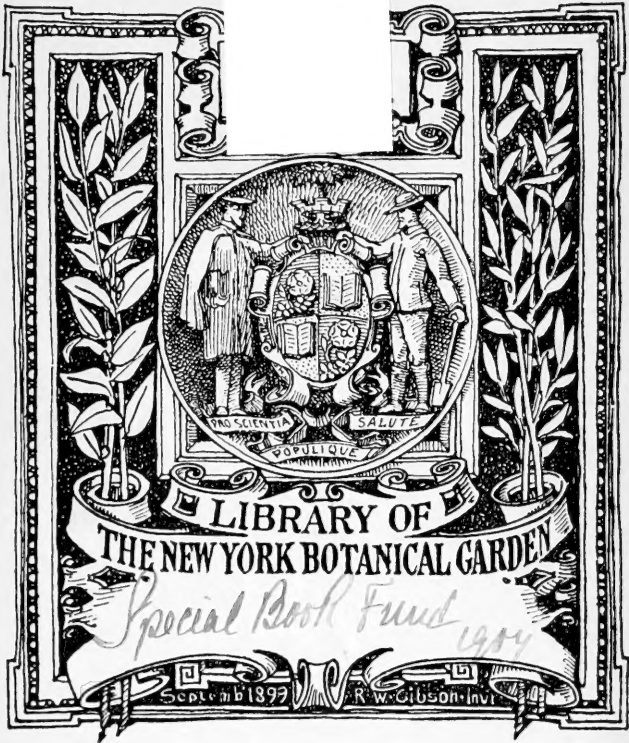


THE CULTIVATION
OF
ORCHIDACEOUS PLANTS

J. HENSHALL



LIBRARY OF
THE NEW YORK BOTANICAL GARDEN

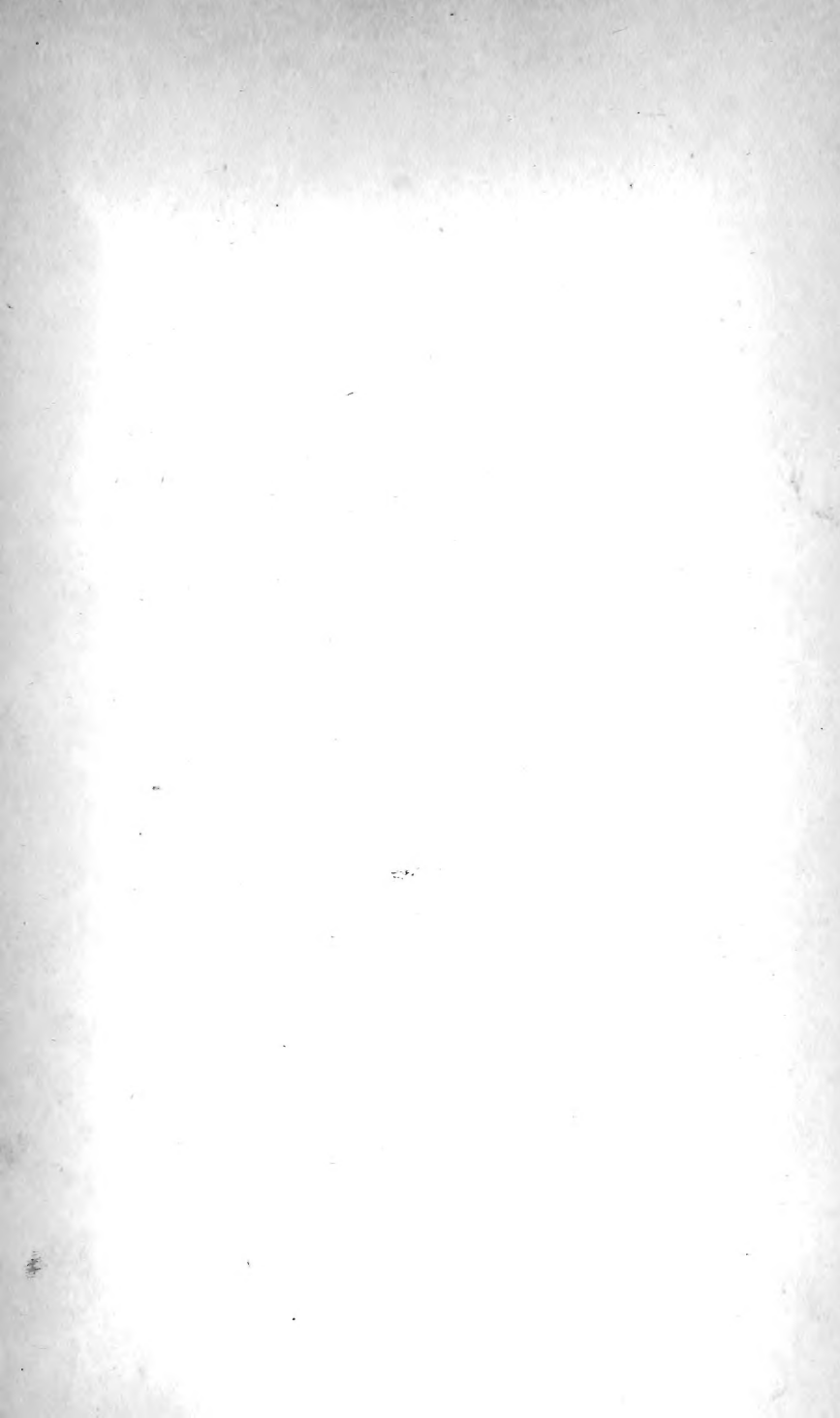
Special Book Fund 1904

September 1899 R. W. Gibson Invt.



9
33
509

THE
CULTIVATION
OF
ORCHIDACEOUS PLANTS.





STANHOPEA TIGRINA.

a/x

A
PRACTICAL TREATISE
ON
THE CULTIVATION
OF
ORCHIDACEOUS PLANTS.

WITH
REMARKS ON THEIR GEOGRAPHICAL DISTRIBUTION,
AND
A select Catalogue of the best kinds in Cultivation.

BY
JOHN HENSHALL.

LIBRARY
NEW YORK
BOTANICAL
GARDEN.

LONDON: .
R. GROOMBRIDGE AND SONS, 5, PATERNOSTER ROW.
1845.

+ Qh 66
. A/m
H4

PRINTED BY C. AND J. ADLARD, BARIHOLMEW CLOSE.

TO J. H. SCHRÖDER, ESQ.

THIS WORK,

AN ENDEAVOUR TO EXPLAIN

THE MANAGEMENT IN CULTIVATION OF ONE OF THE LOVELIEST

PORTIONS OF THE VEGETABLE KINGDOM,

Is Dedicated,

WITH GREAT RESPECT, BY

THE AUTHOR.

TOOTING; *Jan.* 1845.



CONTENTS.

