 6 in. of brickbats or clinkers in bottom & remainder compost; or for ordinary culture an open sunny border & any good soil. Plant bulbs 3 in. deep, 5 to 6 in. apart, placing little sand under & around each in April. Mulch with decayed manure & cocoanut-fibre refuse when 3 in. high. Water freely in dry weather. Lift bulbs in Oct., tie in small bundles, & suspend in cool, airy, frost-proof place until following April.

POT CULTURE: Compost, two parts sandy loam, one part peat, & one part sand. Pot the bulbs singly in 4½-in. pots in March or April. Cover pots with cinder ashes or cocoanut-fibre refuse in cold frame or under stage in cold greenhouse until growth begins, then remove to light. Water moderately after growth begins; freely when well advanced. Apply weak stimulants occasionally when flower stems show. Position when in flower, light airy greenhouse or cold sunny frame. After flowering, gradually withhold water until foliage turns yellow, then keep quite dry. Remove bulbs from soil, tie into bundles, & suspend in cool place until potting time the following April. Propagate by seeds sown ¼ in. deep in light compost in temp. 55° to 65°, spring; by offsets removed & treated as advised for old bulbs in April.

SPECIES CULTIVATED: *T. Pavonia*, orange-red, summer, 1 ft., Mexico; *Pavonia alba*, white; *Pavonia aurea*, yellow; *Pavonia conchiflora*, rich yellow; *Pringlei*, scarlet, orange, and crimson, summer, 18 in., Mexico; *violacea*, rose, purple and white, May, 1 ft., Mexico.

**Tile-root**.—See *Geissorhiza*.

**Tilia** (Lime Tree; Linden Tree; Bass Wood).—Ord. Tiliaceæ. Hardy deciduous trees. Orn. foliage. Flowers, white, yellow; frag-

**Piptanthus** (Nepaul Laburnum).—Ord. Leguminosæ. Hardy evergreen flowering shrub. First introduced 1821.

**CULTURE:** Soil, rich sandy loam. Position, warm sheltered shrubberies, S. & S.W. of England; against S. walls, N. of London. Plant, Sept., Oct., April, or May. Prune straggling shoots moderately after flowering. Propagate by seeds sown in sandy soil in cool greenhouse or cold frame in spring; cuttings of ripened shoots inserted in small pots of sandy soil under bell-glass or hand-light outdoors, Aug. or Sept.; layering shoots, Sept. or Oct.

**SPECIES CULTIVATED:** *P. nepalensis*, yellow, summer, 5 to 10 ft., Himalayas.

**Pistachio-nut** (*Pistacia vera*).—See *Pistacia*.

**Pistacia** (*Pistachio-nut Tree*; *Mastich Tree*).—Ord. Anacardiaceæ. Hardy evergreen & deciduous trees. Flowering & orn. foliage. First introduced 1656. Leaves, unequally feather-shaped, green; reddish in young state.

**CULTURE:** Soil, deep rich sandy loam. Position, sheltered shrubberies S. & S.W. England; against S. walls, N. of London. Plant evergreen species, Sept., Oct., April, or May; deciduous species, Nov. to Feb. Prune evergreen species, April; deciduous species, Nov. to Feb. Propagate by cuttings inserted in sandy soil in cold frame or under hand-light, Sept. or Oct.; layering in Sept.

**SPECIES CULTIVATED:** *P. atlantica*, leaves pinnate, evergreen, 40 ft., Canary Isles; *Lentiscus* (*Mastich Tree*), leaves pinnate, 20 ft., S. Europe; *Terebinthus* (*Turpentine Tree*), yellow, June, 30 ft., S. Europe; *vera* (*Pistachio Nut Tree*), brown, April, 20 ft., Syria.

**Pistia** (*Tropical Duck Weed*; *Water Lettuce*).—Ord. Aroideæ. Stove aquatic perennial. First introduced 1843. Flowers, green, borne on spadix at base of leaves. Leaves, wedge-shaped, notched, pale green, hairy.

**CULTURE:** Soil, rich loam. Position, shallow tub or tank in stove. Place 2-in. layer of soil on bottom of tub or tank & plant on surface of water. Replenish with tepid water occasionally. Add fresh soil annually. Temp., March to Oct. 70° to 85°; Oct. to March 60° to 70°. Propagate by offsets.

**SPECIES CULTIVATED:** *P. stratiotes*, 1 to 3 in., Jamaica.

**Pisum** (*Garden Pea*; *Sugar Pea*; *Crown or Mummy Pea*).—Ord. Leguminosæ. Hardy annuals. Edible seeded & podded vegetables.

**CULTURE OF GARDEN PEAS:** Soil, deep, rich calcareous loam, previously trenched three spits deep & containing a thick layer of manure between first and second spit. Position, open sunny, protected from N. & N.E. & E. winds. Suitable Manures: Solid—Horse dung or peat-moss litter for heavy soils; cow or pig dung for light or sandy soils. Chemical—(1) Kainit 2 lb., nitrate of soda 5 lb., superphosphate of lime 9 lb., half of each to a square rod before sowing, remainder when plants are 6 in. high; (2) nitrate of soda 1½ lb., kainit 1½ lb., superphosphate 1½ lb., salt 3 lb., applied same as No. 1; (3) native guano 6 lb. to a square rod applied before sowing, & 6 lb. when plants are 3 in. high; (4) Peruvian guano 1 lb. for square rod before sowing, also 1 lb. when plants are 3 in. high. Liquid—Horse & cow urine diluted with two-thirds water; nitrate of soda ½ oz. to gallon, all to be applied when ground is moist only & when pods have just formed. Direction of rows: E. to W. or S.E. to N.W. for early sorts; N. to S. for main crops. Depth of drills, 2½ to 3 in.; width, 6 to 9 in. Distance apart for sowing the seeds: 1 in. each way for dwarf sorts; 2 in. for medium kinds; 3 in. for tall vars., arranged in



two rows, thus: . . . . Distance between rows: 18 in. for varieties not exceeding 2 ft. in height; 3 ft. for those not more than 4 ft. high; 6 to 8 ft. for those growing 5 to 6 ft. high. Sow earliest sorts on south border, Nov. & Jan., or in 4½ in. pots in temp. 55° in Jan., hardening plants off when 3 in. high in cold frame & planting outdoors in Feb. or March; second early sorts in open garden in Feb. & March; main-crop, April & May; late crops, June & July. Draw mould up to each side of row when plants are 6 in. high & place supports to them. Mulch to width of 15 in. on each side of row with manure. Water copiously in dry weather. Nip off points of shoots of tall kinds when 4 ft. high, & again when 5 ft. high. Early peas, seeds round, late ditto, wrinkled (marrowfats). Quantity of seed required for a row 50 ft. long: 1 pint. Seeds retain their vegetative powers for 3 to 4 years, and seeds germinate in 10 to 20 days. Crop reaches maturity in 18 to 24 weeks. Round-seeded sorts germinate more quickly than wrinkled kinds. Protect seeds from mice and birds by soaking them in paraffin oil for 4 hours before sowing.

**MARKET CULTURE:** Soil, deeply worked and well-manured. Manure and trench or plough deeply previous autumn. Position, sheltered for early crops. Manures: Basic slag, 8 to 10 cwt. and kainit 2 cwt. per acre, applied in autumn. When plants appear, apply 3 cwt. superphosphate per acre, & a few weeks later 1 cwt. nitrate of soda per acre. On poor soils apply 10 tons of farmyard manure per acre in autumn, and superphosphate & nitrate of soda in spring. Sow early sorts, Nov. to Jan.; mid-season, Feb. & March; late, April. Distances to sow: 3 in. deep, 2 to 3 in. apart in rows 2½ to 3 ft. asunder. Quantity to sow an acre: 3 bushels. Cost of cultivation per acre: Hoeing, 3s.; brushing haulm, 3s. 6d.; picking per bushel (32 lb.), 4d. to 6d. Average yield per acre, 150 bushels. Average return per acre, £20 to £30. Weight of seeds per bushel, 56 to 63 lb.

**CULTURE OF SUGAR PEAS:** Soil, same as for garden peas. Sow in March or April, 2½ in. deep in drills 6 in. wide & 6 ft. apart, & earth up & stake in the usual way. Gather pods when fully developed & cook like French beans. Rotation: Peas may follow potatoes, carrots, parsnips, turnips, broccoli, or cabbage; & be succeeded by cabbage, turnips, spinach, or celery.

**CULTURE OF MUMMY PEA:** Soil, ordinary. Position, open sunny borders. Sow seeds ½ in. deep, three or four in a 3-in. pot filled with light soil & placed in warm window or greenhouse in March, transplanting seedlings outdoors in May; or 2½ in. deep in open ground in April. Support with stakes when 6 in. high. Water copiously in dry weather. Apply stimulants occasionally when flowers appear.

**SPECIES CULTIVATED:** *P. sativum* (Garden Pea), parent of cultivated varieties, white or red, summer, Europe, etc.; *sativum saccharatum* (Sugar Pea), white or red, summer, Europe; *elatus* (Mummy or Crown Pea), bluish, summer, 4 to 6 ft., Mediterranean Region. The statement that seeds of latter were originally found in an Egyptian mummy is a purely legendary one.

**Pitcairnia.**—Ord. Bromeliaceæ. Stove perennial herbs. First introduced 1777. Leaves, narrow or sword-shaped; margins prickly.

**CULTURE:** Compost, equal parts fibrous loam, rough peat, & leaf-mould. Pot, March. Water freely always. Good drainage essential. Temp., Sept. to March 60° to 70; March to Sept. 70° to 80°. Propagate by offshoots inserted in small pots at any time.

**SPECIES CULTIVATED:** *P. andreana*, yellow and red, summer, 1 ft., Vene-

**Touch-me-not** (*Impatiens noli-me-tangere*).—See *Impatiens*.

**Tournefortia** (Summer Heliotrope).—Ord. Boraginaceæ. Greenhouse flowering shrubs. First introduced 1800.

**CULTURE:** Compost, equal parts light loam, leaf-mould & sand. Position, pots or beds, with shoots growing loosely or trained to trellis, walls, pillars, or rafters in greenhouse; in sunny beds outdoors, June to Sept., or in pots in windows. Pot Feb. to May. Plant outdoors, June. Lift & repot, Sept. Water freely March to Oct., moderately afterwards. Apply liquid or artificial manure to healthy plants in flower. Prune old plants in closely in Feb. Training: Nip off points of main, also lateral shoots when 3 in. long, to form dwarf plants; points of main shoots when 12 in. long, & side shoots when 3 to 6 in. long, to form pyramids; points of main shoots when 2 ft. long, & of lateral shoots at apex when 3 to 6 in. long—all side shoots to within 4 in. of apex to be removed altogether—to form standards. Temp., Feb. to Oct. 60° to 70°; Oct to Feb. 50° to 55° Pot plants do best in cold frame or sunny position outdoors, July & Aug. Propagate by seeds sown 1-16 in. deep in well-drained pots or pans of light soil in temp. 65° to 75° in March; by cuttings of shoots, 2 to 3 in long, inserted in pots of sandy soil under bell-glass, or in propagator in temp. 65° to 75° in March, April, Aug. or Sept.

**SPECIES CULTIVATED:** *T. cordifolia*, white, summer, 2 to 3 ft., Colombia; *lavigata*, lilac, summer, 2 ft., Trop. America.

**Trachelium** (Blue Throat-wort).—Ord. Campanulaceæ. Hardy herbaceous perennial. First introduced 1640.

**CULTURE:** Compost, two parts sandy loam, one part leaf-mould. Position, sunny rockeries. Plant, March or April. Protect in severe weather by covering of dry fern fronds. Propagate by seeds sown in above compost, lightly covered with fine light mould, place in temp. of 55° to 65°, spring, transplant seedlings when large enough to handle, harden in cold frame & plant out, May or June; cuttings of young shoots inserted in sandy soil under bell-glass in April or Sept.

**SPECIES CULTIVATED:** *T. cœruleum*, blue, Aug., 2 ft., Italy; *cœruleum album*, white.

**Trachelospermum** (Chinese Jasmine; Chinese Ivy).—Ord. Apocynaceæ. Greenhouse evergreen climbing shrub. Flowering. First introduced 1846.

**CULTURE:** Compost, equal parts peat, loam, & silver sand. Position, pots with shoots trained to wire trellis, or well-drained beds or borders with shoots trained up pillars, rafters, or walls. Pot or plant, Feb. or March. Water freely April to Oct., moderately afterwards. Syringe daily except when flowering. Prune moderately after flowering. Shade from sun essential. Temp., March to Sept. 65° to 75°; Sept. to March, 45° to 55°. Propagate by cuttings of firm young shoots 2 to 3 in. long, inserted in well-drained pots of sandy peat placed under bell-glass in temp. 65° to 75°, spring or summer.

**SPECIES CULTIVATED:** *T. jasminoides* (Syn. *Rhynchospermum jasminoides*), white, fragrant, summer, 10 to 15 ft., China.

**Tradescantia** (Spider-wort; Flower-of-a-Day).—Ord. Commelinaceæ. Hardy herbaceous perennials.

**CULTURE:** Soil, ordinary. Position, partially shady or sunny borders or beds. Plant, Oct., Nov., March or April. Lift, divide, & replant every three or four years. Excellent plants for town gardens. Propagate by division of roots, March or April.

**SPECIES CULTIVATED:** *T. virginiana*, violet blue, spring, 1 to 3 ft., N.

America; virginiana alba, white; virginiana flore pleno, double. For indoor species see the genus *Zebrina*.

**Tragacanth Gum-plant** (*Astragalus tragacantha*).—See *Astragalus*.

**Tragopogon** (Salsafy; Vegetable Oyster).—Ord. Compositæ. Hardy biennial esculent-rooted vegetable. Roots long, tapering, white. CULTURE: Soil, ordinary fine, rich, deeply trenched, free from stones. Position, sunny, open. Sow seeds in groups of three or four, 12 in. apart, in drills  $\frac{1}{2}$  in. deep, & 18 in. apart, in April. Thin seedlings when 3 in. high to one in each group. Remove flower heads as soon as seen. Lift the roots in Oct., twist off their leaves, & store in layers with sand or soil between in cellar or outhouse until required for cooking. Artificial manures for:  $2\frac{1}{2}$  lb. kainit, 1 lb. sulphate of ammonia,  $2\frac{1}{2}$  lb. of guano, mixed, per square rod ( $30\frac{1}{4}$  square yards, applied between sowing in spring. Requires to be raised from seed annually for producing roots for culinary purposes. See *Scorzonera* for market culture, etc.

SPECIES CULTIVATED: *T. porrifolius*, purple, May and June, 2 to 3 ft., Europe.

**Trailing Fuchsia** (*Fuchsia procumbens*).—See *Fuchsia*.

**Trapa** (Water Caltrops; Water Chestnut; Jesuit's Nut).—Ord. Onagraceæ. Hardy aquatic floating herbs.

CULTURE: Soil, rich loamy. Position, sunny; shallow pots or tubs in cool greenhouse. Plant, April or May. Propagate by seeds sown in loamy soil in water in temp. of  $65^{\circ}$  to  $75^{\circ}$  in spring.

SPECIES CULTIVATED: *T. natans* (Syn. *T. bicornis*), Europe.

**Traveller's Joy** (*Clematis vitalba*).—See *Clematis*.

**Traveller's Tree** (*Ravenala madagascarensis*).—See *Ravenala*.

**Treasure-flower** (*Gazania Pavonia*).—See *Gazania*.

**Tree Carnation**.—See *Dianthus*.

**Tree Celandine** (*Bocconia cordata*).—See *Bocconia*.

**Tree Cinquefoil** (*Potentilla frutescens*).—See *Potentilla*.

**Tree Ferns**.—See *Cyathea* & *Dicksonia*.

**Tree Heath** (*Erica arborea*).—See *Erica*.

**Tree Lupin** (*Lupinus arboreus*).—See *Lupinus*.

**Tree Mallow** (*Lavatera arborea*).—See *Lavatera*.

**Tree Mignonette**.—See *Reseda*.

**Tree-of-Heaven** (*Ailanthus glandulosus*).—See *Ailanthus*.

**Tree Onion** (*Allium cepa proliferum*).—See *Allium*.

**Tree Pæony** (*Pæonia moutan*).—See *Pæonia*.

**Tree Poppy** (*Romneya Coulteri*).—See *Romneya*.

**Tree Rhododendron** (*Rhododendron arboreum*).—See *Rhododendron*.

**Tree Tomato** (*Cyphomandra betacea*).—See *Cyphomandra*.

**Tremandra**.—Ord. *Tremandrea*. Greenhouse evergreen flowering shrub.

CULTURE: Compost, two parts fibrous peat, one part turfy loam, one part equal proportions charcoal, broken pots & silver sand. Position, well-drained pots in light airy greenhouse. Pot, Feb. or March. Water moderately at all seasons; rain water only to be used. Shade from sun, June to Sept. Temp., Oct. to April  $40^{\circ}$  to  $50^{\circ}$ ; April to Oct.  $50^{\circ}$  to  $65^{\circ}$ . Propagate by cuttings of side shoots inserted in sand under bell-glass in shade in temp. of  $55^{\circ}$  to  $65^{\circ}$  in summer.

SPECIES CULTIVATED: *T. stelligera*, purple, summer, 2 ft., Australia.

**Trembling-fern** (*Pteris tremula*).—See *Pteris*.

**Trichomanes** (Killarney Fern; Bristle Fern).—Ord. Filices. Greenhouse filmy ferns. Fronds more or less divided, semi-transparent.

**CULTURE:** Compost, equal parts peat, loam, leaf-mould, charcoal, sandstone, & silver sand. Position, moist, shady, in damp recesses of rockeries, under bell-glasses or in cases. Plant, March. Water freely March to Oct., moderately Oct. to March. Syringing unsuitable. Damp atmosphere & shade most essential. Temp., 55° to 65° March to Sept.; 45° to 55° Sept. to March. The Killarney Fern is best grown in a cool house or frame in complete shade. Provide plenty of sandstone for rhizomes to cling to. Constant moisture most essential.

**CULTURE IN CASES IN ROOMS:** Compost, as above. Position, shady window, not exposed to sun. Plant, March. Top-dress with fresh compost annually in March. Water freely April to Sept., moderately afterwards. Ventilate case few minutes daily. Species most suitable, *T. radicans*. Propagate by spores sown on surface of sandy peat in shallow pan covered with bell-glass in temp. 65° to 75° at any time; by division of plant at potting time.

**SPECIES CULTIVATED:** *T. alatum*, W. Indies; *auriculatum*, Trop. Asia; *Colensoi*, New Zealand; *exsectum*, Chili; *parvulum*, Tropics; *radicans* (Killarney Fern), Tropical and Temperate Regions; *trichodeum*, W. Indies.

**Trichopilia**.—Ord. Orchidaceæ. Greenhouse evergreen epiphytal orchids. First introduced 1821.

**CULTURE:** Compost, equal parts fibrous peat, fresh sphagnum moss, charcoal, & clean crocks. Position, well-drained pots with base of plant slightly elevated above rim, or in basket suspended from roof of light greenhouse close to glass. Pot, Feb. or March, or immediately new growth begins. Water moderately March to Sept., very little afterwards. Moist atmosphere essential in summer. Shade from sun. Growing period, March to Sept.; resting period, Sept. to March. Temp., May to Sept. 55° to 65°; Sept. to Feb. 45° to 55°; Feb. to May 50° to 60°. Propagate by division of pseudo-bulbs at potting time.

**SPECIES CULTIVATED:** *T. coccinea*, crimson and white, May and June, 6 in., Central America; *fragrans*, greenish white and yellow, almond scented, summer, Colombia; *galeottiana*, greenish yellow and crimson, summer, Mexico; *suavis*, white, red, and yellow, hawthorn scented, May and June, Central America; *tortilis*, brown, yellow, white, and crimson, summer, Mexico.

**Trichosanthes** (Snake Gourd; Serpent Cucumber; Viper Gourd).—Ord. Cucurbitaceæ. Greenhouse annual climbers. First introduced 1735. Fruit, very long, cucumber-like, twisted.

**CULTURE:** Compost, equal parts sandy loam, leaf-mould, & fibrous peat. Position, well-drained pots with shoots trained up roof of sunny greenhouse. Sow seeds singly 1 in. deep in 2-in. pots filled with above compost, placed in temp. 65° to 75° Feb. or March. Transplant seedlings when three leaves form into 4½-in. pots, & when well rooted into 8-in. size. Water freely; use tepid water only. Syringe daily, May to Sept. Shade from mid-day sun. Apply weak stimulants twice a week May to Sept. Temp., 60° to 70°.

**SPECIES CULTIVATED:** *T. Anguina*, white, summer, 10 to 15 ft., Trop. Asia.

**Trichosma**.—Ord. Orchidaceæ. Stove epiphytal orchid. First introduced 1840.

**CULTURE:** Compost, equal parts fresh sphagnum moss & fibry peat. Position, pots or pans half filled with potsherds, & placed close to glass. Pot, Feb. or March; keep base of plant well above rim of pot or pan. Temp., March to Sept. 70° to 85°; Sept. to Nov. 65° to 75°; Nov. to March 60° to 70°. Water freely March to Aug., moderately Aug. to Nov., very little Nov. to March. Growing period, March to Aug.; rest-

ing period, Sept to Feb. Propagate by division of bulbs at potting time.

**SPECIES CULTIVATED:** *T. suavis*, creamy white, yellow and crimson, fragrant, October and November, Sikkim and Khasya.

**Tricyrtis** (Japanese Toad Lily).—Ord. Liliaceæ. Half-hardy perennials. First introduced 1851.

**GREENHOUSE CULTURE:** Compost, equal parts of sandy loam, peat, & silver sand. Position, well-drained pots in cool greenhouse or cold frame. Pot, Oct. to March. Plunge pots to rim in cocoanut-fibre refuse or cinder ashes in cool greenhouse or cold frame, & give no water till growth commences, then apply moderately. When stems are 3 in. high, place plants in light airy position in greenhouse. No shade required. Apply weak stimulants once a week during flowering period. After flowering gradually withhold water till foliage turns yellow, then keep dry, & store pots away in cold frame or under staging in cool greenhouse until Feb. or March.

**OUTDOOR CULTURE:** Soil, peaty. Position, partially shady, sheltered, moist border. Plant rhizomes 2 in. below surface, Oct. to March. Protect in severe weather with covering of litter. Plants grown outdoors do not flower until autumn. Propagate by offsets removed at planting or potting time.

**SPECIES CULTIVATED:** *T. hirta*, white and purple, autumn, 2 to 3 ft., Japan.

**Tridentalis** (Chickweed Winter Green; Star Flower).—Ord. Primulacæ. Hardy herbaceous perennials.

**CULTURE:** Soil, ordinary light rich. Position, shady borders, margins of rhododendron beds, rockeries or woodlands. Plant, Nov. to April. Propagate by seeds sown in light rich soil, lightly covered with fine mould under hand-light in shady position outdoors in April; division of roots, Nov. or March.

**SPECIES CULTIVATED:** *T. americana* (Star-flower), white, May, 6 to 9 in., N. America; *europæa* (Chickweed Winter-green), white, summer, 6 to 8 in., N. Hemisphere.

**Trifolium** (Purple Clover).—Ord. Leguminosæ. Hardy perennial. Grown only for the sake of the purple-tinted foliage.

**CULTURE:** Soil, ordinary. Position, sunny borders. Plant, Oct. to April. Propagate by division of plants, Oct. or March.

**SPECIES CULTIVATED:** *T. repens purpureum* (Scotch Shamrock), leaves spotted with purple, creeping, Britain.

**Trigonella** (Fenugreek).—Ord. Leguminosæ. Hardy annuals. First introduced 1562. Leaves, feather-shaped.

**CULTURE:** Soil, ordinary. Position, sunny borders. Sow seeds in April in patches lightly covered with fine mould. Thin seedlings when three leaves form to 6 in. apart.

**SPECIES CULTIVATED:** *T. cœrulea*, blue, summer, 2 ft., E. Europe; *Fœnum-græcum* (Fenugreek), white, summer, 18 in., S. Europe.

**Trillium** (American Wood Lily).—Ord. Lilacææ. Hardy tuberous-rooted perennials. First introduced 1700.

**CULTURE:** Soil, sandy peat. Position, shady, moist, well-drained border. Plant, Aug. to Nov. Top-dress annually in March with layer of decayed leaves. Lift & replant only when absolutely necessary. Propagate by seeds sown in shallow, well-drained boxes or pans filled with sandy peat, cover seeds lightly with fine mould & place in shady cold frame; division of tuberous roots, Aug. to Nov.

**SPECIES CULTIVATED:** *T. cernuum*, white, April, 1 ft., N. America; *erectum* (Birth-root), purple, April, 1 ft., N. America; *erythrocarpum* (Painted Wood Lily), red and white, May, 6 in., N. America; *grandiflorum* (Wake Robin), white,

May, N. America; grandiflorum roseum, rose; ovatum, red, April, 6 in., N.W. America; sessile, purple, March, 6 in., N. America.

**Triplet Lily** (*Brodiaea uniflora*).—See *Brodiaea*.

**Triteleia**.—See *Brodiaea*.

**Trithrinax**.—Ord. Palmaceæ. Stove orn. foliage plants. First introduced 1875. Leaves, roundish oval; green.

**CULTURE**: Compost, two parts loam, one part peat & little sand. Position, well-drained pots in moist part of stove. Water copiously April to Oct., moderately afterwards. Syringe daily, April to Sept. Moist atmosphere highly essential. Shade from sun. Temp., March to Oct. 70° to 85°; Oct. to March 55° to 65°. Propagate by seeds soaked for a few hours in tepid water & then sown  $\frac{1}{2}$  in. deep in sandy loam in temp. of 75° to 85°, any time.

**SPECIES CULTIVATED**: *T. acanthocoma*, 10 to 15 ft., Brazil; *brasiliensis*, 10 to 15 ft., Brazil.

**Tritoma**.—See *Kniphofia*.

**Tritonia**.—Ord. Iridaceæ. Hardy deciduous bulbous plants. First introduced 1758.

**OUTDOOR CULTURE**: Soil, equal parts sandy loam, leaf-mould, & decayed manure. Position, sunny, well-drained borders. Plant 3 in. deep & 2 in. apart in masses, Oct. to March. Protect, Nov. to March, by covering of dry litter. Mulch in March with layer of decayed manure, first removing litter. Water occasionally in very dry weather. Apply stimulants occasionally during flowering period. Lift & replant bulbs annually.

**POT CULTURE**: Compost, two parts sandy loam, one part leaf-mould or decayed cow manure. Pots, 4 $\frac{1}{2}$  in. in diameter, well-drained. Place five bulbs 3 in. deep, in each pot in Nov., & cover with cocoanut-fibre refuse in cold frame, or under cool greenhouse stage until flowers fade, then gradually cease, keeping bulbs dry till Jan. Temp., Sept. to March 40° to 50°; other times, 50° to 60°. Propagate by offsets treated as advised for bulbs.

**SPECIES CULTIVATED**: *T. crocata* (Syn. *Ixia crocata*), orange, summer, 2 ft.; *crocsmiæflora*, orange-scarlet, summer, 2 to 3 ft., hybrid; *Pottsii*, orange yellow, Aug., 3 ft. Natives of S. Africa, and formerly known as *Montbretias*.

**Trollius** (Globe Flower).—Ord. Ranunculaceæ. Hardy herbaceous perennials.

**CULTURE**: Soil, deep, moist ordinary or preferably loam. Position, partially shady borders or margins of ponds or streams. Plant, Oct. to April. Water freely in dry weather. Lift, divide, & replant every three or four years. Propagate by seeds sown in moist, loamy soil in shady position outdoors in Sept. or April; division of roots, Oct. to April.

**SPECIES CULTIVATED**: *T. asiaticus*, yellow, May, 18 in., Siberia; *europæus flore pleno*, double.

**Tropæolum** (*Nasturtium*; Indian Cress; Flame Flower; Canary Creeper).—Ord. Geraniaceæ. Greenhouse or hardy annual or perennial dwarf or climbing herbs.

**CULTURE OF CANARY CREEPER**: Soil, good ordinary mould or sandy loam. Position, against sunny or shady wall, fence, arbour, or trellis; does well on a north aspect. Sow seeds  $\frac{1}{2}$  in. deep in light soil in temp. 55° in March, harden off seedlings in cold frame in April & plant outdoors in May; or  $\frac{1}{4}$  in. deep outdoors in April where required to grow. Water freely in dry weather.

**CULTURE OF NASTURTIUM**: Climbing kinds: Soil, ordinary. Position, sunny or shady walls, fences, arbours, or window boxes. Sow

seed 1 in. deep in April where plants are required to grow. Remove seed pods as they form to ensure free flowering. Dwarf kinds: Soil, ordinary, not over rich. Position, sunny or shady borders or beds. Sow seeds 1 in. deep & 3 in. apart in lines or masses in April. Thin seedlings to 6, 9, or 12 in. apart when 3 in high if fine plants are desired. Remove seed pods unless seed is required.

**POT CULTURE:** Sow seeds  $\frac{1}{2}$  in. deep & 2 in. apart in 5-in. pots filled with a compost of two parts good mould & one part decayed manure in April. Place pots in window or cold frame. Water moderately at first, freely when in full growth. Apply stimulants occasionally when in flower. Double varieties propagated by cuttings in temp.  $55^{\circ}$  in spring. Plant outdoors in May or June. May be grown in pots in a compost of two parts loam, one part leaf-mould, & little sand. Pot in March or April. Water freely in summer, moderately other times. Temp., Oct. to March  $40^{\circ}$  to  $50^{\circ}$ ; March to June  $55^{\circ}$  to  $65^{\circ}$ .

**CULTURE OF T. LOBBIANUM:** Sow seeds in light soil in temp.  $55^{\circ}$  in March, harden seedlings off in cold frame in April, & plant out in June in sunny position against walls, fences, arbours, or in borders, placing tree branches to support the shoots; or outdoors  $\frac{1}{2}$  in. deep in April where required to grow.

**INDOOR CULTURE:** Compost, two parts sandy loam, one part leaf-mould or decayed manure & half a part sand. Position, well-drained pots or beds, training shoots up rafters. Water moderately Sept. to April, freely afterwards. Propagate by cuttings of shoots, 2 to 3 in. long, inserted in sandy soil in temp.  $55^{\circ}$  to  $65^{\circ}$  in spring. Temp., Sept. to March  $50^{\circ}$  to  $60^{\circ}$ ; March to Sept.  $65^{\circ}$  to  $75^{\circ}$ .

**CULTURE OF GREENHOUSE TUBEROUS-ROOTED SPECIES:** Compost, equal parts turfy loam, leaf-mould, peat, & silver sand. Position, well-drained pots in light, airy greenhouse. Pot, Aug. to Nov. Place one tuber only in a pot and bury this about 1 in. Water very little till plants grow freely, then give an abundant supply. Withhold water entirely when foliage turns yellow & until growth recommences. Apply stimulants occasionally when plants are in flower. Train shoots to wire trellis fixed in pots or up rafters. Temp., Nov. to Feb.  $40^{\circ}$  to  $50^{\circ}$ ; Feb. to June  $55^{\circ}$  to  $65^{\circ}$ . After growth ceases, store pots in cool place till potting time. Propagate by seeds sown in light sandy soil in temp.  $55^{\circ}$  to  $65^{\circ}$  in spring; cuttings of shoots inserted in sandy soil in temp.  $55^{\circ}$  to  $65^{\circ}$  in spring or summer.

**CULTURE OF HARDY SPECIES:** Soil, light sandy loam for *T. pentaphyllum*; ordinary mould for *T. polyphyllum*; equal parts loam, peat, leaf-mould, & sand for *T. speciosum*; poorish mould for *T. tuberosum*. Position, south wall or fence for *T. pentaphyllum*; sunny bank for *T. polyphyllum*; shaded wall or hedge facing north for *T. speciosum*; sunny border for *T. tuberosum*. Plant *T. tuberosum* in March or April; *T. polyphyllum*, Aug. to Nov.; *T. speciosum* & *T. pentaphyllum*, Oct. or March. Water freely in dry weather. Mulch with decayed manure in Oct. Lift tubers of *T. tuberosum* in Oct., store in sand in frost-proof place till March; leave others undisturbed. Propagate by seeds sown in loam, leaf-mould, & sand in cold frame in April; division of roots at planting time.

**ANNUAL SPECIES:** *T. aduncum* (Syn. *T. canariense*) Canary Creeper, yellow, summer, 3 to 10 ft., Peru. Strictly a perennial, but best grown as an annual; *Majus* (Tall Nasturtium), orange and brown, summer, 5 to 10 ft., Peru; *minus* (Dwarf Nasturtium), yellow, red, summer, 1 ft., Peru.

**GREENHOUSE SPECIES:** *T. azureum*, blue, green, and white, Oct., 3 ft., tuberous-rooted, Chili; *Jarrattii*, orange, scarlet, and brown, June, 12 ft., tuberous-rooted, Santiago; *lobbianum*, orange scarlet, summer and winter, 6 to 10 ft., Colombia; *pentaphyllum*, vermilion and purple, summer, 4 ft., tuberous-rooted, Buenos Ayres; *tricolorum*, orange scarlet, summer, 5 to 10 ft., Chili.

**HARDY PERENNIAL SPECIES:** *T. Leichtlinii*, orange, yellow and red, summer, trailing, hybrid; *polyphyllum* (Yellow Rock Indian Cross), yellow, June, trailing, Chili; *tuberosum*, yellow and red, Sept., trailing, tuberous-rooted, Peru; *speciosum* (Flame Flower), crimson, summer, 10 ft., Chili.