INTRODUCTION.		PAGE
SECT. I.	Geographical Distribution	1
	Part I. Europe	5
	Part II. Asia	9
	Part III. Africa	11
	Part IV. America	13
	II Benefit of Two or more Houses	17
	III. On Heat and Moisture	21
	IV. On Light; the effect it has upon Plants	24
	V. On the construction of Houses	26
—————		
CHAP. I.	On the cultivation of the following Genera: Ærides, Saccolabium, Vanda, Sarcanthus, Camarotis, and Cleisostoma	29
II.	The Genera Acanthophippium, Govenia, Phajus, Calanthe, Bletia, Pesomeria, and Sarcochilus	32
III.	The Genera Acropëra, Cirrhæa, and Gongora	34
IV.	The Genera Pholidota, Batemannia, Bifrenaria, Anguloa, Maxillaria and its recent divisions Lycaste, Paphinia, and Scuticaria	36
V.	The Genus Anæctochilus	39
VI.	The Genera Broughtonia, Aganisia, Comparet- tia, and Angræcum	41
VII.	The Genera Aporum, Cirrhopetalum, Bolbophyl- lum, Sophronites, and Leptotes	43
VIII.	The Genera Aspasia, Eria, Decrypta, Brassava, Trigonidium, and Camaridium	45
IX.	The Genera Brassia, Oncidium, Cyrtochilum, Miltonia, and Odontoglossum	47
X.	The Genus Cattleya	52
XI.	The Genus Schomburgkia	55

	PAGE
CHAP. XII. The Genus <i>Lælia</i>	57
XIII. The Genera <i>Cœlogyne</i> , <i>Paxtonia</i> , <i>Grobia</i> , <i>Eulophia</i> , and <i>Macradenia</i>	60
XIV. The Genera <i>Clowesia</i> , <i>Cyenoche</i> , <i>Mormodes</i> , <i>Catasetum</i> , <i>Myanthus</i> , and <i>Monocanthus</i> ..	62
XV. The Genus <i>Dendrobium</i>	64
XVI. The Genera <i>Epidendrum</i> and <i>Bromheadia</i> ..	69
XVII. The Genus <i>Barkeria</i>	72
XVIII. The Genus <i>Stanhopea</i>	74
XIX. The Genera <i>Æceocladius</i> , <i>Ornithocephalus</i> , <i>Burlingtonia</i> , <i>Dendrochilum</i> , <i>Dinema</i> , and <i>Trias</i>	77
XX. The Genus <i>Phalænopsis</i>	79
XXI. The Genera <i>Pleurothallis</i> , <i>Octomeria</i> , <i>Stelis</i> , <i>Physosiphon</i> , <i>Mycaranthus</i> , <i>Physinga</i> , <i>Oto-</i> <i>chylus</i> , <i>Bryobium</i> , <i>Epiphora</i> , and <i>Poly-</i> <i>stachia</i>	81
XXII. The Genera <i>Megaclinium</i> , <i>Stenia</i> , <i>Masdevallia</i> , <i>Rodriguezia</i> , <i>Fernandezia</i> , <i>Dichæa</i> , <i>Tricho-</i> <i>centrum</i> , <i>Nanodes</i> , and <i>Ornithidium</i> ..	83
XXIII. The Genera <i>Isochilus</i> , <i>Arundina</i> , <i>Arpophyllum</i> , <i>Ionopsis</i> , <i>Pachyphyllum</i> , <i>Scaphyglottis</i> , <i>Te-</i> <i>trapeltis</i> , <i>Geodorum</i> , and <i>Ponera</i>	85
XXIV. The Genera <i>Huntleya</i> , <i>Coryanthes</i> , and <i>Gram-</i> <i>matophyllum</i>	87
XXV. The Genus <i>Peristeria</i>	89
XXVI. The Genus <i>Cyrtopodium</i>	91
XXVII. The Genera <i>Zygopetalum</i> and <i>Cymbidium</i> ..	93
XXVIII. The Genus <i>Sobralia</i>	95
XXIX. The Genus <i>Chysis</i>	97
XXX. The Genus <i>Renanthera</i>	99
XXXI. Treatment of newly imported species ..	101
XXXII. On the destruction of injurious Insects ..	102
A Catalogue of Orchidaceous Plants	105

INTRODUCTION.

SECT. I.

GEOGRAPHICAL DISTRIBUTION.

SOME acquaintance with what may be called first principles is essentially necessary to the acquirement of all knowledge, and a statement or explanation of them should occupy a prominent place, and receive first attention, at the commencement of every study, as the most proper and only true basis for future accessions.

In horticulture, these first principles are gathered from the consideration of the geographical distribution of plants, and the various affecting circumstances by which they are surrounded in their proper habitats or native positions. An idea of the importance of this subject has led me to select it as the most suitable introduction to the accompanying practical remarks.

The great advantage to be derived from a knowledge of geography in the cultivation of these and all other plants is the facility which it affords for estimating the average temperature, and so dependently, the ordinary character of the

climate of any locality—the most useful kind of information, it must be acknowledged, that can be acquired in relation to cultivatable objects. As a rule of guidance, I may mention it is computed, that advancing beyond the temperate zone towards the equator, at the level of the sea a degree of temperature will be gained for every degree of latitude passed over; and, on the contrary, every degree of latitude, from the temperate regions towards either pole, is distinguished by the loss of a corresponding amount of heat. This, however, it must be observed, being estimated entirely on the same level, will be liable to interruption from the physical character of most countries, more especially of those which offer the most encouragement to the spread of Orchidaceæ; indeed, the variety of temperature and climate presented by a mountainous country, is almost beyond calculation, quite precluding the possibility of any latitudinal estimate, except as a mean, for the base or table land: from whence, as we ascend the hills, the temperature is found to decrease in the proportion of about one degree for every hundred feet of elevation; information on this point, however, is unfortunately but scantily furnished, and some discrepancy also existing in that made known renders a correct computation rather difficult. Still, the above formula will, perhaps, be sufficient for ordinary stations,

and to the cultivator, will afford an idea of the requisite temperature whenever the latitude and elevation is stated with newly-introduced plants.

Although, in the present instance, we have only to treat of tropical plants, and therefore need not extend our remarks beyond the latitudes in which they are found; it may be well to mention another important matter connected with their geographical distribution, affecting their cultivation most materially; this is the difference which exists in the state of the atmosphere at different altitudes. The effect of elevation is to cause a reduction of temperature and rarefaction of the surrounding air, the latter produces an increase in the intensity of light, and, of necessity, a corresponding decrease of humidity; now, though Orchidaceous plants inhabit only those places where moisture is prevalent, at least for a season, and consequently are seldom found at very considerable elevations, still a degree of difference is observable among them of sufficient extent to render attention to these circumstances absolute and indispensable. I have therefore thought it advisable thus briefly to point to it here, leaving the application to be explained when treating of ventilation and the benefit of two departments for their culture.

Generally speaking, the more elevated the station of the plant is, in its natural localities, its

vital action is the less because the air is less dense, therefore colder, and consequently has a greater evaporative power: yet the mountainous countries are better supplied with humidity than plains; therefore, the dwarfed growth of plants, in such situations, must be considered as resulting much more from their diminished action than from any excess of evaporation.