**Trumpet-flower.**—See *Tecoma* & *Bignonia*.

**Trumpet Honeysuckle** (*Lonicera sempervirens*). — See *Lonicera*.

**Trumpet Leaf** (*Sarracenia purpurea*).—See *Sarracenia*.

**Trumpet Lily** (*Lilium longiflorum* & *Richardia africana*).—See *Lilium* & *Richardia*.

**Tsuga.**—Ord. Coniferæ. Hardy evergreen coniferous trees. Habit of growth handsome and elegant. First introduced 1736.

**CULTURE:** Soil, deep, rich loam. Position, elevated, well-drained sites in parks or pleasure grounds. Plant in autumn. Propagate by seeds sown in sandy soil outdoors in April, or in pans in gentle warmth in March.

**SPECIES CULTIVATED:** *T. canadensis* (Syn. *Abies canadensis*), Hemlock Spruce, 60 to 80 ft., N.E. America; *caroliniana*, 50 to 60 ft., S. Alleghanies; *mensurata* (Syn. *Abies albertiana*), 100 to 140 ft., N.W. America; *pattoniana* (Californian Hemlock Spruce), 100 to 150 ft., California; *Sieboldii* (Japanese Hemlock Spruce), 80 to 100 ft., Japan.

**Tuberose** (*Polianthes tuberosa*).—See *Polianthus*.

**Tube-tongue** (*Salpiglossis sinuata*).—See *Salpiglossis*.

**Tufted Pansy.**—See *Viola*.

**Tulip.**—See *Tulipa*.

**Tulipa** (*Tulip*).—Ord. Liliacæ. Hardy bulbous-rooted plants.

**CLASSIFICATION OF FLORISTS' TULIPS:** Seedlings: Bulbs that have not flowered. Breeders or Selves: Seedlings or offsets from bulbs that have flowered & promise to develop into a good strain of one of the following classes. Broken: Breeder tulips developing stripes of another colour. Feathered: Having a light, heavy, or irregular dark-coloured edge to the petals. Flamed: having a dark candle-flame-like spot in the centre of each petal. Bizarres: Yellow petals marked with another colour. Byblomens: White, marked with shades of black, violet, or purple. Roses: White, marked with red.

**CLASSIFICATION OF ORDINARY TULIPS:** Early: Flowering in March. Example, *Duc Van Thol*. Late or Cottage: Flowering in May & June. Example, *T. vitellina*. Mother: Same as Breeders, self-coloured. Darwin: A superior strain of self-coloured tulips. Rembrandt: Same as Darwins, but striped. Parrot: Curiously-coloured blooms with large, feathery-edged petals.

**CULTURE OF ORDINARY TULIPS:** Soil, light, ordinary, previously liberally enriched with well-decayed manure. Position, sunny well-drained beds or borders. Plant bulbs 4 in. deep & 6 in. apart, Oct. to Dec. Mulch surface of bed with decayed manure or cocoanut-fibre refuse. Lift bulbs directly after flowering & replant them in sunny reserve border to finish their growth; or leave until July, then lift, dry, & store away in cool place till planting time. Bulbs may be left in ground altogether if desired, lifting, dividing, & replanting every three years. Mother, Darwin, Rembrandt, & Parrot tulips grown in the same way.

**POT CULTURE:** Compost, two parts loam, one part decayed



manure, & little sand. Pot, Sept. to Nov., placing three bulbs in a 5-in. or four in a 6-in. pot, & burying bulbs just below the surface. Pot firmly. Cover pots with cinders or cocoanut-fibre refuse in cold frame. Remove to window, frame, or greenhouse when growth begins & water freely. Temp. for forcing, 55° to 65°.

**CULTURE FOR EXHIBITION:** Compost, four parts good turfy loam, one part leaf-mould, one part decayed cow manure, & one part sand, mixed together & allowed to remain in a heap for one year. Position, well-drained sunny bed, containing about 18 in. of above compost. Plant bulbs 3 to 4 in. deep & 6 in. apart end of Oct. or beginning of Nov. Surround each bulb with sand. Protect-blooms with canvas awning. Lift bulbs when leaves turn brown. Store in cool shed to dry, after which remove loose skins & place in drawers till planting time.

**CULTURE OF HARDY SPECIES:** Soil, light rich ordinary. Position, sunny borders, rockeries, or naturalised, in grass. In latter case plant permanently; no lifting required. Plant, Sept. to Nov., 3 in. deep & 6 in. apart. Lift, divide, & replant every four years. Propagate by seeds sown in Feb. in light sandy soil in a cold frame; transplanting following year in bed of rich soil outdoors; by offsets removed from parent bulb & planted 3 in. deep in a bed of light rich soil in a sunny position outdoors in Nov. Seedling bulbs flower when four to six years old; offsets when three to four years old.

**SPECIES CULTIVATED:** *T. acuminata* (Turkish Tulip), yellow and red, 17 in., May; *australis* (Syn. *T. celsiana*), yellow and red, April, 1 ft., S.W. Europe; *biebersteiniana*, yellow, April, 1 ft., Caucasus; *Batalinii*, yellow, April, 6 to 8 in., Asia Minor; *biflora*, white and yellow, April, Caucasus; *bibletiana*, yellow, May, 2 ft., Europe; *clusiana*, white, red and black, June, 8 in., S. Europe; *elegans*, red and yellow, May, 1 ft.; *elegans alba*, white; *fragrans*, yellow, April, 8 in., Algiers; *gesneriana*, scarlet and black, fragrant, May, 2 ft., S. Russia and Asia Minor, parent of florists' tulips; *Greigi*, scarlet, yellow, and black, April, 6 to 9 in., Turkestan; *kaufmanniana*, white, red, and yellow, 6 in., Turkestan; *kolpakowskyana*, yellow and rose, 8 in., April, 2 ft., Central Asia; *Leichtlinii*, pink and white, May, 1 ft., Kashmir; *macrospila*, crimson and black, fragrant, May, 2 ft.; *orphanidea*, yellow, May, 18 in., Greece; *platystigma*, magenta, blue, and white, May, 1 ft., parent of the Parrot Tulips, S. Europe; *oculis-solis*, red, yellow, and black, April, 18 in.; *præcox*, red and black, April, 2 ft., S. Europe; *primulina*, yellow and red, spring, 6 in., Algiers; *retroflexa*, yellow, May, 1 ft.; *spathulata*, red and black, May, 2 ft., Italy; *suavolens*, scarlet and yellow, fragrant, May, 6 in., Crimea; *sylvestris*, yellow, May, 18 in., Europe; *undulatifolia*, crimson, yellow and black, 9 in., Asia Minor; *violacea*, mauve, spring, 6 in., N. Persia; *viridiflora*, yellow and green, June, 1 ft.; *vitellina*, yellow, May, 18 in.

**Tulip Tree** (*Liriodendron tulipifera*).—See *Liriodendron*.

**Tunbridge Filmy Fern** (*Hymenophyllum Tunbridgense*).—See *Hymenophyllum*.

**Tupelo-tree** (*Nyssa aquatica*).—See *Nyssa*.

**Turban Bellflower** (*Campanula turbinata*).—See *Campanula*.

**Turban Lily** (*Lilium pomponium*).—See *Lilium*.

**Turfing Daisy** (*Pyrethrum Tchihatchewi*).—See *Pyrethrum*.

**Turkestan Tulip** (*Tulipa Greigi*).—See *Tulipa*.

**Turkey Oak** (*Quercus Cerris*).—See *Quercus*.

**Turkey Rhubarb** (*Rheum palmatum*).—See *Rheum*.

**Turkey's-beard** (*Xerophyllum asphodeloides*).—See *Xerophyllum*.

**Turk's-cap Cactus** (*Melocactus communis*).—See *Melocactus*.

**Turk's-cap Lily** (*Lilium Martagon*).—See *Lilium*.

**Turk's-head Grass** (*Lagurus ovatus*).—See *Lagurus*.

**Turnip**.—See *Brassica*.

**Turnip Fern** (*Angiopteris erecta*).—See *Angiopteris*.

**Turnip-rooted Celery**.—See *Apium*.

**Turnsole** (*Heliotropium peruvianum*).—See *Heliotropium*.

**Turquoise-berried Vine** (*Vitis heterophylla humulifolia*).—See *Vitis*.

**Turtle-head**.—See *Chelone*.

**Tussilago** (*Variegated Coltsfoot*).—Ord. *Compositæ*. Hardy herbaceous perennial. Orn. foliage. Leaves, roundish heart-shaped, margined or spotted with creamy white.

**CULTURE**: Compost, two parts loam, one part leaf-mould & sand. Pot, March. Position, cold greenhouse, frame, or window. Water freely, April to Oct.; keep nearly dry afterwards. May be grown outdoors in damp shady borders and ordinary soil. Plant, March. Propagate by division, March.

**SPECIES CULTIVATED**: *T. Farfara variegata*, 6 in., Britain.

**Tutsan** (*Hypericum Androsæum*).—See *Hypericum*.

**Tweedia**.—See *Oxypetalum*.

**Twin-flower** (*Linnæa borealis*).—See *Linnæa*.

**Twin-leaf** (*Jeffersonia binnata*).—See *Jeffersonia*.

**Twin-leaved Lily of the Valley** (*Maianthemum convallaria*).—See *Maianthemum*.

**Tyerman's Groundsel** (*Senecio pulcher*).—See *Senecio*.

**Typha** (*Reed Mace*).—Ord. *Typhaceæ*. Hardy aquatic perennials. Inflorescence, brown; July.

**CULTURE**: Soil, ordinary. Position, margins of shallow rivers or ponds. Plant, Oct. or March, by division.

**SPECIES CULTIVATED**: *T. angustifolia*, 4 to 5 ft., and *T. latifolia*, 4 to 6 ft., both natives of Britain.

**Ulex** (*Furze*; *Gorse*; *Whin*).—Ord. *Leguminosææ*. Hardy evergreen shrubs.

**CULTURE**: Soil, ordinary. Position, sunny banks, rockeries, or woodlands. Plant, Sept. to April.

**HEDGE CULTURE**: Plant 18 in. apart in single row. Trim sides in moderately close in April. Propagate by seeds sown  $\frac{1}{4}$  in. deep in light soil outdoors in April; cuttings inserted in ordinary soil in shady position outdoors, spring or autumn.

**SPECIES CULTIVATED**: *U. europæus flore pleno*, yellow, double, 6 ft., spring, Europe (Britain).

**Ulmus** (*Elm*; *Wych Elm*).—Ord. *Urticaceæ*. Hardy deciduous trees. Flowers, insignificant. Leaves, green or variegated.

**CULTURE**: Soil, ordinary for common species (*U. campestris*); deep rich loamy with gravelly subsoil for *Wych Elm* (*U. montana*); moist loamy for *American Elm* (*U. americana*). Position, open & sunny woodlands, parks, or shrubberies for all species & varieties. Plant, Oct. to Feb.

**CULTURE FOR TIMBER PURPOSES**: Soil, clay, loam, chalk, or gravel. Position, hedge rows or avenues. Plant autumn, 20 to 25 ft. apart. Timber fine, hard grain, & brown in colour. Used for coffin making, cart & wagon making, furniture, etc. Average price per cubic ft., 7d. to 1s. 6d. Average weight of timber per cubic ft., 43 lb.; number of cubic ft. per ton, 52. Average life of tree, 400 to 500 years. Altitude to which Elm will thrive, 1,500 ft. Number of seeds to a pound, 70,000. Average height of trees, 150 ft. Average price of trees per 1,000: 2 years old, 5s.; 2 to 3 years, transplanted, 20s. to 25s.

**PROPAGATION:** Propagate by suckers removed & planted Oct. to Nov.; layering shoots in Sept. or Oct.; budding choice kinds on common species, & choice variegated kinds on *U. montana* in July, or by grafting similarly in March; seeds gathered as soon as ripe & sown in light soil in shady position outdoors.

**SPECIES CULTIVATED:** *U. alata* (Winged Elm), 30 to 40 ft., S.U. States; *americana* (American Elm), 50 to 100 ft., N. America; *campestris* (Common Elm), 70 to 120 ft., Europe, N. Africa, Siberia, etc.; *campestris suberosa* (Cork-barked Elm); *campestris pendula*, weeping variety; *campestris variegata*, variegated; *glabra* (Wych Elm), 50 to 70 ft., Europe; *glabra cornubiensis* (Cornish Elm); *glabra pendula*, weeping form; *montana* (Scotch Elm), 60 to 100 ft., Europe, N. Asia, etc.; *montana vegeta* (Huntingdon Elm).

**Umbilicus.**—See *Cotyledon*.

**Umbrella Fern.**—See *Gleichenia*.

**Umbrella Fir** (*Sciadopitys verticillata*).—See *Sciadopitys*.

**Umbrella Leaf** (*Diphylleia Cymosa*).—See *Diphylleia*.

**Umbrella Palm** (*Hedyscepe canterburyana*).—See *Hedyscepe*.

**Umbrella Pine** (*Pinus pinca*).—See *Pinus*.

**Umbrella Plant.**—See *Saxifraga* & *Cyperus*.

**Umbrella Tree** (*Magnolia tripetala*).—See *Magnolia*.

**Ungernia.**—Ord. *Amaryllidæ*. Greenhouse bulbous-rooted plant.

**CULTURE:** Compost, two parts sandy loam, one part equal proportions of leaf-mould & cow manure. Pot dry bulbs, Sept. to Dec.; afterwards repotting annually immediately after flowering. Bury bulbs about two-thirds of their depth. Water moderately from time flowers show till leaves appear, then freely; keep quite dry after leaves fade. Temp., Sept. to April 55° to 65°. Place pots from April to Sept. in light sunny position. Propagate by offsets treated as bulbs, Sept. to Dec.

**SPECIES CULTIVATED:** *U. trisphæra* (Syn. *Lycoris Semerzowii*), red, summer, 8 in., N. India.

**Unicorn-plant.**—See *Martynia*.

**Unicorn-root** (*Veltheimia viridifolia*).—See *Veltheimia*.

**Uniola** (Sea Oat).—Ord. *Graminaceæ*. Hardy perennial grasses. Orn. flowering. Inflorescence borne in large loose panicles, July & Aug.

**CULTURE:** Soil, ordinary. Plant, March or April. Position, open sunny borders. Gather inflorescence & dry for winter use in Aug. Propagate by seeds sown in light rich soil outdoors in April; by division of roots in March.

**SPECIES CULTIVATED:** *U. latifolia*, 4 ft.; *paniculata*, 6 to 8 ft., N. America.

**Urceolina** (Golden Urn-flower; Drooping Urn-flower).—Ord. *Amaryllidaceæ*. Greenhouse deciduous bulbous plants. First introduced 1836.

**CULTURE:** Compost, two parts turfy loam, one part river sand, & a few crushed bones. Position, well-drained pots in light part of house. Pot, Feb., burying bulb about two-thirds of its depth. Water freely from time growth begins (about Feb.) until Sept., when keep quite dry. Apply liquid manure when flower spike shows. Top-dress annually & repot every three or four years only. Temp., Feb. to Sept. 55° to 65°; Sept. to Feb. 40° to 50°. Propagate by seeds sown 1-16 in. deep in well-drained pots of sandy loam in temp. 65° to 70° in March, placing seedlings singly in 2-in. pots & keeping them moderately moist all the year round for three years; by offsets treated as old bulbs.

SPECIES CULTIVATED: *U. pendula* (Syn. *U. aurea*), yellow and green, summer, 1 ft., Peru.

**Ursinia**.—Ord. Compositæ. Half-hardy annual. First introduced 1836.

CULTURE: Soil, ordinary. Position, sunny beds or borders. Sow seeds, Feb. or March in ordinary light mould in pots, pans, or boxes in temp. 55° to 65°, & transplant seedlings when an inch high to 3 in. apart in shallow boxes; place in cold frame in April; harden off & plant outdoors, May or June. Also sow seeds in open ground in April where required to grow, & thin seedlings to 4 or 6 in. apart when 1 to 6 in. high.

SPECIES CULTIVATED: *U. pulchra* (Syn. *Sphenogyne speciosa*), yellow and brown, summer, 1 ft., S. Africa.

**Utricularia** (Bladderwort).—Ord. Lentibulariaceæ. Stove aquatic herbs. First introduced 1871.

CULTURE: Compost, equal parts fibrous peat, sphagnum moss, & crocks. Position, well-drained pots or shallow pans placed on inverted pots in saucer of water under bell-glass or hand-light in shade. Pot, March or April. Water freely, April to Sept.; moderately afterwards. Admit air for a few minutes daily every morning by tilting bell-glass or hand-light. Temp. Oct. to March 55° to 65°; March to Oct. 70° to 85°. Propagate by seeds sown on surface of shallow pans filled with equal parts of sphagnum moss, peat, & sand, placed under bell-glass & kept moist in temp. of 55° to 65°, Feb., March, or April; division of plants at potting or planting time.

SPECIES CULTIVATED: *U. Endriesii*, green, lilac and yellow, spring, 4 in., Costa Rica; *montana*, white and yellow, summer, 6 in., Trop. America.

**Uvularia** (Bell-wort).—Ord. Liliaceæ. Hardy bulbous plants. First introduced 1710.

CULTURE: Soil, moist peat. Position, partially shaded border. Plant, Oct. & Nov. Propagate by division of roots in Oct.

SPECIES CULTIVATED: *U. grandiflora*, yellow, May, 1 ft., N. America; *perfoliata*, yellow, May, 1 ft., N. America.

**Vaccinium** (Whortleberry; Bilberry; Huckleberry).—Ord. Vacciniaceæ. Hardy deciduous & evergreen flowering or berry-bearing shrubs. Berries, red, bluish black; edible; Aug. to Oct.

CULTURE: Soil, boggy peat. Position, moist rockeries for *V. vitis-ideæ* & *V. myrtillus*. Plant, Sept., Oct., March, or April. No pruning required. Propagate by seeds sown in shallow boxes or pans filled with moist sandy peat in temp. of 55° to 65° in spring, transplanting seedlings outdoors in summer; cuttings of shoots inserted in sandy moist peat under hand-light in shade in summer; layering shoots in autumn; division of plants, Sept. or March.

SPECIES CULTIVATED: *V. myrtillus* (Bilberry or Whortleberry), rose and green, spring, berries dark blue, 18 in., N. Hemisphere (Britain); *vitis-ideæ* (Cowberry or Flowering Box), pink, spring, trailing, evergreen, N. Hemisphere (Britain).

**Valerian** (*Centranthus ruber*).—See *Centranthus*.

**Valeriana** (Cretan Spikenard).—Ord. Valerianaceæ. Hardy perennial herbs. Flowering & orn. foliage. Leaves, golden yellow.

CULTURE: Soil, ordinary. Position, sunny borders. Plant, Sept. to April. Lift, divide, & replant every three or four years. Top-dress annually with decayed manure in April. Cut down flowering stems in Oct. Flower buds should be picked off as they form. Propagate by seeds sown 1-16 in. deep in light soil in sunny position outdoors in April; division of roots in March or April.

SPECIES CULTIVATED: *V. phu aurea*, white, Aug., 2 ft., Caucasus.

**Valerianella** (Corn Salad; Lamb's Lettuce).—Ord. Valerianaceæ. Hardy annual salad vegetable. Leaves, largely used in winter & spring for salads.

**CULTURE:** Soil, ordinary. Position, sunny dryish border. Sow seeds in drills, 1 in. deep & 6 in. apart fortnightly during Aug. & Sept. Thin seedlings when three leaves form to 6 in. apart in the row. Gather leaves either separately or by cutting off the entire plant.

**SPECIES CULTIVATED:** *V. olitoria*, blue, April, 6 in., Europe (Britain).

**Vallisneria** (Eel Grass; Tape Grass).—Ord. Hydrocharidaceæ. Half-hardy aquatic herb. First introduced 1818. Flowers, white; minute; July. Leaves, long, narrow.

**CULTURE:** Soil, rich loam. Position, deep tubs, cisterns, or aquariums filled with water. Plant in small pot or in heap of compost in bottom of tank, etc., March or April. Temp., Sept. to March 45° to 50°; March to Sept. 60° to 75°. Propagate by seeds sown in moist loam in water; spring; division, March or April.

**SPECIES CULTIVATED:** *V. spiralis*, S. Europe.

**Vallota** (Scarborough Lily).—Ord. Amaryllidaceæ. Greenhouse evergreen bulbous plants. First introduced 1774.

**CULTURE:** Compost, equal parts good fibrous loam, leaf-mould, & sand. Position, well-drained pots in light sunny greenhouse or window. Pot imported bulbs, Oct., Nov., March, or April. Repot established plants in June or July. Place bulbs with points just below the surface; pot firmly. Water moderately, Sept. to March; freely, March to June; keep nearly dry, June to Sept. Apply stimulants once or twice a week, March to June. Established plants do best placed in sunny cold frame, or on layer of cinder ashes or slate, tile, or board in open air. May till flowering period. Repotting necessary every three or four years only. Temp., Sept. to March 40° to 50°; March to June 55° to 65°.

**OUTDOOR CULTURE:** Soil, light sandy loam. Position, warm well-drained border at foot of S. wall. Plant bulbs, Oct., Nov., March, or April, 6 in. deep & surround with sand. Press soil firmly round bulbs. Protect in winter with a covering of dry litter or fern fronds. Propagate by offsets removed at potting or planting time.

**SPECIES CULTIVATED:** *V. purpurea*, red, August, 2 to 3 ft.; *purpurea eximia*, white and crimson; *purpurea magnifica*, large flowered; *purpurea major*, scarlet; *purpurea minor*, red, dwarf. *Hybrida* is a hybrid between *V. purpurea* and *Cyrtanthus sanguineus* and bears vermilion-coloured flowers.

**Vanda** (Cowslip-scented Orchid).—Ord. Orchidaceæ. Stove epiphytal orchids. First introduced 1810.

**CULTURE:** Compost, clean potsherds & fresh sphagnum moss only. Position, teak baskets suspended from roof, or pots filled three parts of their depth with potsherds, remainder sphagnum moss; or on rafts of teak wood. *V. teres* does best with its stems secured to a branch of apple or oak fixed firmly in a pot. Pot, place in baskets or on rafts in March. In potting or basketing insert the roots carefully among the potsherds, & finish off with a layer of fresh sphagnum moss. Water copiously daily, March to Oct.; moderately afterwards. Plants on rafts require to be dipped for a few moments daily in water. Expose plants fully to the sun all the year round. Moist atmosphere highly essential, March to Oct. Growing period, March to Oct. Temp., Oct. to March 60° to 70°; March to Oct. 75° to 85°. Propagate by cutting tops, furnished with one or two roots, off tall plants,

or by removing young growths with roots attached from base of plants in Feb. or March, & potting or placing in baskets as advised for old plants.

**SPECIES CULTIVATED:** *V. amesiana*, white, rose, and magenta, various seasons, fragrant, India; *Bensoni*, white, violet, and pink, various seasons, Burma; *cærulea*, lavender blue, autumn, N. India; *cærulescens*, purplish blue, summer, Burma; *denisoniana*, white, summer, Burma; *hookeriana*, white, rose, and magenta-purple, autumn, Malaya; *insignis*, brown, chocolate, yellow, white, and rose, winter, Timor; *kimballiana*, white, rosy purple, yellow, and brown, autumn, Burma; *Parishii*, yellow, brown, magenta, and violet, fragrant, summer, Burma; *Roxburghii*, green, brown, purple, and white, summer, India; *sanderiana*, pink, yellow, and crimson, summer, Philippines; *suavis*, white, purple, and rose, fragrant, Java; *teres*, white, rose, orange, and magenta, spring, India; *tricolor*, yellow, white, magenta and purple, various seasons, Java.

**Vanilla.**—Ord. Orchidaceæ. Stove climbing orchid. First introduced 1800. Seed pods form the vanilla of commerce.

**CULTURE:** Compost, equal parts peat, sphagnum moss, & clean potsherds. Position, well-drained pots, pans, or narrow bed with shoots trained up wall or rafter, or logs of wood. Pot or plant, Feb. or March. Water copiously, March to October; moderately afterwards. Shade from sun. Syringe foliage daily in summer. Temp., March to Sept. 70° to 85°; Sept. to March 55° to 65°. Propagate by cuttings of climbing stems cut into 2 or 3 in. lengths & imbedded in sphagnum moss & peat in temp. of 75° to 85° in spring.

**SPECIES CULTIVATED:** *V. planifolia* (Vanilla Plant), white, summer, 10 to 20 ft., Central America.

**Vanilla Orchid** (*Vanilla planifolia*).—See Vanilla.

**Vegetable Marrow.**—See Cucurbita.

**Vegetable Oyster** (*Tragopogon porrifolius*). — See Tragopogon.

**Veltheimia.**—Ord. Liliaceæ. Greenhouse bulbous plants. First introduced 1768.

**CULTURE:** Compost, two parts sandy loam, one part well-decayed cow manure, & little sand. Position, light sunny greenhouse or window, Sept. to June; sunny cold frame remainder of year. Pot bulbs of *V. viridifolia*, Aug. to Nov.; those of *V. glauca* & *intermedia*, Oct. to March. Place bulbs with point just below surface of compost. Press compost firmly in pots. Water moderately when new growth commences; freely when in full growth; keep nearly dry when leaves die off. Apply stimulants occasionally when the plants are growing freely. Temp., Sept. to March 40° to 50°; March to June 55° to 65°. Propagate by offsets removed from parent bulbs, placed in small pots & treated as advised for large bulbs; by leaves removed close to bulbs & inserted singly in pots of sandy soil in spring or summer.

**SPECIES CULTIVATED:** *V. glauca*, flesh, March, 18 in. to 2 ft.; *intermedia*, flesh, April, 12 to 18 in.; *viridifolia*, flesh, Aug., 2 ft. All natives of S. Africa.

**Venetian Sumach** (*Rhus Cotinus*).—See Rhus.

**Venidium.**—Ord. Compositæ. Half-hardy annuals.

**CULTURE:** Soil, ordinary. Position, sunny borders. Propagate by seeds sown in light soil in temp. 55° to 65°, March or April; transplanting seedlings outdoors, May or June.

**SPECIES CULTIVATED:** *V. fugax* (Syn. *V. calendulaceum*), orange and black, summer, 18 in., S. Africa.

**Venus's Fly Trap** (*Dionæa muscipula*).—See *Dionæa*.

**Venus's Looking-glass** (*Specularia speculum*).—See *Specularia*.

**Venus's Navel-wort** (*Omphalodes linifolia*).—See *Omphalodes*.

**Veratrum** (False Hellebore).—Ord. Liliaceæ. Hardy herbaceous perennials. First introduced 1548. Leaves, large, much ribbed, green. Roots, creeping; highly poisonous.

**CULTURE:** Soil, light ordinary or peaty. Position, partially shady moist borders. Plant, Oct. to April. Propagate by seeds sown in moist peaty soil outdoors, March or April; division of roots, Oct. or April.

**SPECIES CULTIVATED:** *V. album* (White Hellebore), white, July, 3 to 4 ft., Europe; *nigrum* (Black Hellebore), purple, summer, 3 ft., Europe; *viride* (Green Hellebore or Indian Poke), green, July, 3 ft., N. America.

**Verbascum** (Mullein; Aaron's Rod).—Ord. Scrophulariaceæ. Hardy biennial & perennial herbs.

**CULTURE OF BIENNIAL SPECIES:** Soil, ordinary. Position, sunny borders. Sow seeds in light rich soil in sunny position outdoors in April, transplanting seedlings when three or four leaves form, 6 in. apart in sunny position until following April; then plant where required to flower.

**CULTURE OF PERENNIAL SPECIES:** Soil, deep light rich ordinary. Position, sunny borders. Plant, Oct., Nov., March, or April. Propagate by seeds as advised for biennial species; by division of roots in March or April.

**BIENNIAL SPECIES.**—*V. olympicum* (Olympian Mullein), yellow, summer, 6 ft., Bithynia.

**PERENNIAL SPECIES:** *V. Chaixii* (Nettle-leaved Mullein), yellow, summer, 3 ft., S.W. Europe; *nigrum* (Dark Mullein), yellow, summer, 3 ft., Europe; *phœniceum* (Purple Mullein), violet and red, summer, 3 ft., Europe.

**Verbena** (Vervain).—Ord. Verbenaceæ. Hardy biennials & greenhouse shrubby & hardy herbaceous perennials. Present race of bedding verbenas originally derived from *V. teucrioides* and other species not now cultivated. First introduced 1774.

**CULTURE OF BEDDING VERBENAS:** Compost, two parts good turfy loam, & one part of equal proportions of decayed manure, leaf-mould, & sharp silver sand. Position, pots in light greenhouse; or cold frames in summer. Pot, Feb. to May. Water freely, April to Oct.; moderately afterwards. Apply stimulants two or three times weekly to plants in flower. Nip off points of shoots during spring to induce bushy growth. Discontinue nipping off points of shoots six weeks before plants are required to flower. Young plants struck from cuttings or raised from seed best adapted for pot culture. Temp., Oct. to March 40° to 50°; March to June 55° to 65°. Shade from sun.

**OUTDOOR CULTURE:** Soil, good ordinary liberally enriched with decayed manure. Position, sunny beds or borders. Plant 12 in. apart each way in June. Water freely in dry weather. Peg shoots to surface of bed as they grow, & when they meet each other nip off their points.

**CULTURE OF BIENNIAL SPECIES:** Soil, ordinary. Position, sunny borders. Sow seeds in light soil in temp. 55° in Feb., harden off seedlings in cold frame in April, & plant out 12 in. apart in May; or where required to grow in April.

**CULTURE OF *V. VENOSA*:** Soil, ordinary rich. Position, sunny beds or borders. Plant, May. Lift roots in Oct., store in ordinary soil in boxes in frost-proof place until March, then place in temp.

55°, & when new shoots form remove these with portion of old roots, place in small pots, harden off & plant out 12 in. apart in May; or plant old roots, dividing them, if necessary, direct into beds in April. Peg shoots down as they grow. May be grown outdoors altogether in well-drained soils in sheltered districts.

**PROPAGATION OF VERBENAS:** Propagate garden verbenas by seeds sown 1-16 in. deep in pots, pans, or boxes filled with a compost of equal parts loam & leaf-mould & little sand, placed in a temp. 65° to 75° in Jan., Feb., or March, transplanting seedlings when third leaf forms in boxes or pans, placing these on shelf near glass in temp. 55°, transferring when fairly strong singly to 2½-in. pots, & later on to a larger size; by cuttings inserted in a bed of sandy soil in cold frame in Aug., lifting cuttings when rooted & planting 2 in. apart in boxes or pans & storing on shelf in greenhouse until March, then potting off singly in small pots; or young shoots taken off in Feb. or March, & inserted in damp sand under bell-glass in temp. 65°; *V. venosa*, by division of the roots in spring, or cuttings of shoots inserted in cold frame in Aug.

**BIENNIAL SPECIES:** *V. Aubletia* (Rose Vervain), purple or lilac, summer, 1 ft., N. America, hardy.

**HALF-HARDY SPECIES:** *V. venosa*, lilac, summer, 2 ft., Argentine.

**Vernonia** (Ironweed).—Ord. Compositæ. Hardy herbaceous flowering plants. First introduced 1710.

**CULTURE:** Soil, rich, sandy loam. Position, sunny borders. Plant, March or April. Top-dress with decayed manure in spring. Propagate by seeds sown in sandy soil in a cold frame in March or April, or outdoors in a sunny border in April; also by division of the roots in March or April.

**SPECIES CULTIVATED:** *V. altissima*, purple and violet, autumn, 4 ft., U. States; *arkansana*, purple, autumn, 3 to 4 ft., N. America; *noveboracensis*, purple, summer, 4 to 5 ft., U. States.

**Veronica** (Speedwell).—Ord. Scrophulariaceæ. Half-hardy & hardy evergreen flowering shrubs & hardy herbaceous perennials.

**CULTURE OF SHRUBBY SPECIES:** Soil, ordinary or loam & peat. Position, sunny rockeries, borders, or beds near the sea coast, or in inland sheltered districts south of the Trent. Plant, Sept. or April. Protect in very severe weather. Prune straggly plants into shape in April.

**POT CULTURE:** Compost, two parts loam, one part peat, & little sand. Position, sunny greenhouse, windows, corridors, porches, or balconies. Pot, Sept. or March. Water freely, April to Oct.; moderately other times. Apply stimulants occasionally to healthy plants during summer. Plants put out in rich soil in sunny position in May, kept well watered, lifted, & placed in pots in Sept., will usually flower freely in the greenhouse during autumn.

**CULTURE OF HARDY PERENNIAL SPECIES:** Soil, ordinary rich. Position, sunny borders or rockeries. Plant, Sept. to Nov., Feb. to May. Lift, divide, & replant triennially. Water freely in dry weather. Mulch annually in April with decayed manure. Propagate shrubby species by cuttings inserted in sandy soil under bell-glass in spring; under hand-light or in cold frame in summer; perennials by division of roots in autumn or spring; seeds sown in light soil in shade outdoors in April.

**SHRUBBY SPECIES:** *V. Andersoni*, blue, summer, 2 to 3 ft.; *Andersoni variegata*, variegated; *Bidwellii*, white and violet, summer, 6 to 12 in., New Zealand;



cupressoides, violet, summer, 2 to 3 ft., New Zealand; chathamica, purple, summer, 1 ft., New Zealand; elliptica (Syn. *V. decussata*), white, summer, 3 to 8 ft., New Zealand; Lewisii, white and blue, summer, 4 to 6 ft., New Zealand; Lyallii, white, summer, 1 ft., New Zealand; salicifolia, white, summer, 3 to 6 ft., New Zealand; speciosa, blue, May, 2 to 3 ft., New Zealand; Traversii, white, summer, 4 to 6 ft., New Zealand.