Hence, if we ascend the slopes of mountains, we find upon them plants resembling those of a succession of latitudes gradually getting colder, than the mean temperature of that which answers to the level of the sea in the same latitude as the mountains; so that, upon very lofty mountains near the equator, the Andes, in upper Peru, for example, we meet with something resembling the succession of plants, in the whole circuit of the globe; but it is a resemblance only and not an identity, because, although it be possible to find upon the side of the mountain, places which have the same mean temperature for the year, as is found in every parallel of latitude, yet both the daily and seasonable distribution of the sun's action are very different, and it necessarily follows that the habits and even the characters of the plants are equally so.

PART I.—EUROPE.

In the following brief summary of the distribution of Orchideæ in the several quarters of the world I have confined myself to the bare mention of the most important habitats, giving only a rough sketch of their ordinary physical character, so far as it affects the growth of the plants under consideration, deeming it unnecessary to enter upon detail here, as the native station will be found attached to each plant contained in the selected list at the end of the work.

In Europe the distribution of these plants is very limited, the character of the climate, receding from the temperate to the frigid zone, prevents the spread of more than the little terrestrial kinds which are indigenous, and these undoubtedly owe their existence to the curious and admirably adapted magazine of vital power which they possess, provided them by nature in the form of fleshy tuberous roots, into which the energy of the plant seems to retire as it were to a citadel to await and repel the attack of winter.

They affect, for the most part, situations sheltered from cold winds and the mid-day sun, such as is usually found on the south-eastern side of woods and pastures, generally preferring a cal-

careous soil, or otherwise, one rich in carbonic matter.

As the present treatise professes only the cultivation of the exotic species, I content myself with an enumeration of the principal indigenous species, appending an outline of the treatment likely to produce successful management.

British Species.

The genus *Neottia* is extensively distributed—the majority of its species extending throughout Europe; others are found in the West Indies, in Nepal, New Holland, and China, though only two of them are strictly indigenous; these are *spiralis* and *nidus avis* (the birds' nest plant).

The genus *Listeria* comprises only two species; these are both natives of Britain, and are rather inconspicuous.

Spiranthes. This genus extends over nearly the same latitudes that *Neottia* affects, and is usually found growing under the same circumstances. *Æstivalis* (ladies' tresses) is the only British species.

Orchis. This is the most extensive genus in a numerical consideration: of the whole family inhabiting our temperate zone, the chief part are found in England, luxuriating in marshy woods

or open calcareous soils ; other species are scattered throughout the whole of Europe, though but few of them are worth the culturist's care : the species *maculata* is the best known, and perhaps the most deserving.

Epipactis is entirely a British genus, curious and pleasing plants, of easier culture than most others ; they are found for the most part in damp woods, which circumstance points to their proper treatment when in an artificial state.

Corallorrhiza. A small genus, found only in Scotland ; it is not remarkable either in form or colour.

The genus *Nigritella* has only one species (*angustifolia*) which is at present known, and that is a native of Austria ; it has dark crimson flowers.

Ophrys. This is beyond question the most interesting section of the whole group ; it occupies a prominent position in the flora of all European countries, and is well deserving all the attention necessary to its successful culture. *Apifera* (the bee) ; *tenthredinefera* (the sawfly) ; *araniifera* (the spider) ; and *muscifera* (the fly orchis,) are well known and deservedly admired.

Gymnadenia. Four species of this genus are found in Europe, and some botanists mention a fifth ; and an additional one is found in Canada. *Viridis* is the most common of the British kinds,

but, from the colour of its flowers (green), is not a favorite.

Aceras. A small genus, very difficult to manage: there are but two species—the one, *anthropophora* (*green man*), is widely disseminated, being present in most places favorable to its growth throughout Europe: the other *secundiflora* has violet-coloured flowers, and is found only in the south of Europe.

Cypripedium.—*Calceolus* is the only member of this genus that can be considered as belonging to this section of the work; it is a native of Britain, and for singularity in form, and richness in colouring, may vie with the best; yet, notwithstanding these inducements to its culture, it is extremely scarce, seldom indeed being seen under cultivation in aught but an enervated or perhaps starving condition.

Platanthera. This genus possesses only one European species, *bifolia* (two-leaved,) an inhabitant of British woods: this is the common butterfly orchis; the flowers are white, and very interesting; the genus is composed of this and two other species, but they are natives of Canada.

Having thus briefly glanced at the leading genera of the European division of these plants, without pretending to any analysis of them, I may remark they have hitherto been found difficult to preserve in anything like their natural

vigour; this diminution of energy in all probability arising from an excess of care.

Should, however, any one feel desirous of attempting the culture of British Orchideæ as a first step, it would be well to inquire as to the character of the localities from which they are derived; for many of them, especially those from a chalky district, refuse to vegetate, unless supplied with their accustomed food. In these cases, and indeed in all where practicable, it is advisable to assimilate the artificial treatment as nearly as possible in every particular, but more so with the soil, to their natural position; they generally succeed moderately well under the management usual for half-hardy plants, keeping them in a cold frame, with protection from heavy rains and severe frosts, through the winter, and the scorching influence of the sun's rays during summer.

PART II.—ASIA.

Asia, in many respects, is the most interesting division of the globe, as every variety of climate and of soil occurs in this vast region; it is watered by magnificent rivers, and intersected by stupendous mountains, of which I believe the *Himmalaha* chain is the loftiest in the world.

Here the distribution of *Orchideæ* is very ex-

tensive, and the principal places they inhabit are the Islands of Ceylon, Sumatra, Java, Manilla; also Japan, between Osacca and Jeddo, or Yeddo; likewise in the swampy parts of the woods of Malacca, or Malaya, a country of India, beyond the Ganges, formerly a large peninsula, growing upon the tamarind (*Tamarindus indica*), and other lofty trees; the temperature varying from 75° to 90°.

In Nepal, and along the Nepalese hills, they abound to a considerable extent; the temperature ranging from 78° to 90°, diversified by the dry and rainy months; changes also are produced by the south-west and north-west monsoons.

In Calcutta they flourish vigorously during the wet season; but when the dry season sets in, the drought lasting so long nearly destroys them; but, on the other hand, in Bengal they grow all the year round with equal vigour; the hot or dry season commences in March, and continues until the end of May; the rainy season then sets in, and continues to September; and before the latter end of July the lower part of the country is overflowed with water, sometimes forming an expanse of more than one hundred miles in breadth; but when abated, the luxuriance of vegetation is not equalled by any other part of the globe: the soil is composed of decayed vegetable matter to the depth of six feet

or more. From China, also, there have been a few introduced to our country; where in the southern provinces the heat is greater even than in Bengal.

PART III.—AFRICA.

Africa extends in length from the Cape of Good Hope to the Mediterranean, on the coast of Tunis; its greatest breadth is from Cape Verde to Cape Guere-a-fiu, forming a vast peninsula, separated from Europe by the Mediterranean, and from Asia by the Isthmus of Suez and the Red Sea, and holds the third rank, in regard to size, of the four quarters of the globe. But the distribution of Orchidæ over the greater portion of the country is extremely meagre, indeed, throughout the northern and most of the eastern parts, together with much of the interior vegetation in general, is very scanty, which is attributable to the excessive heat and long-continued droughts this part of the world is subject to, so torrid as to render a great portion entirely desert.