PERENNIAL SPECIES: *V. corymbosa*, blue, Sept. and Oct., 8 in., Alps; *gentianoides*, blue, June, 8 to 12 in., S.E. Europe; *gentianoides alba*, white; *gentianoides variegata*, variegated; *incana*, blue, summer, 18 in., S. Europe; *longifolia*, lilac blue, Aug., 18 in. to 2 ft., Europe; *longifolia subsessilis*, blue, 3 to 4 ft.; *orientalis*, fleshy pink, summer, 1 ft., Asia Minor; *repens*, white, summer, 2 to 3 in., Corsica; *saxatilis*, blue, July, 6 in., Europe; *spicata*, blue, July, 12 to 18 in., Europe; *spicata alba*, white; *spicata corymbiflora*, blue; *Teucrium dubia* (Syn. *v. rupestris*), blue, summer, 3 to 6 in., Europe; *virginica*, white, July, 4 to 6 ft., N. America.

**Verschaffeltia.**—Ord. Palmaceæ. Stove palm. Orn. foliage. First introduced 1864. Leaves, roundish, divided at tips; bright green.

CULTURE: Compost, two parts fibrous peat, one part equal proportions charcoal, turfy loam, & sand. Position, moist shady part of stove. Pot, Feb. or March. Syringe freely twice daily, Feb. to Oct.; once daily afterwards. Water freely at all times. Shade & moist atmosphere essential. Temp., March to Oct. 70° to 85°; Oct. to March 65° to 75°. Propagate by seeds sown 1 in. deep in peat & loam in small pots in temp. 75° to 85°, spring.

SPECIES CULTIVATED: *V. splendida*; 12 to 80 ft., Seychelles.

**Vervain.**—See *Verbena*.

**Vetch, Kidney.**—See *Anthyllis*.

**Vetch, Spring** (*Vicia lathyroides*).—See *Vicia*.

**Viburnum** (Guelder Rose; *Laurustinus*; Wayfaring Tree; Snowball Tree).—Ord. Caprifoliaceæ. Hardy deciduous and evergreen flowering shrubs.

CULTURE: Soil, good ordinary. Position, open sunny shrubberies. Plant, Oct. to March. Thin out weak growths in winter, but otherwise prune.

CULTURE OF LAURUSTINUS: Soil, deep sandy loam. Position, warm sheltered shrubberies, etc. Plant, Sept., Oct., or April. Prune, April. This species also suitable for pot culture for flowering in cold greenhouses in winter. Pot, spring. Position, outdoors in semi-shady position, May till Oct.; in cold greenhouse, Oct. to May. Water freely while outdoors; moderately in winter. Propagate by cuttings of half-ripened shoots inserted in sandy loam under bell-glass in cold shady frame or hand-light outdoors in Sept. or Oct.; or by layering shoots in Sept. or Oct.

DECIDUOUS SPECIES: *V. macrocephalum*, white, June, 15 to 20 ft., China; *opulus* (Wild Guelder Rose), white, June, 8 ft., Europe (Britain); *opulus sterile*, sterile-flowered (the Garden Guelder Rose or Snowball Tree); *tomentosum plicatum* (Syn. *V. plicatum*), white, May, sterile-flowered, 6 ft., Japan.

EVERGREEN SPECIES: *V. Tinus* (*Laurustinus*), white and pink, winter, 8 to 10 ft., Mediterranean Region.

**Vicia** (Vetch; Broad Bean).—Ord. Leguminosæ. Hardy annual & perennial herbs, including the well-known vegetable called the Broad Bean.

CULTURE OF ANNUAL SPECIES: Soil, ordinary. Position, sunny borders, with shoots trained up tree branches, walls, or trellises. Sow seeds ½ in. deep in groups of 8 or 12 in April. Water freely in dry weather.

CULTURE OF PERENNIAL SPECIES: Soil, ordinary. Position, sunny borders. Plant, Oct. to March. Mulch annually with decayed

manure. Lift, divide, and replant every four or five years. Cut down flower stems, Oct. or Nov. Propagate by seeds sown  $\frac{1}{2}$  in. deep in ordinary soil in sunny position outdoors, March or April; division of roots, Oct. or March.

**CULTURE OF BROAD BEANS:** Soil, rich, well-manured, moist loam, for main crops; lighter, rich soil for early ones. Position, south borders for early crops; open garden for main or late ones. Sow early longpod varieties in Jan. & Feb., main crop sorts in March & April. Distances: Drills 3 in. deep & 2 $\frac{1}{2}$  ft. apart for early; 3 in. deep & 3 ft. for main crops. Seeds to be 4 to 6 in. apart in drills. Soak seeds in water for a few hours before sowing. Nip off points of plants when first flowers open. Mulch late crops with decayed manure, especially on light soils. Manures: Kainit, 2 lb.; superphosphate, 5 lb.; sulphate of iron, 1 lb. Apply these quantities per square rod before sowing. Crop ready for use 18 weeks after sowing. Seeds take 12 to 14 days to germinate. Seeds retain their germinating powers one year. Quantity of seeds to sow a row 50 ft. long, 1 pint.

**MARKET CULTURE:** Soil, rich, strong, moist loam. Manures, 15 to 20 tons of farmyard manure applied per acre in autumn to poor soils; none on rich soils. In latter case apply 3 cwt. of superphosphate & 3 cwt. kainit per acre before sowing, and 1 cwt. nitrate of soda when plants are 3 in. high. On heavy soils 6 cwt. basic slag per acre in autumn in place of superphosphate. Sow early Long-pod varieties 6 to 10 in. apart in drills 2 in. deep and 2 ft. apart in Feb.; main crop kinds 8 to 10 in. apart in drills 2 in. deep, and 3 ft. apart in March. Roll land afterwards. Quantity of seed required to sow an acre, 2 or 3 bushels. Hoe between crops occasionally. Market by the bushel. Average yield per acre, 150 bushels. Average returns (gross) per acre, £18 to £23.

**ANNUAL SPECIES:** *V. atropurpurea*, purple, June, 3 ft., S. Europe; *faba* (Broad Bean), white, June and July, 3 ft., East; *lathyroides* (Spring Vetch), lilac, May, 6 to 8 in., Europe; *narbonensis*, purple, June, 3 ft., S. Europe; *onobrychioides*, purple, June, 2 ft.

**PERENNIAL SPECIES:** *V. orobioides* (Syn. *Orobis lathyroides*), blue, June, 2 ft., Europe (Britain).

**Victoria** (Royal Water Lily; Queen Victoria's Water Lily).—Ord. Nymphaceæ. Stove aquatic plant. Orn. foliage. First introduced 1838. Leaves, roundish, flat, with turned-up edges; bronzy green; 4 to 6 ft. diameter; floating.

**CULTURE:** Compost, two parts good rich turfy loam, one part decayed cow manure. Position, large tank 6 ft. deep & 20 to 25 ft. wide filled with running water. Plant, May. Temp. of water, 80° to 85°. Temp. of atmosphere, 75° to 85°, March to Sept.; Sept. to March 65° to 70°. No shade required. Propagate by seeds sown in pot of sandy loam submerged in water heated to temp. of 85°, & placed near glass in light position, Jan. When seedlings appear above surface, transplant singly in small pots & place in water again until May, then plant out as above advised. The *Victoria Regia* is strictly a perennial, but thrives best treated as an annual in this country.

**SPECIES CULTIVATED:** *V. regia*, white, rose and purple, summer, Trop. America.

**Victoria Water Lily** (*Victoria regia*).—See *Victoria*.

**Victor's Laurel** (*Laurus nobilis*).—See *Laurus*.

**Viuessexia**.—See *Moræa*.

**Villarsia**.—See *Limnanthemum*.

**Vinca** (Periwinkle; Band Plant; Cut Finger; Madagascar Periwinkle).—Ord. Apocynaceæ. Hardy herbaceous perennials & stove overgreen shrubs.

**CULTURE OF STOVE SPECIES:** Compost, two parts fibrous loam, one part decayed manure, & little silver sand. Position, well-drained pots in stove, Sept. to June; sunny cold frame or greenhouse remainder of year. Pot, Feb. or March. Prune shoots of old plants to within 1 or 2 in. of their base in Jan. or Feb. Water freely, April to Oct.; moderately afterwards. Apply weak stimulants occasionally during summer & autumn. Nip off points of shoots in young or old plants once or twice during July & Aug. to insure bushy habit. Temp., March to June 65° to 75°; Sept. to March 55° to 65°.

**CULTURE OF HARDY SPECIES:** Soil, ordinary. Position, shady borders, rockeries, or shrubberies under trees. Plant, Oct. to April. Lift, divide, & replant only when absolutely necessary.

**POT CULTURE:** Compost, two parts sandy loam, one part leaf-mould, & little sand. Pot, Oct. to March. Position, pots suspended in wire baskets in cold or cool greenhouses, balconies, or windows. Water freely, April to Sept.; moderately afterwards. Repot annually. Propagate *V. rosea* by cuttings of young shoots removed when 2 or 3 in. long in spring, & inserted in sandy soil under bell-glass in temp. 65° to 75°. Hardy species by division in March or April.

**STOVE SPECIES:** *V. rosea* (Madagascar Periwinkle), rose, May, 1 ft., Tropics; *rosa alba*, white.

**HARDY SPECIES:** *V. difformis* (Syn. *Media*), blue, summer, 1 ft., S.W. Europe; major (Large Periwinkle), purple, summer, 2 ft., Europe (Britain); major variegata, variegated; minor (Lesser Periwinkle), blue, summer, 1 ft., Europe (Britain); minor flore pleno, double, blue; minor flore albo, white, double; minor foliis-argenteis, variegated with white; minor foliis-aureis, variegated with yellow.

**Vine.**—See *Vitis*.

**Viola** (Violet; Tufted Pansy; Pansy; Heartsease).—Ord. Violaceæ. Hardy perennial herbs.

**CLASSIFICATION:** Pansies in General.—Any free-growing or free-flowering strain, self-coloured, or variegated. Show Pansy.—Blooms circular, flat, & smooth, without wavy or crinkled edges; petals thick, velvety, & lying closely over each other; principal or ground colour of three lower petals pure white or yellow; dark circular blotch in centre of blooms, orange eye; dark narrow belt to three lower petals; same colour as upper petals; diameter 1½ in. Fancy Pansy.—Blooms circular, flat, & smooth, with wavy or crinkled edges; petals thick and velvety, lying closely over each other; solid, bright orange eye; large blotches of colour, with narrow belt or margin of another colour on three lower petals; top petals same colour as blotches or margins; colour, sometimes suffused; size 1½ in. to 2 in. in diameter. Tufted Pansy.—A name applied to a class of pansies, commonly called "violas," hybrids of the ordinary pansy and the Horned Violet (*V. cornuta*). Blooms smaller than those of ordinary pansies. Colours varied, chaste, & delicate. Habit, dwarf, not spreading as in the pansy. Trimardeau Pansy.—A strain of French origin, noteworthy for coarseness of blooms & gaudiness of colour. Violetta.—A strain of very dwarf pansies, the result of a cross between a pansy & *Viola cornuta*. Flowers, small, rayless, & fragrant.

**CULTURE OF SHOW, FANCY, AND TUFTED PANSIES:** Soil (a) deep, rich, moist loam, enriched with well-decayed cow manure;

(b) two parts loam, one part of equal proportions of leaf-mould & sand; (c) ordinary light mould, enriched with cow manure; (d) clayey or heavy soils, with decayed horse or cow manure. Soil best manured & dug previous autumn. Position, open, light, sheltered, away from roots & branches of trees, & shaded from midday sun. Plant pansies in Sept., Oct., or April, 12 in. apart each way; tufted pansies, March or April, 10 in. apart each way. Mulch with cow manure & leaf-mould in May or June. Stir the surface frequently. Water copiously in dry weather, applying it in the evening. Remove all flower buds until plants are established. If exhibition blooms are desired, allow only one bloom to grow on each shoot. Manures: (1) 1 oz. guano to a gall. of water; (2)  $\frac{1}{2}$  oz. sulphate of ammonia,  $\frac{1}{4}$  oz. superphosphate of lime,  $\frac{1}{4}$  oz. sulphate of iron to 2 gall. of water (Griffiths); (3) liquid soot, prepared by enclosing a peck of soot & a heavy stone in a canvas bag, and immersing this with a few crystals of sulphate of iron in 30 gall. of water, used undiluted; (4) liquid cow or sheep dung, prepared by placing a peck of dung in 30 gall. of water, keeping mixture stirred at intervals for a week, then applying liquid in a clear state undiluted. All the foregoing may be applied every ten days or so during growing & flowering season. Violettas best grown as edgings to beds or in patches on rockeries. Plant in May.

**CULTURE OF VIOLET:** Soil, ordinary, previously well-enriched with well-decayed manure. Clay soils require plenty of grit, decayed vegetable refuse & manure incorporated with them. Light & gravelly soils need a liberal amount of cow manure & loam or clay mixed with them. Position, border or bed on north or north-east side of hedge, or under the shade of fruit trees. Full exposure to hot summer sun undesirable. Plant "crowns" 9 in. apart in rows 12 in. asunder, April. "Crowns" are portions separated from parent plant, each furnished with roots. Water when first planted & shade from sun. Apply manures recommended for pansies at intervals of three weeks during summer. Remove runners, i.e. shoots that issue from the "crowns," as they form during summer, & keep plants free from weeds. Lift plants for winter blooming in Sept., & replant, 6 to 8 in. apart, in equal parts good soil & leaf-mould in a cold sunny frame. Water freely in fine weather. Protect from frost. In case of deep frames decayed manure may be used to fill up space to within 12 in. of light, putting 6 in. of above soil on this. Replant annually.

**POT CULTURE:** Compost, two parts loam, one part leaf-mould, & one part sand. Pot, April, placing six "crowns" in a 6-in. pot. Place in a shady frame, & water moderately. Plunge pots to their rims outdoors in shade in May, & let them remain till Sept., when remove to greenhouse. Water freely outdoors; moderately in winter. Winter temp., 40° to 50°.

**CULTURE OF OTHER SPECIES:** Soil, ordinary, rich. Position, moist, partially-shaded rockeries, beds, or borders. Plant, March or April, 3 to 6 in. apart. Propagate by seeds sown in light sandy soil in boxes or pans in cold shady frame in July or Aug., transplanting seedlings into flowering positions in Sept. or Oct.; by cuttings inserted in cold shady frames in Aug. or Sept.; divisions in Sept. or Oct.; violets by runners in April.

**SPECIES CULTIVATED:** *V. alpina*, purple, June, 3 in., E. Europe; *altaica* (Altaian Violet), purple, May, 6 in., Siberia; *biflora* (Twin-flowered Violet), yellow,

June, 3 in., Europe; *calcarata* (Spurred Violet), blue, May, 6 in., Europe; *calcarata pallida plena*, lavender, double; *canina* (Dog Violet), blue or white, May, 3 to 4 in., Europe; *cornuta* (Horned Violet), blue, summer, 6 in., Pyrenees, one of the parents of the Garden Viola or Tufted Pansy; *cornuta alba*, white; *cucullata* (Hollow-leaved violet), violet, spring, 3 to 4 in., N. America; *gracilis* (Olympian Violet), purple, June, 3 in., Greece; *lutea* (Mountain Violet), yellow, June, 3 in., Europe (Britain); *munbyana* (Munby's Violet), violet, spring, 4 in., Spain; *odorata* (Sweet Violet), blue, spring, 6 in., Europe (Britain); *odorata alba*, white; *odorata pallida plena* (Neapolitan Violet), lavender, double; *palustris* (Marsh Violet), white, May, 3 to 4 in., N. Europe (Britain); *pedata* (Bird's-foot Violet), blue, May, 6 in., N. America; *pedata alba*, white; *rothamagensis* (Rouen Violet), blue, summer, 6 in., Europe; *sylvestris* (Wood Violet), blue, spring, 6 in., Europe; *tricolor* (Pansy), yellow, purple and white, summer, 6 in., Europe (Britain).

**Violet**.—See Violet.

**Viper's Bugloss** (*Echium vulgare*).—See *Echium*.

**Virginian Bird Cherry** (*Prunus virginiana*).—See *Prunus*.

**Virginian Cowslip** (*Mertensia virginica*).—See *Mertensia*.

**Virginian Creeper**.—See *Vitis*.

**Virginian Poke** (*Phytolacca decandra*).—See *Phytolacca*.

**Virginian Raspberry** (*Rubus odoratus*).—See *Rubus*.

**Virginian Snow-flower** (*Chionanthus virginica*). — See *Chionanthus*.

**Virginian Spiderwort** (*Tradescantea virginica*). — See *Tradescantea*.

**Virginian Stock** (*Malcolmia maritima*).—See *Malcolmia*.

**Virginian Willow** (*Itea virginica*).—See *Itea*.

**Virgin's Bower**.—See *Clematis*.

**Viscum** (Mistletoe).—Ord. Loranthaceæ. Hardy evergreen parasitical plant. Fruit, white, roundish, viscid; winter.

**CULTURE**: Cut a notch in bark on underside of branch & press ripe berry gently thereinto. Time for insertion, March. Trees adapted for mistletoe culture: Apple, hawthorn, poplar, lime, maple, mountain ash, cedar, larch, & oak; two first most suitable.

**SPECIES CULTIVATED**: *V. album*, green, March, Europe (Britain).

**Vitex** (Chaste Tree; Tree of Chastity).—Ord. Verbenaceæ. Hardy evergreen flowering shrubs.

**CULTURE**: Soil, ordinary. Position, sheltered warm border or against S. wall. Plant, Oct. to Feb. Prune into shape moderately after flowering. Propagate by cuttings of shoots inserted in ordinary light sandy soil under bell-glass in cool greenhouse or cold frame, Sept. or Oct.

**SPECIES CULTIVATED**: *V. Agnus-castus*, lilac or white, Aug., 6 ft., S. Europe.

**Vitis** (Grape-vine; Virginian Creeper).—Ord. Ampelideæ. Hardy & stove deciduous & evergreen climbing shrubs. The genera *Ampelopsis* and *Cissus* are now included in the present genus.

**CULTURE OF GRAPE VINE**: Compost, five parts of top spit turfy loam from an old pasture chopped into small pieces, one part old lime rubbish, one part equal proportions of charcoal & wood ashes, & one part half-inch bones. Position, sunny, fairly dry subsoil. Borders: Inside for early forcing; outside for late or ordinary culture. Width, 10 to 16 ft.—that is equalling width of house. Depth, 3 ft. On cold clayey soils, surface of border best raised 18 in. above ordinary ground level, & bottom covered with layer of concrete. Place brick rubbish & old mortar 2 ft. deep at back, sloping to 18 in. in front, in bottom of border. On this put a layer of turves, grass side downwards, then fill the remaining space with above compost. A drain along the bottom of border is advisable. Plant, end of Jan.

or beginning of Feb.; or in the case of young plants raised from eyes in spring, June or July. Distance for planting: 5 ft. apart.

**PRUNING:** Shorten the stem of vine planted in Jan. or Feb. to within 3 in. of ground if inside; to within 2 in. of where it enters house if outside, directly after planting. Allow one strong shoot only to grow & form future stem; rub all others off when they first form. Prune this following Dec. halfway back if strong; two-thirds if weak. Second year: Allow side shoots to form & one young shoot to grow up roof 18 in. apart; rub off remainder in a young state. Nip off points of side shoots at first joint beyond bunch, if any, otherwise at third or fourth joints. Prune side shoots following Dec. close to last bud or eye near main stem to form spurs, & third portion of main stem same as advised for second portion. Third year: Allow side shoots to form at spurs, also on third portion of main stem. If more than one shoot forms at a spur, select strongest & rub off (disbud) remainder. Nip off points of shoots as before advised. Following Dec. shorten shoots issuing from spurs, also from third portion of main stem, to last eye or bud; also fourth portion of main stem to length of rafters. Fourth and subsequent years: Future pruning to consist of rubbing off (disbudding) all side shoots except one at each spur, nipping off (stopping) points at first joint beyond bunch or fourth from base, cutting back, Dec. or Jan., side shoots to last bud or eye from their base.

**STARTING TEMPERATURE AND WATERING:** Time for starting Vines: Nov. to ripen first in April; Dec. for May; Jan. for June; March for July. Vines started in March without artificial heat will ripen in Aug. or Sept. Temp. by night: 35° to 40° until buds break; 40° to 50° from then until flowers expand; 50° to 55° during flowering period; 60° to 70° from then until berries are ripe. Temp. by day: 60° on cold & 70° to 75° on sunny days until buds break; 65° on cold & 75° to 80° on sunny days until vines flower; 75° on cold & 85° to 90° on sunny days onwards till grapes are ripe. Watering Inside Borders: Apply water heated to temp. 60° at the rate of 4 to 5 gall. per square foot when vines are started; again when shoots are 6 in. long; also just before flowers expand; lastly, when berries begin to swell for second time. Watering Outside Borders: Apply water similar temp. & quantity just before flowering & when berries begin to swell second time. Syringe morning & afternoon daily until vines flower, then cease. Moistën floors, staging, walls, & borders several times daily from start until berries colour, then discontinue. Ventilation: Open the ventilators tentatively on fine days when the sun rises, & close again early in afternoon or when sun disappears. Ventilate freely night & day during ripening period.

**MANURES FOR GRAPE VINES:** Drainings from stable or manure heap, diluted with one-third water. Apply when berries first form, & again when they commence to colour. Special manures for various soils—(a) Sandy soils not containing much humus: 2 lb. of guano, 3 lb. kainit, mixed together, & latter crushed fine; apply at the rate of 2 oz. to a square yard once a week from time berries form until they change colour. (b) Sandy soils containing much humus: 1 lb. nitrate of soda, 2 lb. superphosphate, 3 lb. kainit, applied at the rate of 1½ oz. per square yard as advised for (a). (c) Calcareous soils: 1 lb. dried blood, 2 lb. superphosphate, 1 lb. sulphate

of potash, applied at the rate of 1 oz. to a square yard as recommended for (a). (d) Peaty soils: 1 lb. nitrate of soda, 3 lb. basic slag, 2 lb. sulphate of potash; apply 1 oz. to a square yard once a fortnight. Potash & soda to be crushed fine; mixture to be well washed in by a copious watering (Dyke). Top-dressing: Apply 2 in. of horse or cow manure to surface of border when vines commence to grow. Also compost of two parts loam, one part of equal proportions of wood ashes & bone shavings or ground bones applied in autumn, first removing loose inert soil from surface. Cropping: Average weight of fruit per foot run of rod, 1 lb. Average weight of a fair-sized bunch,  $\frac{3}{4}$  lb. Average number of bunches borne by a rod 12 ft. long, about 12. Allow one bunch only to each spur, for heavy crop; one to every alternate spur for moderate crop. Thin berries when size of radish seeds, and again later on, finally allowing a space of 1 in. between berries to enable them to fully develop. Avoid touching berries with hand or head. Temp. for grapes when ripe: 40° to 45°.

**POT CULTURE:** Two-year-old plants established in 10 or 12 in. pots best adapted for fruit in pots. No repotting required. Place in temp., 60°, Nov. to Feb. Give little water till buds break, then apply freely. Increase temp. to 65° after buds break, & to 75° when in flower; lower to 68° afterwards until stoning is completed, when again raise to 70°. Allow above temp. to be increased 5° to 10° by sun-heat. Syringe daily until vines flower. Thin berries when size of radish seeds. Apply one of above liquid stimulants three times weekly after berries form & until they are ripe. Top-dress with Standen's manure at the rate of a tablespoonful to each pot; or with two parts loam & one part Thomson's vine manure when berries form. Allow each vine to carry 6 to 8 bunches—8 to 10 lb. altogether.

**OUTDOOR CULTURE:** Soil, two parts sandy loam, one part of equal proportions of wood ashes, old mortar, half-inch bones, & rotten manure. Position, against a south sunny wall. Plant, 2 ft. apart, Nov. or March. Prune, Jan. or Feb., precisely as advised for indoor culture. Disbud also in a similar manner. Manures advised for indoor vines equally applicable for outdoor ones.

**USEFUL DATA:** Supposed date of introduction to England, 280 A.D. Heaviest bunch grown, 26 lb. 4 oz. Average yield in a house 200 ft. by 27 ft., 2,500 to 3,000 lb. Average returns at 1s. per lb., £150; at 2s. 6d., £375. Months in which best prices (2s. 6d. to 7s. 6d. per lb.) are obtained, Feb., March, April, & May; worst months (9d. to 2s.), Nov., Dec., & Jan.

**PROPAGATION:** By seeds sown in light mould in temp. 55° to 65° in spring; by "eyes" inserted in light sandy soil in temp. 65° to 75° in Jan., Feb., or March; by cuttings of shoots 6 in. long & having a slice of older branch attached at base, inserted in shady position outdoors in Oct. or Nov.; layering shoots in summer or autumn; in-arching in spring; grafting when the vines are in flower.

**CULTURE OF HARDY ORNAMENTAL VINES:** Soil, good ordinary, enriched with decayed manure. Position, walls or fences for Virginian Creepers; arbours, trellises, poles, pergolas, etc., for others. Plant in autumn. Prune away straggling shoots of Virginian creepers in winter; shorten previous year's shoots of other kinds not required to form new branches, to 1 in. from base in Feb. Propagate by seeds sown in heat in spring; cuttings of shoots, 6 to 8 in. long, inserted

in pots of sandy soil in cold frame in Sept. & Oct.; layering the shoots in autumn.

**CULTURE OF KANGAROO VINE:** Compost, two parts peat, one part leaf-mould, & one loam & sand. Pot, Feb. of March. Position, pots, or in well-drained beds, shoots trained up roof or on wire trellis. Water freely March to Sept., moderately afterwards. Temp., March to Sept. 55° to 60°; Sept. to March 45° to 55°. Propagate by cuttings, 2 in. long, of young shoots, removed with portion of stem attached, & inserted in 2-in. pot filled with sandy peat in temp. 85° in April.

**SPECIES CULTIVATED:** *V. æstivalis* (American Summer Vine), climber, U. States; *antarctica* (Kangaroo Vine), Syn. *Cissus antarctica*, greenhouse climber, Australia; *californica* (Californian Vine), climber, leaves crimson tinted in autumn, California; *Coignetii* (Japanese Vine), climber, leaves crimson tinted in autumn, Japan; *Engelmanni*, climber, stems self-clinging; *flexuosa major*, climber, leaves richly tinted in autumn, China and Japan; *heterophylla humulifolia* (Turquoise Berry Vine), dwarf climber, blue berries, China and Japan; *heterophylla humulifolia variegata*, leaves variegated; *inconstans* (Syn. *Ampelopsis Veitchii*), Veitch's Virginian Creeper, climber, stems self-clinging, Japan and China; *Labrusca* (American Fox Grape), climber, N. America; *quinquefolia* (Syn. *Ampelopsis hederacea*), the Virginian Creeper, climber, stems self-clinging, N. America; *vinifera*, parent of the cultivated Grape Vines, Orient; *vinifera purpurea*, purple-leaved.

**Vriesia.**—See *Tillandsia*.

**Wachendorfia.**—Ord. *Hæmoradacææ*. Half-hardy tuberous-rooted plants. First introduced 1687.

**OUTDOOR CULTURE:** Soil, light, rich sandy. Position, sunny well-drained border. Plant, Sept. to Jan., placing bulbs 4 in. deep & 2 in. apart. Lift & replant bulbs annually. Mulch surface of bed in March with cow manure.

**POT CULTURE:** Compost, two parts sandy loam, one part leaf-mould or decayed cow manure. Pot, 4½ in. in diameter, well drained. Place five bulbs, 3 in. deep, in each pot in Nov., & cover with cocoanut-fibre refuse in cold frame or under cool greenhouse stage until growth begins. Water moderately from time bulbs begin to grow until flowers fade, then gradually cease, keeping bulbs dry till Jan. Temp., Sept. to March 40° to 50°; other times, 50° to 60°. Propagate by offsets treated as advised for bulbs.

**SPECIES CULTIVATED:** *W. paniculata*, yellow, April, 3 ft.; *thrysiflora*, yellow, May, 2 ft.; natives of S. Africa.

**Wahlenbergia** (Bell-flower).—Ord. *Campanulacææ*. Greenhouse & hardy perennial herbs.

**CULTURE OF GREENHOUSE SPECIES:** Compost, equal parts peat and loam with a little silver sand. Position, pots in sunny greenhouse. Pot, March. Water freely, April to Oct.; moderately afterwards. Temp., March to Oct. 55° to 65°; Oct. to March 45° to 50°.

**CULTURE OF HARDY SPECIES:** Soil, ordinary. Position, sunny rockeries. Plant, Oct. to April. Propagate by seeds sown in a temp. of 55° in March or April; cuttings in summer; division in spring.

**GREENHOUSE SPECIES:** *W. saxicola* (New Zealand Bellflower), lilac, June, 6 in., New Zealand; *tuberosa*, white and rose, summer, 1 to 2 ft., Juan Fernandez.

**HARDY SPECIES:** *W. hederacea* (Syn. *Campanula hederacea*), Creeping Harebell, blue, summer, trailing, Britain; *Kitabelii*, blue and purple, summer, 6 in., Transylvania; *tenuifolia*, blue, violet and white, summer, 6 in., Dalmatia.

**Waitzia** (Everlasting Flowers).—Ord. *Compositææ*. Half-hardy annuals. First introduced 1835.

**CULTURE:** Soil, ordinary. Position, sunny beds or borders. Sow seeds ½ in. deep in light sandy soil in temp. 55° to 65° in March or



April, harden off in May, & plant out in June. Gather blooms when fully grown, & dry thoroughly in summer for winter decoration.

**POT CULTURE:** Compost, equal parts sandy peat, leaf-mould, loam, & decayed cow manure. Sow seeds thinly in shallow pan or box in temp. 55° to 65° in Sept. for spring flowering, & in March for summer blooming. Transplant when three leaves have formed 1 in. apart in a 5-in. pot. Grow on shelf near glass. Water moderately at first; freely later on. Apply weak stimulants once a week when seedlings are 6 in. high. Support with neat stakes when 3 to 6 in. high. No shade required. Winter temp., 45° to 55°.

**SPECIES CULTIVATED:** *W. aurea*, yellow, summer, 1 to 2 ft.; *grandiflora*, yellow, summer, 1 to 2 ft.; natives of Australia.

**Waldsteinia** (Barren Strawberry).—Ord. Rosaceæ. Hardy perennial herbs. First introduced 1800.

**CULTURE:** Soil, ordinary rich. Position on sunny rockeries. Plant, Oct. to April. Cut away flower stems in Sept. Propagate by seeds sown 1-16 in. deep in shallow boxes or well-drained pots of light soil in cold frame, April or July, or in sunny positions (similar depth & soil) outdoors, April or Aug.; division of plants, Oct. to April.

**SPECIES CULTIVATED:** *W. fragarioides*, yellow, June, 6 in., N. America.

**Wall Cress** (*Arabis albidia*).—See *Arabis*.

**Wallflower**.—See *Cheiranthus*.

**Wallichia**.—Ord. Palmaceæ. Stove palm. Orn. foliage. Leaves feather-shaped.

**CULTURE:** Compost, two parts rich loam, one part leaf-mould, little sand. Position, well-drained pots in moist part of stove. Pot, Feb. Water copiously, Feb. to Oct., moderately afterwards. Syringe daily, summer. Shade from sun. Temp., March to Oct. 75° to 85°; Oct. to March 55° to 65°. Propagate by suckers removed with roots attached, Feb. or March.

**SPECIES CULTIVATED:** *W. caryotoides*, 6 to 12 ft., India.

**Wall Pepper** (*Sedum acre*).—See *Sedum*.

**Wall Rue Fern** (*Asplenium Ruta-muraria*).—See *Asplenium*.

**Walnut** (*Juglans regia*).—See *Juglans*.

**Walwewa**.—Ord. Orchidaceæ. Dwarf stove epiphytal orchids. Seldom grown.

**CULTURE:** Compost, equal parts fibrous peat, chopped sphagnum moss and a little charcoal. Position, well-drained pots in shady part of stove. Repot, Feb. or March. Water freely March to Sept., moderately afterwards. Temp., March to Oct., 65° to 75°; Oct. to March, 60° to 65°. Growing period, March to Sept.; resting period, Sept. to Feb. Flowers appear at base of last-made pseudo-bulb. Propagate by division of pseudo-bulbs.

**SPECIES CULTIVATED:** *W. pulchella*, yellow and purple, Feb., Brazil.

**Wandering Jew** (*Saxifraga sarmentosa*).—See *Saxifraga*.

**Wand Plant** (*Galax aphylla*).—See *Galax*.

**Warcewiczella**.—See *Zygopetalum*.

**Warrea**.—Ord. Orchidaceæ. Stove terrestrial orchids. First introduced 1843.

**CULTURE:** Compost, equal parts leaf-mould, loam, & decayed cow manure. Pot, March or April. Position, well-drained pots in warm moist part of stove during growing period; cool and dry part during resting period. Cover drainage with layer of moss, & do not allow compost to be higher than half an inch below rim. Water freely, April to Sept.; moderately, Sept. to Jan.; keep nearly dry, Jan. to

March. Temp., March to Sept. 65° to 85°; Sept. to Jan. 60° to 70°; Jan. to March 55° to 65°. Growing period, March to Oct.; resting period, Oct. to March. Propagate by division of pseudo-bulbs, March or April.

SPECIES CULTIVATED: *W. tricolor*, white, yellow and purple, summer, 6 in., Brazil.