But on the other hand, in the south-western parts of Africa, where the soil and climate are congenial, its flora is rich in a corresponding degree, particularly in Sierra Leone, the humid atmosphere being so very great as to be inimi-

cal to European constitutions at certain periods of the year: here they abound in great quantities; they are also found in Madagascar and Mauritius, or Isle of France (an island in the Indian ocean); likewise in Algoa Bay and some few at the Cape of Good Hope, the temperature attaining 80° to 90° . There have been a few found also in Delagoa Bay, the coast being covered with woods, intersected with savannahs and watered with numerous streams; it is situated about midway between Mozambique and Cape of Good Hope. The floral productions of this part of the coast are, I believe, unrivalled in brilliancy and fragrance. These places are situated in the south-eastern parts of Africa.

Madeira also produces a few, but not equal in number or beauty to the former places, although a fine island in the north-west. Did this island possess a somewhat higher temperature, Orchidaceous plants would prevail, all other circumstances seeming peculiarly adapted for them, but the comparatively cool climate prevents their spreading to any appreciable amount. Altogether, Africa is not rich in any description of vegetation, although some especial gems have been received from thence, and its generally arid climate militates against the increase of Orchideæ most especially; its opposite is found in the next quarter of the globe.

PART IV.—AMERICA.

This Continent is divided into North and South America, by the Isthmus of Panama. As *Orchideæ* have a wide distribution in this quarter of the globe, the mention of a few of the principal places may serve as a reference, without extending this subject too far, and prove useful as well as interesting to many as a guide to their cultivation.

The principal places in North America, where they abound, are the divisions of Mexico and Guatemala; the first includes Oaxaca or Guaxaca, Xalapa, and Vera Cruz; the latter includes Honduras and Costa Rica; and from various parts of both divisions some of our finest varieties have been introduced. The average temperature of these countries may be stated at 65° , sometimes rising as high as 80° , and again at the opposite season falling to nearly the freezing point; an excessive evaporation and deposit of moisture takes places alternately, day and night, in the low lands, where these plants are most numerous.

The commencement of the rainy season occurs between the beginning of the month of June and that of July, and generally ends in the month of October, the dry season only lasting eight months,

which is from the beginning of October to the latter end of May.

The first rains generally commence on the eastern declivity of the Cordilleras, the formation of the clouds and the precipitation of the water dissolved in the air, on the coast of Vera Cruz: these phenomena are accompanied with strong electrical explosions, which take place successively at Mexico, Guadalaxara, and on the western coast; the mountains in some of these districts are upwards of 6560 feet above the level of the sea.

In the West India islands, the year is divided into the wet and dry seasons—two of each; spring generally commencing about the middle of May, when the first periodical rains set in, they being remarkable for falling every day about noon, during the first fortnight, creating a bright verdure and a rapid and luxuriant vegetation; the weather afterwards becomes dry, clear, and settled; the sun glows with heat, which is almost insupportable, till the sea breeze springing up about ten o'clock in the forenoon, all nature revives, and the temperature in the shade becomes pleasant; this state of the weather ceases about the middle of August, when the steady diurnal wind from the sea is succeeded by faint breezes and alternate calms, the preludes to the second or autumnal rainy season.

In October the rain becomes general, pouring down in torrents from the beginning of August, to the end of October; these islands are occasionally visited by dreadful hurricanes, which spread ruin and devastation far and wide.

In November or December the weather becomes serene and pleasant, and continues cool and refreshing till the end of April. In general, the low parts of the islands may be described as exposed to a hot and unhealthy temperature, while the mountainous regions enjoy an equal and salutary climate: the principal places in the West Indies where Orchideæ are distributed are the Bahamas, Cuba, and St. Domingo; also in the savannahs of Jamaica, usually found growing upon the ebony (*Brya Ebenus*,) and calabash (*Crescentia cucurbitina*); and in Dominica, belonging to the Leeward Islands. In the Windward Islands, the distribution is in St. Vincent, Grenada, and Trinidad; these islands are rich in almost every tropical production.

SECT. II.

THE BENEFIT OF TWO OR MORE HOUSES.

ORCHIDACEOUS plants being natives of tropical regions, require, in their cultivation, what is technically termed a seasonal treatment; that is, a period of active growth, and one of decided rest; during the former, which agrees with the rainy season of the country of which the plant is properly an inhabitant, every stimulative means that the cultivator possesses should be applied to the encouragement of a vigorous and full development of the several increasing parts of the plants; and after the completion of this seasonal growth, the period of dormancy or rest should be brought on gradually, when all excitement must cease in order to give full maturity to the newly-developed organs. Now, as it happens that Orchidaceous plants are obtained from many and various climates and seasons, it is not reasonable to expect, when we take the force of natural habit into consideration, that they will all of them begin to grow at one and the same period, bloom at the

same time, or rest altogether at one season ; not even if we endeavour to assimilate these seasons to those of our own climate ; there will always be a number of them, in a collection of the least pretensions, that will be springing into activity and requiring excessive moisture and other stimulants ; while another portion will be speedily advancing to maturity, and consequently demanding for their future welfare quite a contrary treatment ; and a third will assume an intermediate station, in which flowers are produced, the brilliancy and duration of which are materially diminished when continued in an aqueous atmosphere.

Then, again, there is the great difference which exists between the climate of India and that of Mexico, and the largest portion of South America, to be considered ; it would indeed be but wasteful economy to grow the plants from each of these places together, as the temperature necessary for the Indian species would be more than sufficient for those from Mexico, in fact it would be injurious. But if two houses are maintained for them, every plant may be allowed its proper treatment without disarrangement to its fellows ; thus the structure devoted to Indian kinds being kept at a higher temperature and with more moisture than the American house, the plants of the former may be rested in the latter, while, should it happen that any of the inhabitants of the cooler one

begin to grow in winter or before the time usual for increasing the application of warmth and moisture, they may be removed to the hotter house, where the necessary stimuli will be in waiting for them.

In the case of very large collections, it would indeed be advisable to provide even a third structure, to be devoted to the species requiring less warmth while dormant, such as those from the elevated districts of America—this house with the plants at rest might be kept with a temperature as low as 45° or 50° during the day, and at night it may even be lowered to 40° . With a large number of these plants to grow, it would be a far preferable arrangement to have three small, rather than one or two large houses; and where a general collection is grown, it is almost indispensable to have the Indian species, and those of the hotter climates in a house by themselves, with a temperature during the summer months ranging from 70° to 80° without the aid of sun heat; but if raised by it as high as 90° no danger need be apprehended, as air may be given more freely at the roof of the house during the middle of the day: and by doing so, the atmosphere of the house will be rendered sweet and pure, and the plants consequently benefited by it. At night the temperature should fall as low as 65° ; by reducing it at night, I find that it causes moisture

to circulate more freely in the house than if it was not lowered at all: as in their native country the nights are much colder than the day, in order that the moisture of the ground may rise more freely, and give support to those that derive their entire nourishment from such sources.