**Washingtonia**.—Ord. Palmae. A genus of ornamental warm greenhouse plants or palms. Leaves roundish and fringed with filaments.

CULTURE: Compost, equal parts peat, loam, and silver sand. Position, pots in partial shade. Repot, Feb. Water moderately Oct. to April, freely afterwards. Temp. Sept. to March, 55° to 65°; March to Sept., 65° to 75°. Propagate by seeds sown in above compost in temp. 85° in spring.

SPECIES CULTIVATED: *W. filifera* (Syn. *Brahea* or *Pritchardia filamentosa*), 10 to 20 ft., S. America.

**Water Arum** (*Calla palustris*).—See *Calla*.

**Water Caltrops** (*Trapa nutans*).—See *Trapa*.

**Water Chestnut** (*Trapa nutans*).—See *Trapa*.

**Water Cress** (*Nasturtium officinale*).—See *Nasturtium*.

**Water Daffodil** (*Sternbergia lutea*).—See *Sternbergia*.

**Water Elm** (*Zelkova acuminata*).—See *Zelkova*.

**Water Lettuce** (*Pistia stratiotes*).—See *Pistia*.

**Water Locust** (*Gleditschia monosperma*).—See *Gleditschia*.

**Water Oat** (*Zizania aquatica*).—See *Zizania*.

**Water Plantain** (*Alisma Plantago*).—See *Alisma*.

**Water Rice** (*Zizania aquatica*).—See *Zizania*.

**Water Soldier** (*Stratiotes aloides*).—See *Stratiotes*.

**Water Violet** (*Hottonia palustris*).—See *Hottonia*.

**Watsonia** (*Bugle Lily*).—Ord. Iridaceæ. Half-hardy bulbous plants. First introduced 1750.

OUTDOOR CULTURE: Soil, deep rich, liberally manured. Position, sunny, sheltered, well-drained beds or borders. Plant, Nov., Feb., or March. Place corms 4 in. deep & 6 in. apart in groups of three, six, or twelve; put a little silver sand under each corm. Protect in winter with layer of manure. Apply liquid manure when flower buds form. Fix stakes to spikes when 2 or 3 in. high. Lift corms in Sept., & store in cool place till planting time.

POT CULTURE: Compost, two parts loam, one part well-decayed manure & river sand. Position, pots in cold frame, cool greenhouse, or window. Pot, Oct. to March, placing five corms 1 in. deep in a 6-in. pot. Place pots in cold frame till flower spikes show, then remove to greenhouse or window. Water moderately at first; freely afterwards. Apply liquid manure when flower spikes show. After flowering, gradually withhold water till foliage dies, then keep quite dry till repotted. Propagate by seeds sown  $\frac{1}{2}$  in. deep in pans of light rich soil in Feb., in temp. 55° to 65°; by bulbils planted 2 in. deep & 6 in. apart in sunny border outdoors, March.

SPECIES CULTIVATED: *W. coccinea*, scarlet, May, 1 ft.; *densiflora*, rosy red, June, 1 ft.; *Moriana O'Brieni* (Syn. *W. Arderni*), white, summer, 3 ft.; *rosea* (Syn. *Gladiolus pyramidatus*), rose, July, 3 ft. Natives of S. Africa.

**Wax Flower** (*Hoya carnosa*).—See *Hoya*.

**Weather Plant** (*Abrus precatorius*).—See *Abrus*.

**Wedding Flower** (*Moræa robinsoniana*).—See *Moræa*.

**Weeping Ash** (*Fraxinus excelsior pendula*).—See *Fraxinus*.

**Weeping Beech** (*Fagus sylvaticus pendula*).—See *Fagus*.

**Weeping Birch** (*Betula alba pendula Youngii*).—See *Betula*.

**Weeping Elm** (*Ulmus glabra pendula*).—See *Ulmus*.

**Weeping Oak** (*Quercus pedunculata pendula*).—See *Quercus*.

**Weeping Willow** (*Salix babylonica*).—See *Salix*.

**Weigela**.—See *Diervilla*.

**Welfia**.—Ord. Palmaceæ. Stove palm. Orn. foliage. First introduced 1869. Leaves, partially feather-shaped; bronzy green.

**CULTURE**: Compost, rich loam one part, equal proportions leaf-mould, decayed cow manure, & little sand. Position, well-drained pots in moist part of stove. Pot, Feb. Shade from sun. Syringe daily, March to Oct. Moist atmosphere essential. Water copiously, March to Oct.; moderately other times. Temp., March to Oct. 65° to 85°; Oct. to March 55° to 65°. Propagate by seeds previously soaked in tepid water, then sown an inch deep in turfy loam & leaf-mould in temp. 65° to 75°, spring.

**SPECIES CULTIVATED**: *W. regia*, 10 to 30 ft., New Grenada.

**Wellingtonia**.—See *Sequoia*.

**Welsh Onion**.—See *Allium*.

**Welsh Polypody** (*Polypodium vulgare cambricum*).—See *Polypodium*.

**Welsh Poppy** (*Meconopsis cambrica*).—See *Meconopsis*.

**Welwitschia**.—Ord. Gnetaceæ. A curious hothouse plant of mushroom-like habit of growth with leaves fringed with ribbon-like filaments. A difficult plant to grow.

**CULTURE**: Equal parts brick rubble and coarse sand. Position, a well-drained bed in a hot, dry corner. Scarcely any water required. Full exposure to sun essential. Temp. 55° in winter; 75° in summer. Propagation, exceedingly difficult.

**SPECIES CULTIVATED**: *W. mirabilis*, Trop. Africa.

**Western Plane** (*Platanus occidentalis*).—See *Platanus*.

**West Indian Jasmine** (*Ixora coccinea*).—See *Ixora*.

**West Indian Kale** (*Colocasia antiquorum esculentum*).—See *Colocasia*.

**Weymouth Pine** (*Pinus Strobus*).—See *Pinus*.

**Whangee Cane** (*Phyllostachys nigra*).—See *Phyllostachys*.

**White Beam-tree** (*Pyrus Aria*).—See *Pyrus*.

**Whitlavia**.—See *Phacelia*.

**Whitlow Grass**.—See *Draba*.

**Whorl-flower**.—See *Morina*.

**Whortleberry** (*Vaccinium myrtillus*).—See *Vaccinium*.

**Whodringtonia** (*African* or *Milanji Cypress*).—Ord. Coniferæ. Tender evergreen coniferous trees, suitable only for greenhouse cultivation in this country. Habit, elegant & graceful.

**CULTURE**: Compost, two parts sandy loam & one part leaf-mould, with a liberal amount of silver sand. Position, pots in light, sunny greenhouse. Pot in March. Water freely, March to Oct.; moderately afterwards. Temp., March to Oct. 55° to 65°; Oct. to March 45° to 55°. Propagate by seeds sown in gentle heat in spring, transferring seedlings singly to small pots as soon as large enough to handle.

**SPECIES CULTIVATED**: *W. Whytei*, leaves glaucous and graceful, Central Africa.

**Wigandia**.—Ord. Hydrophyllaceæ. Stove orn. foliage plants. First introduced 1836. Height, 3 to 10 ft. Leaves, large, very wrinkled, more or less downy.

**CULTURE:** Soil, ordinary. Position, sunny sheltered beds outdoors, May to Oct.; warm greenhouse remainder of year. Plant, May or June. Lift, Sept. or Oct. Propagate by seeds sown in light soil in temp. 65° to 75° in Feb.; cuttings inserted in sandy soil under bell-glass in temp. 75° in spring. Usually treated as an annual; seldom preserved during the winter.

**SPECIES CULTIVATED:** *W. carcassana* (Syn. *W. macrophylla*), 8 to 10 ft., Mexico; *Vigieri*, 4 to 6 ft., lilac, autumn.

**Wig Tree** (*Rhus Cotinus*).—See *Rhus*.

**Wild Rosemary**.—See *Andromeda*.

**Willow**.—See *Salix*.

**Willow Herb**.—See *Epilobium*.

**Windflower**.—See *Anemone*.

**Wine-berry** (*Rubus phœnicolasius*).—See *Rubus*.

**Winter Aconite** (*Eranthis hyemalis*).—See *Eranthis*.

**Winter Cherry**.—See *Physalis* and *Solanum*.

**Winter Cross** (*Barbarea præcox*).—See *Barbarea*.

**Winter Flax** (*Reinwardtia trigyna*).—See *Reinwardtia*.

**Winter Green** (*Pyrola minor*).—See *Pyrola*.

**Winter Hawthorn** (*Aponogeton distachyon*).—See *Aponogeton*.

**Winter Heath** (*Erica carnea*).—See *Erica*.

**Winter Heliotrope** (*Tussilago fragrans*).—See *Tussilago*.

**Winter Savory** (*Satureia montana*).—See *Satureia*.

**Winter Sweet** (*Acokanthera spectabilis*).—See *Acokanthera*.

**Wistaria** (Grape-flower Vine; Kidney-bean Tree).—Ord. Leguminosæ. Hardy deciduous climbing flowering shrubs. First introduced 1724.

**CULTURE:** Soil, deep rich sandy loam. Position, well-drained borders against S. or S.W. walls; or on sunny pergolas; or as standards in shrubbery or on lawns in sheltered districts. Plant, March or April. Prune, Jan. or Feb., shortening shoots not required for extending branches to within 1 in. of base. Propagate by layering young shoots during summer.

**SPECIES CULTIVATED:** *W. sinensis* (Chinese Kidney-bean Tree), mauve, May, China; *sinensis alba*, white; *sinensis flore pleno*, double; *sinensis macrobotrys*, white, blue, and purple; *frutescens* (American Kidney-bean Tree), mauve, April, 10 ft., U. States; *frutescens alba*, white; *multijuga*, lilac-purple, summer, China.

**Witch's Thimble** (*Silene maritima*).—See *Silene*.

**Witloof**.—See *Cichorium*.

**Witsenia**.—See *Aristea*.

**Wolf's-bane** (*Aconitum lycoctonum*).—See *Aconitum*.

**Wood Anemone** (*Anemone nemerosa*).—See *Anemone*.

**Woodbine** (*Lonicera periclymenum*).—See *Lonicera*.

**Wood Lily**.—See *Trillium*.

**Woodruff** (*Asperula odorata*).—See *Asperula*.

**Woodsia**.—Ord. Filices. Greenhouse & hardy ferns. Deciduous & evergreen. Fronds, feather-shaped.

**CULTURE OF GREENHOUSE SPECIES:** Compost, equal parts peat & loam, with little silver sand, & charcoal. Position, well-drained pots or beds in shady greenhouse. Pot or plant, Feb. or March. Water freely, March to Oct.; moderately afterwards. Syringing not

required. Shade from sun. Temp., Sept. to March 45° to 50°; March to Sept. 50° to 60°.

**CULTURE OF HARDY SPECIES:** Compost, equal parts peat & loam. Position, shady borders or banks. Plant, April. Water copiously in dry weather. All the hardy species are suitable for greenhouse culture. Propagate by spores sown on surface of fine peat in well-drained pans placed in temp. of 75° at any time; division of plants, March or April.

**GREENHOUSE SPECIES:** *W. obtusa*, 1 ft., N. America; *polystichioides*, 6 to 9 in., Japan; *p. Veitchii*, China.

**HARDY SPECIES:** *W. glabella*, 6 in., N. America; *ilvensis*, 4 in., Arctic and N. Temperate Zone (Britain); *hyperborea* (Syn. *W. alpina*), 6 in., N. Temperate Zone; *scopulina*, 8 in., N. America.

**Wood Sorrel.**—See *Oxalis*.

**Wood Tongue Fern** (*Drymoglossum carnosum*).—See *Drymoglossum*.

**Woodwardia** (Chain Fern).—Ord. Filices. Greenhouse evergreen ferns. First introduced 1774.

**CULTURE:** Compost, equal parts loam & leaf-mould or peat. Position in well-drained pots, or on rockeries in cool greenhouse or fernery. Water freely in summer; moderately other times. Syringe daily in summer. *W. radicans* & *W. i. cristata* suitable for suspending in baskets. Greenhouse species will also grow outdoors in sheltered positions, & with the protection of litter in winter. Propagate by spores sown on surface of fine peat in well-drained pans placed in temp. of 75° any time; division of plants, March or April; by bulbils removed from fronds & placed in small pots in temp. of 65° to 70° until roots form.

**SPECIES CULTIVATED:** *W. areolata*, 12 to 18 in., U. States; *japonica*, 18 in., to 2 ft., China and Japan; *Harlandii*, 18 in., Hong Kong; *orientalis*, 4 to 8 ft., Japan; *radicans*, 3 to 6 ft., N. Temperate Zone; *radicans Brownii* (Syn. *Radicans cristata*), fronds crested.

**Worm Grass** (*Sedum album*).—See *Sedum*.

**Wormwood** (*Artemisia Absinthum*).—See *Artemisia*.

**Wulfenia.**—Ord. Scrophulariaceæ. Hardy perennial herbs. First introduced 1817.

**CULTURE:** Soil, light rich sandy loam. Position, partially shady rockeries. Plant, March or April. Propagate by seeds sown in light sandy soil in shallow boxes in cold frame in March or April, transplanting seedlings when large enough to handle on to rockery; by division of plants in March or April.

**SPECIES CULTIVATED:** *W. amherstiana*, blue, summer, 6 to 10 in., Himalayas; *carinthiaca*, blue, July, 2 ft., Carinthia.

**Wych Elm** (*Ulmus montana*).—See *Ulmus*.

**Wych Hazel** (*Hamamelis virginica*).—See *Hamamelis*.

**Xanthisma.**—Ord. Compositæ. Hardy annual.

**CULTURE:** Sow seeds in gentle heat in spring, harden off seedlings in May, & plant out in June, a foot apart, in bold groups in sunny borders.

**SPECIES CULTIVATED:** *X. texanum* (Syn. *Centaureidium Drummondii*), yellow, summer, 2 to 3 ft., Texas.

**Xanthoceras.**—Ord. Sapindaceæ. Hardy deciduous flowering tree. First introduced 1870. Leaves, feather-shaped.

**CULTURE:** Soil, ordinary. Position, sunny borders or shrubberies. Plant, Oct. to Feb. Propagate by seeds sown in light soil outdoors in autumn or spring.

**SPECIES CULTIVATED:** *X. sorbifolia*, white and red, summer, 15 ft., China.

**Xanthosoma.**—Ord. Aroideæ Stove perennial herbs. Orn. foliage. First introduced 1710. Leaves, arrow-head shaped, green or variegated.

**CULTURE:** Compost, equal parts turfy loam, peat, leaf-mould, decayed manure, & silver sand. Position, well-drained pots in shade. Pot moderately firm in pots just large enough to take tubers in Feb. or March; transfer to larger pots in April or May. Water moderately, Feb. to April & Sept. to Nov.; freely, April to Sept.; keep quite dry, Nov. to Feb. Temp., Feb. to Sept. 70° to 80°; Sept. to Nov. 65° to 75°; Nov. to Feb. 55° to 65°. Propagate by dividing the tubers in Feb. or March.

**SPECIES CULTIVATED:** *X. Barilletii*, Trop. America; *Lindenii* (Syn. *Phyllotaxium Lindenii*), Colombia; *violaceum*, W. Indies.

**Xeranthemum** (Immortelle; Annual Everlasting).—Ord. Compositæ. Hardy annuals. First introduced 1570. Flowers, single & double; suitable for winter decoration.

**CULTURE:** Soil, ordinary. Position, sunny beds or borders. Sow seeds in light soil in March, in temp. 55° to 65°, planting out in June, or in open ground end of April. Gather flowers for winter decoration directly they are fully expanded.

**SPECIES CULTIVATED:** *X. annuum*, purple, etc., summer, 2 ft., S. Europe.

**Xerophyllum** (Turkey's Beard).—Ord. Liliaceæ. Hardy perennial aquatic herb. First introduced 1765.

**CULTURE:** Soil, moist sandy peat. Position, boggy gardens or margins of ponds or lakes. Plant, March or April. Propagate by seeds sown in moist peaty soil in April where required to grow, or by division of roots in March or April.

**SPECIES CULTIVATED:** *X. asphodeloides*, white, May, 1 ft., N. America.

**Xylobium.**—Ord. Orchidaceæ. Stove epiphytal orchids. First introduced 1826.

**CULTURE:** Compost, equal parts fibry peat & chopped sphagnum moss, with little sand & charcoal. Position, well-drained pots, pans, or baskets in light part of greenhouse. Pot when new growth commences. Water deciduous species freely from time new growth begins until Nov., then occasionally; evergreen species freely from March to Nov.; moderately, Nov. to March. Syringe once or twice daily whilst making growth. Ventilate freely, May to Sept. Temp., April to Oct. 55° to 65°; Oct. to April 45° to 50°. Growing period, Feb. to March; resting period, Oct. to Feb. Plants may be grown in sitting-room or cool conservatory when in flower. Propagate by division of pseudo-bulbs immediately after flowering.

**SPECIES CULTIVATED:** *X. discolor*, yellow and white, spring, W. Indies; *elongatum*, yellow, white, and brown, spring, W. Indies; *squalens*, yellow, white, and purple, spring, Brazil.

**Yam** (*Dioscorea sativa*).—See *Dioscorea*.

**Yarrow.**—See *Achillea*.

**Yellow Asphodel** (*Asphodeline lutea*).—See *Asphodeline*.

**Yellow Ox-Eye.**—See *Bupthalmum*.

**Yellow Star of Bethlehem** (*Gagea lutea*).—See *Gagea*.

**Yellow Water-Lily** (*Nuphar advena*).—See *Nuphar*.

**Yellow Wood Anemone** (*Anemone ranunculoides*).—See *Anemone*.

**Yerba Mansa** (*Anemonopsis macrophylla*).—See *Anemonopsis*.

**Yew.**—See *Taxus*.

**Yucca** (Adam's Needle; Mound Lily; Spanish Bayonet).—Ord.

Liliacæ. Greenhouse & hardy evergreen perennials. First introduced 1526.

**CULTURE OF HARDY SPECIES:** Soil, ordinary light well-drained. Position, sunny banks, mounds, rockeries, raised borders, or singly lawns. Plant, Oct. or April. Protect in severe weather with mats.

**CULTURE OF GREENHOUSE SPECIES:** Compost, two parts sandy loam, one part leaf-mould & little sand. Position, light greenhouse, Sept. to June; sunny position outdoors, pots plunged to rims in soil, June to Sept.; or may be grown entirely in greenhouse. Pot, March. Water freely, April to Sept.; very little afterwards. Repotting only necessary when root-bound. Temp., Sept. to March, 40° to 50°; March to Sept. 55° to 65°. Propagate by division in March, offsets or suckers in March or April; cuttings of roots inserted in sand in temp. 55° in spring.

**GREENHOUSE SPECIES:** *Y. aloifolia*, white, summer, 15 ft., S. U. States and W. Indies; and its varieties *Draconis* (leaves drooping), *purpurea* (leaves purplish), *quadricolor* (leaves reddish), *tenuifolia* (leaves slender), *tricolor* (leaves variegated with white, green, and yellow), *variegata* (leaves striped with white).

**HARDY SPECIES:** *Y. angustifolia*, white, July, S. U. States; *filamentosa*, white, June, S. U. States; *filamentosa variegata*, variegated; *glauca*, white, July, S. U. States; *gloriosa* (Adam's Needle), white, July, 6 to 9 ft., S. U. States; *recurvifolia*, leaves recurving, white, summer, S. U. States.

**Yulan** (*Magnolia conspicua*).—See *Magnolia*.

**Zaluzianskia**.—Ord. Scrophulariaceæ. Half-hardy annuals. First introduced 1824.

**CULTURE:** Soil, rich sandy loam. Position, warm sunny borders or rockeries. Propagate by seeds sown on surface of fine light mould & slightly covered with silver sand & placed in temp. 55° to 65° in March, transplanting seedlings outdoors in June, or sow seeds 1-16 in deep outdoors in May where plants are required to flower. Water freely in dry weather. Mulch with layer of cocoanut-fibre refuse in June.

**SPECIES CULTIVATED:** *Z. capensis* (Syn. *Nycteria capensis*), white, spring, and summer, fragrant, 1 ft., S. Africa; *selaginoides* (Syn. *Nycteria selaginoides*), pink and yellow, May, 6 in., S. Africa.

**Zamia** (Jamaica Sago Tree).—Ord. Cycadaceæ. Stove or greenhouse orn. foliage plants. First introduced 1691. Leaves, feather-shaped.

**CULTURE:** Compost, equal parts loam & peat, little silver sand. Position, well-drained pots in shady part of stove. Pot, Feb. or March. Water copiously, March to Oct. Syringe daily, April to Sept. Moist atmosphere essential. Shade from sun. Temp., March to Oct. 75° to 85°; Oct. to March 60° to 70°. Propagate by seeds sown in light soil in temp. 75° to 85°, spring; by offsets removed & placed in small pots under bell-glass in propagator in spring; by division, Feb. or March.

**SPECIES CULTIVATED:** *Z. purpuracea* (Jamaica Sago Tree), 3 ft., W. Indies; *Lindenii*, 8 ft., Ecuador; *Wallsii*, Colombia.

**Zanzibar Balsam** (*Impatiens Sultani*).—See *Impatiens*.

**Zauschneria** (Californian Fuchsia).—Ord. Onagraceæ. Half-hardy shrubby perennial. First introduced 1847.

**CULTURE:** Soil, sandy loam. Position, well-drained rockery or old wall. Plant, March or April. Propagate by seeds sown in light sandy soil, lightly covering with fine mould, place in temp. 55° to 65°, March, transplanting seedlings outdoors end of May or beginning of

June; by cuttings of young side shoots inserted in pots of sandy soil under bell-glass or hand-light in shady position outdoors in Sept., protecting cuttings in heated greenhouse until following April, then planting out; by division of old plants in April.

**SPECIES CULTIVATED:** *Z. californica*, scarlet, autumn, 1 ft., California; *californica grandiflora*, large flowered.

**Zea** (Maize; Indian Corn).—Ord. Gramineæ. Half-hardy annual. Orn. foliage. First introduced 1562. Leaves, narrow, grass-like; green or variegated with white.

**CULTURE:** Soil, ordinary. Sow seeds  $\frac{1}{2}$  in. deep & 1 in. apart in light rich soil in well-drained pots or boxes in temp. 55° to 65°, Feb. or March; transfer seedlings when 2 in. high singly into 2-in. pots, then into 4½-in. pots. Place in cold frame to harden in May & plant outdoors in June. May also be grown in pots in compost of equal parts good loamy soil & leaf-mould, & little sand. Water freely.

**SPECIES CULTIVATED:** *Z. Mays*, 3 to 4 ft., Paraguay; *Mays variegata*, variegated.

**Zebra Plant.**—See *Calathea*.

**Zebrina.**—Ord. Commelinaceæ. Greenhouse herbaceous trailing perennial. Orn. foliage. First introduced 1849. Leaves, oval oblong; dark green, striped white above, purplish beneath. Stems creeping.

**CULTURE:** Compost, equal parts loam, leaf-mould, & sand. Position, in pots or baskets suspended from roof, or in beds under stage or on rockeries. Pot or plant, Jan. to April. Water freely, March to Oct.; moderately afterwards. Shade from strong sunshine. Temp., 40° to 50° Oct. to April; 55° to 65° April to Oct. May be grown in windows as a pot or basket plant. Protect from frost in winter. Propagate by cuttings of young shoots inserted in light soil under a bell-glass in above temp., March to Oct.

**SPECIES CULTIVATED:** *Z. pendula* (Syn. *Tradescantea zebrina*), purple, summer, Mexico; *pendula tricolor*, leaves variegated with white, green, and red.

**Zelkova** (Water Elm; Siberian Elm).—Ord. Urticacæ. Hardy deciduous trees of no special merit. Closely allied to the elms.

**CULTURE:** Soil, deep loam. Position, mixed shrubberies or side of water-courses. Plant, Oct. to Feb. Propagate by seeds sown outdoors in autumn or spring; grafting in March.

**SPECIES CULTIVATED:** *Z. acuminata* (Syn. *Ulmus Keaki*), 30 to 40 ft.; *crenata* (Syn. *Ulmus polygana*), Siberian Elm, Siberia, 40 ft.; *Verschaffeltii* (Syn. *Ulmus Verschaffeltii*), 30 ft.

**Zenobia.**—Ord. Ericacæ. Hardy evergreen flowering shrub. First introduced 1800.

**CULTURE:** Soil, peat or sandy loam. Position, moist sheltered borders. Plant, Sept., Oct., March, or April. Propagate by layering in Sept. or Oct.

**SPECIES CULTIVATED.**—*Z. speciosa*, white, summer, 3 to 4 ft., N. America; *speciosa pulverulenta*, leaves whitish.

**Zephyranthes** (Zephyr Flower; Atamaseo Lily; Peruvian Swamp Lily; Flower of the West Wind).—Ord. Amaryllidacæ. Hardy deciduous bulbous flowering plants. First introduced 1629.

**CULTURE OF HALF-HARDY SPECIES:** Soil, light sandy loam. Position, well-drained sunny beds, borders, or rockeries. Plant, Aug. to Nov., placing bulbs 3 to 4 in. deep & 4 in. apart. Protect in winter by a layer of cinder ashes. Lift & replant only when bulbs show signs of deterioration.

**CULTURE OF HARDY SPECIES:** Compost, two parts loam, one part peat, leaf-mould, & silver sand. Position, well-drained pots in



cold frame or greenhouse. Pot, Aug. to Nov., placing one bulb 2 in. deep in a 5 or 6-in. pot. Water very little till growth begins, then freely. Withhold water when flowers fade & keep soil quite dry till potting time. Propagate by offsets planted & treated as advised for large bulbs, Aug. to Nov.

**HALF-HARDY SPECIES:** *Z. Andersoni*, golden yellow, May, 6 in., Monte Video; *Atamasco* (*Atamasco Lily*), pink, May, 1 ft., N. America; *carinata*, pink, May, 6 in., Mexico.

**HARDY SPECIES:** *Z. candida* (*Peruvian Swamp Lily*), white, Sept., 6 in., Peru  
**Zephyr Flower** (*Zephyranthes candida*).—See *Zephyranthes*.

**Zingiber** (*Ginger*).—Ord. Scitamineæ. Stove perennial. Roots furnishing the ginger of commerce. First introduced 1605.

**CULTURE:** Compost, equal parts loam, peat, & sand. Position, pots in shady moist part of stove. Pot, Feb. Water copiously, March to Oct.; keep nearly dry, Oct. to March. Temp., March to Oct. 75° to 85°; Oct. to March 55° to 65°. Stems die down in autumn. Propagate by division of the rhizomes in Feb.

**SPECIES CULTIVATED:** *Z. officinale*, red, July, 2 ft., E. Indies.

**Zinnia** (*Youth-and-old-age*).—Ord. Compositæ. Half-hardy annuals. First introduced 1770.

**CULTURE:** Soil, deep loamy, liberally enriched with decayed manure. Position, sunny beds or borders. Sow seeds 1-16 in. deep in light soil in temp. 55° early in April. Transplant seedlings when third leaf forms 2 in. apart in shallow boxes filled with light mould. Place box near the glass in temp. 55° until seedlings are established, then remove to a cooler house, and if possible plant out 4 in. apart in good rich soil in cold frame early in May. Shade from sun, keep moist, & gradually expose to air, end of month. Plant out 8 to 12 in. apart second week in June. Sow also outdoors middle of May. Prepare bed of rich soil in sunny position, sow three or four seeds at intervals of 12 in., & thin seedlings to one at each place when third leaf forms. Mulch all zinnias with decayed manure after planting. Water liberally in dry weather. Apply stimulants when the plants commence to flower. On dry soils take out mould to depth of 12 in., put 3 in. of decayed manure in, then replace former.

**SPECIES CULTIVATED:** *Z. elegans*, various colours, summer, 2 ft., Mexico; *haageana*, orange-yellow, summer, 1 ft., Trop. America; *multiflora*, scarlet, summer, 2 ft.; *tenuiflora*, scarlet, summer, 2 ft., Mexico.

**Zizania** (*Water Rice*; *Water Oats*; *Canadian Rice*; *Indian Rice*).

—Ord. Gramineæ. Hardy aquatic perennial grasses.

**CULTURE.**—Soil, ordinary. Position, margins of shallow ponds or lakes. Plant, April or May. Propagate by seeds sown in heat in spring, growing seedlings on under glass until May, then hardening off in cold frame.

**SPECIES CULTIVATED:** *Z. aquatica*, green and brown, summer, 6 ft., N. America.

**Zonal-Geranium** (*Pelargonium zonale*).—See *Pelargonium*.

**Zygadenus.**—Ord. Liliaceæ. Hardy bulbous-rooted plants.

**CULTURE:** Soil, peat, leaf-mould, and sand. Position, partially shady moist border or bed. Plant, autumn. Lift and replant triennially. Propagate by division of offsets in autumn; seeds sown in sandy soil in a cold frame in spring.

**SPECIES CULTIVATED:** *Z. angustifolius* (*Syn. H-Ionias angustifolia*), white and purple; June, 18 in., N. America; *elegans*, green and white, July, 2 ft., N. America; *Fremontii*, cream, June, 18 in., N. America; *glaberrima*, white, July, 1 ft., N. America; *Muscotoxicum*, green, July, 2 ft., N. America; *Nuttallii*, white, June, 18 in., N. America.

**Zygo-Batemannia.** — Ord. Orchidacææ. A new race of orchids, the result of hybridising *Zygopetalum crinitum* with *Batemannia Colleyi*. The product is termed a bigeneric orchid. Habit intermediate between the two genera. Flowers of medium size. Require similar culture to *Zygopetalums*.

HYBRID CULTIVATED: *Z. Mastersii*, green, chocolate, creamy white and purple.

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HYBRIDS CULTIVATED: *Z. amesiana* (*Z. brachypetalum* × *Colax jugosus*), green, purple, violet, and white; *leopardinus* (*Z. Gauterii* × *C. jugosus*), white, purple and blue; *Veitchii* (*Z. crinitum* × *C. jugosus*), yellow, purple, violet, and white; *wiganiana* (*Z. intermedium* × *C. jugosus*), green, purple, white, and violet.

**Zygotepetalum.**—Ord. Orchidacææ. Stove epiphytal orchids. First introduced 1825.

CULTURE: Compost, equal parts rough fibrous peat & sphagnum moss & charcoal. Position, well-drained pots or on blocks of wood (roots being covered with sphagnum moss), or in baskets suspended from roof. Pot, etc., Feb. or March. Water freely, April to Sept.; moderately, Sept. to Dec. Give very little, Dec. to April. Shade from sun in summer. Moist atmosphere essential. Temp., March to June 58° to 65°; Dec. to March 53° to 60°. Growing period: All the year round. Resting period: None. Flowers appear at base of new growth. Propagate by division, any time.

SPECIES CULTIVATED: *Z. Burkei*, green, chocolate-brown, white, and purple, winter, 12 to 18 in., Demerara; *Burtii*, white, yellow, brown, crimson, and purple, summer, 1 ft., Costa Rica; *cerinum*, straw and yellow, various seasons, 1 ft., Chiriqui; *cæleste*, blue, mauve, white, and violet, summer, Colombia; *crinitum*, green, white, and purple, spring, 18 in. to 2 ft., Brazil; *dayanum*, white, green, and purple, autumn, 1 ft., Colombia; *Gautieri*, green, brown, yellow, and purple, various seasons, 12 to 15 in., Brazil; *gramineum*, yellow, green, red, and brown, various seasons, 9 in., Brazil; *intermedium*, green, brown, white, and violet-purple, autumn, Brazil; *Klabocorum*, white, purple, yellow, and crimson, various seasons, 1 ft., Ecuador; *Lalindei*, rose and yellow, various seasons, 1 ft., Colombia; *Lehmannii*, white, purple, and mauve, various seasons, 15 in., Ecuador; *Mackii*, green, yellow, brown, and violet, winter, 18 in. to 2 ft., Brazil; *maxillare*, green, brown, violet, and blue, winter, 1 ft., Brazil; *meleagris*, white, yellow, and brown, summer, 10 in., Brazil; *Rollisonii*, yellow and purple, autumn, 3 in., Brazil; *rostratum*, white and rosy purple, May and June, 8 in., British Guiana; *stapelioides*, green, yellow, brown, and purple, summer, 3 in., Brazil; *Wendlandii* (Syn. *Warszewiczella Weidlandii*), white and purple, Sept., 9 in., Costa Rica; *xanthinum* yellow, red, and crimson, summer, 3 in., Brazil.

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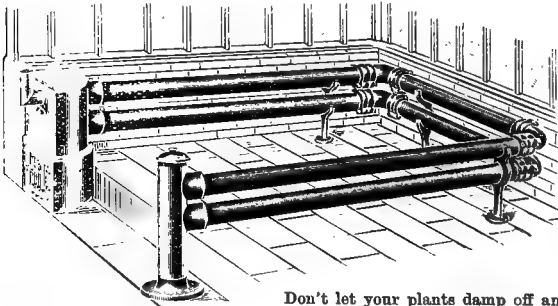
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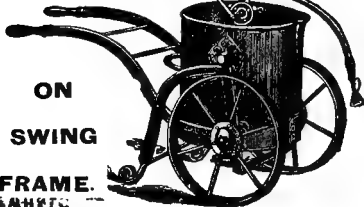
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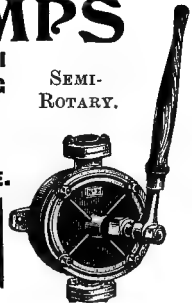
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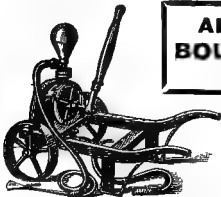
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