In winter the temperature of this house again should be lowered to 65° or 60° during the day, and at night 5° or 10° lower; by reducing the temperature it will cause them to break stronger when again raised; there will also of course be some that are still growing during the winter months, but the reduction will cause them to strengthen and remain nearly dormant until heat is again applied, or they be removed as before advised.

The other house will be more suitably devoted to those from the colder parts of South America, and Mexico, Guatimala, or other parts of North America. They are generally found growing in a comparatively low temperature, and often covered with dew, similar to the hoar frost of this country.

If those plants that inhabit the countries above mentioned were kept in a house by themselves during the summer, or while growing at a temperature not exceeding 70° during the day, with the aid of sun-heat (air should be moderately given), nor below 60° , and lowered 5° during the night,

it would induce a sufficient robust growth to ensure a perfect development of the flowers.

In winter, when the chief part of them are at rest, which generally happens between December and the latter end of February, the temperature should be lowered to 55° in the day, and 50° during the night.

SECT. III.

ON HEAT AND MOISTURE.

THE essential agents in the production and continuance of this tribe of plants are HEAT and MOISTURE, for there is no place where they abound more than where it is hot, and damp almost to saturation; they are here found in vast quantities, but still there are some that will thrive in a comparatively low temperature (50° or 55°), and with a judicious application of moisture attain a robust habit. Such plants are mostly from elevated districts, and consequently the temperature is much lower. Of the two necessary agents mentioned, moisture certainly exhibits the greatest effect upon plants, and in its proper appliance and withholding, rests the entire art of their cultivation.

In this particular these plants exhibit a most decided difference to any other cultivated tribe, for they will bear an increase or diminution of temperature better than an ill-timed alteration of the supply of moisture, yet it is at the present time considered, by some cultivators, that they will not flower so fine, unless they are

kept thoroughly dry during their resting season. This, I am of opinion, is not borne out by experience, for after upwards of nine years of practice and study on this particular point, I find that they require a low temperature (50°), and sufficient water given them to keep their bulbs or stems from shrivelling. The practice of drying so thoroughly I am persuaded is very injurious to them, for they, about that period, require to be kept as sound as possible, to cause them to produce their flowers with sufficient strength.

AIR and WATER. Of the first, sufficient should be admitted to prevent mouldiness and rotting; and of the latter, so much as will secure a constantly moist, and genial atmosphere; this is to be applied not solely by watering, but also by steaming, which may be done by pouring water on the hot pipes or flues which heat the house, until the plants are moistened over: it is of great advantage to them, either during their resting or growing season; for the first, once or twice a week will be sufficient in moderate quantities, and for the latter, a little every day towards evening as they then receive the greater quantity of moisture when in their natural state; but under artificial treatment, the quantity must be regulated by the heat employed, reducing the one with the other.

MOISTURE and HEAT, to a great extent, act and react upon each other, and though the varying positions of the sun, and the length of the days and nights, are a sort of general principle, here obeying the law which we would deduce from the latitude, yet we must be regulated by local causes; for instance, in tropical climates the humidity, and its opposite, are divided into alternating periods, and the greater heat falls upon the latter part of the dry period, and the beginning of the rainy period.

Hence the principal part of the growing and flowering falls upon the period of the rains, and partially upon the dry period or season, for too much humidity while plants are flowering is unfavorable to them; the season of flowering is various, as some produce them before resting, while others do so immediately afterwards.

SECT. IV.

ON LIGHT, THE EFFECT IT HAS UPON PLANTS.

ON entering into the subject of the effect of light on plants, it may be well to state something of the usually-received theory, relative to the question; on the proper observation of which, practice is indubitably dependent. The chief constituents of plants are, by chemists, termed carbon and hydrogen; these occur in all their parts, and are essential to their existence; of these two bodies, carbon occupies the first position, being in reality the true food of all vegetable matter; and without entering into the question of its derivation, whether from the earth or the air, a point of contention among some who profess to teach the matter, I will merely draw attention to its action on plants, or rather to their mode of consuming it, in order to show the effect of light on vegetation, and the necessity of a proper supply: Liebig says "the roots and other parts of a plant, possessing the same property, constantly absorb water and carbonic acid, this power is independent of solar light. During the night, carbonic acid is accumulated in all parts of their

structure; and the decomposition of the carbonic acid, the assimilation of the carbon, and the exhalation of oxygen, commences from the instant that the rays of the sun strike them." Thus it appears that though the food be collected in the night (and hence the benefit of steaming in the evening), light is necessary to its proper elaboration and assimilation,—I am the more particular on this matter from an error which frequently occurs, in the supposition that these plants will not bear exposure to the light—while it is evidently as necessary to them as to other plants, and during our long dull winters they cannot receive too much; yet it must be borne in mind that, being for the most part natives of the dense forests of the tropic, a softened light will be required in summer, when the direct and vivid rays of the sun would be extremely injurious to them, for when exposed to its more immediate influences, they lose all that rich luxuriance for which they are so remarkable, their leaves become spotted with brown, in the form of blisters, their progress is very much checked, and with some species entirely suspended; yet there are some that will bear a strong light without injury, but their leaves are of a more succulent nature, and consequently of a firmer texture; these are of the Vandææ tribe.

SECT. V.

ON THE CONSTRUCTION OF HOUSES.

IN the construction of houses for these plants, attention should be paid to the form, which should be one that will prevent too strong a body of the sun's rays entering at once. The span-roof house is to be preferred before any other, with an angle of thirty-five, and facing EAST and WEST; it is then capable of admitting light and maintaining a requisite temperature at all seasons. The form of the roof, I believe, affects the plants growing under to a considerable extent, particularly if the laps of the glass be puttied, for then the vapour of the house cannot escape, but condenses and falls down on them. During the hot sunny days of the months of May, June, July, August, and to the middle of September, the plants will require shading with canvass or net, similar to that used for protecting peach trees in the spring months.

The readiest and best way for managing this is by nailing it to a strip of wood, the length of the house, and screwed to the upper part of the

roof; the canvass, when spread over the glass, should have a roller fastened along the bottom, with a small wheel at one end, to wind the cord on, when it is lowered down for shading; a hook should be fastened to the opposite corner for the cord, so that it may keep the roller in its place at the ridge of the roof, when not required to be let down: by this means the house may be shaded without any trouble, and as the days are sometimes very changeable in regard to the weather, it is desirable that these things be easily arranged, for, in warm showery weather, attention to shading is of the first consequence; during the winter months, or from October to the latter end of April, no shading will be required, as they should then have the full benefit of the light, particularly those that are growing, for there will be, of course, some still growing.

CULTIVATION
OF
EXOTIC ORCHIDACEOUS PLANTS.

CHAPTER I.

THE GENERA AERIDES, SACCOLABIUM, VANDA,
SARCANTHUS, CAMAROTIS, AND CLEISOS-
TOMA.

THE three first-mentioned genera are amongst the most beautiful and interesting of all this tribe of plants, and are inhabitants of the moist and warmer parts of India, where the woods are perfumed for miles round with their odoriferous fragrance. These are generally termed air plants, on account of the roots growing from the stems, and deriving their nourishment from the damp atmosphere. The mode that I recommend for growing them, is upon rough billets of wood with the bark upon them; the billet should be cut in size proportionate to that of the plant which is to be placed upon it; before placing

the plant, the block should be covered with sphagnum tied round with lead wire, so that it will not fall off. I have also covered the billets with clay made like paint, and then laid fresh moss upon them; when dry it will need no wire to keep it on: when either operation is done, the plant should be placed upon it, and more sphagnum applied to the base of the plant, and tied with wire, this will preserve moisture to it: when all is completed a piece of copper wire should be nailed to each end of the billet, so that it may be suspended with the head of the plant rather in an inclined position, so that water may not lodge in the heart of it; the sphagnum will also have a better appearance if trimmed with a pair of scissors, besides the loose sphagnum will then be separated from that which is fast: these plants should be hung up in the dampest part of the house; when they begin to make young roots, syringing will be required a little every day, this will cause them to make a rapid progress as if in their native country, where they are invariably found growing in the dampest places.

They may also be grown in baskets made of wood and filled with a mixture of chopped sphagnum, rotten wood, and a little turfy peat; the plants should be placed in the centre of the baskets, and their roots allowed to grow through; by this mode of growing them the mois-

ture is collected more about their roots, and consequently they do not require so much syringing as with the other method, the result is about equal.

Their growing season is generally from the middle of March to the latter end of October, and sometimes to the beginning of November; during which period they require plenty of water or moisture, or else they will not flower with sufficient strength: the temperature also required for them while growing is from 70° to 80° , without sun heat, or with the sun to 90° ; air then should be given them during the middle of the day, to carry off the unwholesome vapours that will arise from the stagnant water which has been confined in the house during the night. And when these are at rest, which will be from November to the latter end of March, if quite done growing, watering and syringing should be discontinued, that they may mature their yet embryo flower buds. Their time of flowering is generally from the beginning of May to the latter end of June, or even to the middle of July, but varies a little according to the time they make their growth; that of the genus *Sarcanthus* is generally from July to September.

CHAPTER II.

THE GENERA ACANTHOPHIPPIUM, GOVENIA,
 PHAJUS, CALANTHE, BLETIA, PESOMERIA,
 AND SARCOCHILUS.

THESE are natives of various parts of India and Xalapa, and are what is generally termed *terrestrial Orchideæ*, on account of their growing upon the ground, in contradistinction to the generality of orchidaceous plants; which, from being inhabitants of trees, have the term *epiphyte* applied to them.

The flowers of the first genus are not remarkably handsome, but contrasting well with its fine foliage renders it worthy of cultivation; the chief point in growing them to perfection is to place a good drainage under them, as they require a plentiful supply of water during their growth.

The mode that I shall recommend for their cultivation is in pots of sufficient size to admit the plant to root freely; the plant should be full two inches from the side every way; when they

are ready, and the time suitable for potting, there should be a smaller one placed over the hole in the inside, turned upside down; after this is done the space between must be filled with potsherds until the pot is nearly half full; they then should be potted level with the rim in a mixture of sphagnum and turfy loam, well chopped together. The genera above noticed do not require an elevation: the most proper time for repotting is when they have begun to make their young shoots; they will then require a moderate supply of water at first, increasing as the plants grow; but when their roots have become established, water will be required abundantly to make their bulbs or shoots of sufficient strength to flower in perfection. The temperature required to grow these in, is the same that I have recommended for the Indian species; but the genera *Pesomeria* and *Calanthe* will do in any plant-stove, provided proper attention be paid to watering, and as these remain ever green all the year round: a little water will be required when they are not growing, to keep them in a sound and healthy state.

CHAPTER III.

THE GENERA ACROPERA, CIRRHÆA, GONGORA.

THESE three genera are natives of various parts of Demerara, Xalapa, and Brazils; they have a pendant habit in their mode of flowering, producing the flowers on a drooping raceme from the base of their bulbs, not beautiful, yet curious; some of the species of Gongora perfume the woods for miles in their native country with an odour of cinnamon. The most proper mode of cultivating these genera is in square baskets made of wood or wire; the latter are the best where neatness is preferred, but they will require painting before being used, to keep them from rusting; nothing being more injurious, in my belief, than the oxide of iron to their roots, or even the drip from it on their leaves. These little matters are often neglected by many small cultivators, and indeed by many experienced ones, yet they have their importance. The depth of the baskets should be about six inches, and the size according to that of the plant; the usual time for removing them is as soon as they are observed to make fresh roots, from the young shoots which they are producing; the basket

should then be lined with some long sphagnum, or the fibrous part of peat, with the mould beaten out of it: a few broken pots will be required in the middle for drainage, and upon these a layer of mixed sphagnum and turfy peat, well chopped together; and if a few potsherds or charcoal be mixed, it will be an assistance to the plant.

The plant should be placed so that it will be nearly two inches above the rim of the basket, to allow the racemes of flowers to descend more freely, and filled up firmly with the same compost; they may also be grown in pots, though not an advisable method: long ones should be used three parts filled with broken potsherds, and the plant elevated four inches at the least above the rim: the same mould will do for them, only requiring some turfy peat cut into square pieces, to be placed around the edges of the pot, secured together by means of wooden pegs thrust through into the mould, yet allowing it to slope a little from the plant to the rim; water will be required but little at the first, increasing the supply as the plant becomes stronger; but during the resting season they will scarcely require any water, or, what is most proper, a little now and then, just sufficient to preserve their bulbs, from shrivelling; the temperature required for them is the same as for the Indian species.

CHAPTER IV.

THE GENERA PHOLIDOTA, BATEMANNIA, BIFRE-
 NARIA, ANGULOA, MAXILLARIA AND ITS
 RECENT DIVISIONS, LYCASTE, PAPHINIA,
 AND SCUTICARIA.

THESE are inhabitants of the various woods of Brazil, Trinidad, and Demerara, and may be assimilated in all essential points of management. The two latter genera are various in point of colour, and should be by all means in the possession of every admirer of this beautiful family of plants.

The genus *Maxillaria* is very extensive, and enumerates many valuable species, although it has recently undergone a division.

To cultivate them successfully, the stronger growing kinds should be allowed plenty of pot room, at the same time paying due regard to the size of the plant when selecting its pot; the habit of the plant also must be considered, for many of the smaller growing species are somewhat delicate, and to them nothing is more injurious than over-potting, for after a long experience I find the mould becomes sour by constant watering be-

fore the roots of the plant can occupy the whole of the pot and absorb the moisture given to them; besides, nothing looks more unsightly than a small plant in a large pot. When potting commences, the plant should have plenty of drainage, to allow a free supply of water; and the compost for them should consist of chopped sphagnum, turfy peat, and a few potsherds, mixed together; the latter will secure a better and quicker drainage through the soil from the plant. When potted they should be at an elevation of at least two inches in the centre above the pot; the outside of these should also have a layer of pieces of turfy peat, to keep the other mould from falling off by the watering. There are some of the smaller divisions of *Maxillaria* which will succeed equally as well, if not better, on blocks of wood covered with moss; but all these operations should be done when the plants are beginning to grow. They will require a gentle watering at first, increasing as the plant becomes stronger in its growth; a little water and often is better than going to extremes; by the first the mould is always kept moist, and not too wet, but in the latter case it is dry one time, and saturated another; the death of the plant frequently resulting. During their season of growth they will require a temperature varying from 65° to 75°, and a gentle syringing as soon as they have begun to form

their bulbs: this should only be done on fine days. My reason for refraining from syringing until they have begun to form their bulbs, is that then no water can lodge in the hearts of the young shoots, which, if done before, is quite likely to happen, this would cause them to damp off, and thus the season's growth would be lost. During their resting, water should not be entirely suspended, so as to cause their pseudo-bulbs to shrivel; and if there be a cooler house at liberty during their flowering, they may be carried into it without danger of the plant being injured by so doing. *M. (Scuticaria) Steelii*—most beautiful and curious object, from the circumstance of its producing very long pendant rush-like leaves, instead of the ordinary pseudo-bulbs and erect foliage which distinguish the other portion of the original genus—should be grown on a block of wood, suspended from the roof of the house; but in all other respects it may be treated as directed for the pseudo-bulbous division.

CHAPTER V.

THE GENUS ANÆCTOCHILUS.

THIS curious little genus of plants is found extensively in the woods of Ceylon, one of the Philippines Islands; and is another member of the terrestrial division. Their general appearance resembles somewhat that of *Goodyera discolor*, but the foliage is far more handsome; that of the species *A. setaceus* is of a very dark green colour, with a broad longitudinal stain of gold colour along the midrib, and each side netted over with the same colour; the leaves of the other species *A. argenteus*, are of a pale green, marked in the same way, but possessing a silvery appearance, from which it takes its specific name; in form the leaf is also more acute.

I have succeeded in growing this plant to a remarkable degree of perfection by pot cultivation; the pots should be nearly half filled with potsherds, and the plant potted in a mixture of turfy peat, a little chopped sphagnum, and a small quantity of very small potsherds, all mixed together: it does not require any elevation at all, nor does it want much water; this pot should

be placed into a larger one, the space betwixt them to be filled up with sphagnum, and a bell glass, such as is used for striking cuttings, should be placed over the plant, and the inside wiped dry every morning; by this means the plant will grow strong and flower freely; during the time of flowering the glass may remain off, the temperature required for it is from 70° to 80°.

CHAPTER VI.

THE GENERA BROUGHTONIA, AGANISIA, COMPARETTIA, AND ANGRÆCUM.

IN classing several genera together, I am actuated by a desire to condense my remarks as much as possible, because the plants thus placed together require the same treatment, and therefore need no separate notice. Those mentioned in the present chapter are inhabitants of the various woods of Jamaica, Demerara, Trinidad, and Sierra Leone; in some of these islands they are found extensively.

The mode that I recommend for growing them is upon blocks of wood, the size and thickness according to those of the plants requiring them; when these are selected out and covered with sphagnum, in the manner that I have recommended before, the roots should be covered with the same material, and neatly fastened down with lead-wire; during the time the plants are growing the blocks will require a liberal supply of water to keep them moist; but, as some of the latter genus, such as *A. ebernum*, and those of a stronger growth, will require pot

cultivation, on account of their roots being of a fleshy substance; I would recommend them to be placed in shallow pots, three parts filled with broken pots, and in a mixture of turfy peat and small potsherds; the plant should be elevated a little above the pot, with a layer of pieces of turfy peat round the outside, secured together by means of small pegs as before directed; in growing them this way they will not require so much water even while growing; and during their resting, that is, when they have done growing, a little water once a week will be found sufficient for them. The best time for potting or blocking is as soon as you observe them begin to make fresh roots. If the pots or blocks be large enough for another season, they will require only top dressing, the blocks will sometimes last for years; it would be ridiculous to remove them every year, for new blocks are only required when the old ones get too small, or become rotten; the temperature suitable to their growth is the same as that I have recommended for the Indian sorts, and those of warmer climates.

CHAPTER VII.

THE GENERA APORUM, CIRRHOPETALUM, BOL-
BOPHYLLUM, SOPHRONITES, GUNNIA, AND
LEPTOTES.

THESE are inhabitants of various woods of India and Brazil, possessing a temperature of 70° to 78°, abounding with moisture, almost to excess, but it must not be considered that the same may be applied under artificial treatment without caution or regulation.

The mode that I follow in the cultivation of these genera, is to place them upon small pieces of wood, or cork-barked oak, suitable to the size of the plant, covering their roots with sphagnum, neatly fastened down with wire: the best time for such purposes is when they are making their fresh growth, which is generally about the latter end of June to the middle of September: when grown this way they require looking over every day to see if any be dry, for while growing the moss should be kept constantly damp, but not to saturation, or else their roots will rot. But the genus LEPTOTES may be grown to advantage under pot cultivation; and as the plant is

of a dwarf growth it will not require large pots, but, in the inside of them there should be a smaller one placed upside down over the hole; afterwards a few more potsherds upon it: the plant should then be potted a little above the rim in a mixture of chopped sphagnum, turfy peat, and some very small potsherds, all mixed together; the plant will thus have a better drainage, and the roots will also cling to and derive nourishment from the drainage in the mould. When completed the mould should slope a little from the plant down to the pot, and very little water under this treatment will be required. If the house is kept moist during the winter scarcely any water will be required for them, so long as their stems or leaves do not shrivel. The temperature is the same as that I have recommended for those of the last chapter.

CHAPTER VIII.

THE GENERA ASPASIA, ERIA, DECRYPTA, BRASSAVOLA, TRIGONIDIUM, AND CAMARIDIUM.

THESE plants are found in the woods of the West Indies, Jamaica, and Demerara, growing vigorously in a temperature of 76° to 84° on the calabash trees; their flowers are not very handsome nor very fragrant.

They may be successfully cultivated in pots of sufficient size, allowing them plenty of drainage, and a mixture of turfy peat, sphagnum, and a few rotten leaves, all blended together, and potted at an elevation of two inches above the rim of the pot; by elevating them, their roots are not so liable to be broken during shifting.

The genus *Brassavola* may be grown in baskets or on rough chumps of wood covered with sphagnum, to preserve as much moisture as possible about them, as they are often found growing among the rocks in their native country. While under exciting treatment water should be liberally supplied to them, but during rest scarcely any will be required; when grown in baskets for

suspending, the mould should consist of fibrous peat and a few potsherds mixed together.

All these genera are fond of a damp atmosphere during their growth, which occurs generally from June to August; but when that is completed water should be reduced, and a little steaming added now and then, which will be of great service to them; this may be done by pouring water on the hot pipes or flues until you have a sufficient quantity in the house. By reverting to this plan, a more genial atmosphere is obtained than can be with the usual means of steaming them from a boiler. The temperature for all these genera, except the *Trigonidium*, will require to be the same as for the Indian species; the genus *Trigonidium* requires the same temperature as the American species.

CHAPTER IX.

THE GENERA BRASSIA, ONCIDIUM, CYRTOCHILUM, MILTONIA, AND ODONTOGLOSSUM.

THESE genera are also inhabitants of various parts of Demerara, Brazil, and Guatemala; they are extremely beautiful, and at the same time easily flowered when properly treated; their flowers also last for a great length of time if taken out of the growing-house when fully expanded and put into a cooler one. But before entering on the subject of their cultivation, I will venture to make a few remarks on the structure of their flowers, as they are so nearly related to each other in their botanical character, although different in outward appearance: in my opinion they are nothing more than a sectional division of the genus *Oncidium*, they being so closely related to each other, and no doubt, form the nucleus of a group of *Vandææ*; I have examined them at various times, and found that the genus *Oncidium* has a column with two ears and the labellum; a distinct-lobed

Miltonia has a column also with two ears, but the labellum is entire, and partially united at the base; *Cyrtorchilum* has also a winged column, but the labellum is distinct and entire; *Brassia* has a column short of being winged or eared, but the labellum is distinct and entire; *Odontoglossum* has also a winged column, and the labellum entire, partially united to the column at the base; the petals of the genera *Oncidium* and *Cyrtorchilum* are angulated (narrowed); but the genera *Brassia*, *Miltonia*, and *Odontoglossum* have their sepals and petals sessile.

Having now given a plain description of the above flowers, I will at once proceed with my routine of cultivation.

The following is my method of cultivating them, and which I find applicable to the whole, except the genus *Odontoglossum*, which differs a little, and will be explained last. The stronger growing species require large pots for the full development of their growth; these should be three parts filled with broken potsherds, observing that a smaller one be placed at the bottom, upside down, over the hole; by this means the hole is kept open, which of course causes a quicker drainage from the plant, and over this a layer of well-chopped sphagnum, turfy peat, and small potsherds, all mixed together; the plant should then be placed upon it so as to be about

two inches above the rim of the pot ; more of the above mixture should be placed round the plant, and neatly finished off with small pieces of turfy peat, pegged down round the outside ; this will keep the mould more closely about the plant, and will prevent it from being washed off by the watering. The time I consider best for shifting them is when they are beginning to make fresh roots from the young shoots ; if done before that time the damp mould brings the plant too soon into action ; or if delayed until they have made their roots, they are liable to get broken, without extraordinary care is taken at the time ; but if done as I have directed, there is not the slightest fear of either case happening.

When potted and finished off, they should be put into the coolest part of the house ; very little water should be given them until they have advanced a little in their growth ; afterwards it should be increased by degrees until the plants are three parts grown ; water then should be decreased by degrees ; care must also be taken when watering that none gets lodged in the hearts of the young shoots, or it will cause them to rot off. As soon as any is perceived in them they should be turned on their sides for a while, so that it may run out ; the like attention is required that no drip from the top of the house fall upon them, as it is very often their destruction.

When they have completed their growth, water will only be required in sufficient quantity to keep the mould from getting perfectly dry, and the plants ought to be allowed to remain this way until they either flower or make a fresh growth: in the latter case moisture in the house will be sufficient for them. By attending to these directions a strong flowering and vigorous growth will result; the temperature during the growing season should be the same as for the South American species.

The genus *Odontoglossum* is a beautiful one, and well deserves cultivation; they may be grown either in shallow pots or pans; the latter are the best: they will also succeed well on blocks of wood covered with sphagnum, placed rather thickly, with a free supply of water while they are growing, this is essential, or they will not flower so fine as they ought to do. It is one of the easiest in cultivation when properly attended to; for pot cultivation they should have a good drainage underneath, to ensure which the pots should be nearly three parts filled with broken sherds, and the plants placed a little higher than the rim in a compost of turfy peat, chopped sphagnum, and rotten wood, all mixed together: I have found this to answer best for them. The best specimens of *O. grande* grown by this treatment have produced as many as nine racemes of flowers on one plant, with five and six flowers on a raceme;

the temperature they are subject to during their growth should never be allowed to exceed 65° , nor fall below 56° . They should also be placed where plenty of air is circulated; but during resting the temperature may be lowered down to 45° ; very little water should be given them during this time, and the lower the temperature the stronger will be their growth, and consequently they will flower so much the finer.

CHAPTER X.

THE GENUS CATTLEYA.

CATTLEYAS are, beyond question, among the finest of ORCHIDÆ: their flowers are generally large and splendidly shaded with various hues. They are inhabitants of South America, luxuriating in places possessing a temperature of 60° to 70°, and frequently damp almost to excess; the rains in such situations being very heavy at certain times; but under artificial treatment less water is required, and while resting very little indeed will suffice, neither should they be allowed to make more than two growths in a year, as it causes them to become weak and not flower so fine when three growths are made in one season.

The system that I recommend for their cultivation is in middling sized pots, as they seldom require moving; the pots should be three parts filled with broken sherds to give a good drainage, for if that is not done the plants will soon become sickly, and from which state they seldom can be recovered.

The mould that I prefer for them is peat, na-

turally mixed with sphagnum, but if this cannot be had, a little sphagnum, well chopped with it, will answer the same purpose; the peat should remain in small pieces, and a portion of potsherds be mixed with it. When potted, the plant should be about two inches above the rim, in the centre of the pot; round the outside a little rough peat should be placed and secured down with pegs; this will keep the other mould together.

The base of the plant, by no means, should be buried in the mould, for then water often effects a lodgement which will destroy the plant, particularly the young shoots that are just beginning to grow.

The best time for potting I have found to be from July to the latter end of August; they are then beginning to form new roots, from the base of the young shoots: this operation should not be delayed too long for this genus, as their roots are liable to be broken by it, and a great check would thus be given to the plant; water must be given but gently at first, increasing as the plant becomes more strongly rooted: and when the plant has nearly completed its growth, the supply of moisture should be reduced by degrees until it arrives at a dormant state, very little water will then be required, as the only object then is to keep the mould from getting too dry. During their flowering season they should be removed

into a cooler house, or the drawing-room, as their flowers will last longer and the colour be much finer than if allowed to remain in the growing-house, the moisture of which would cause them soon to decay, and consequently abridge the period of their beauty. The temperature most suitable to their growth is that of a cool house, such as is recommended for the North American species, and the same when at rest will suit them.

CHAPTER XI.

THE GENUS SCHOMBURGKIA.

THIS stands next in point of beauty to the genus CATTLEYA; it is mostly derived from the woods of Honduras and Guiana, where they are found extensively growing on the large trees of those islands.

In describing the cultivation of this genus, it will be necessary to state that the species *tiber-cina* requires a somewhat different treatment to the others: it should be grown on a chump of wood with the bark as rough as possible, for the roots to run into; but before placing it upon the wood it must be covered with sphagnum; the plant should then be placed upon it, and more applied about the roots and fastened down with lead-wire.

This operation should be done when the plant has begun to grow and is forming new roots, it will then require a little water to keep the moss damp, so that the roots may derive sufficient nourishment; and the quantity should be increased as the plant gains strength, until it has nearly com-

pleted its growth; when arrived at maturity it will scarcely require any water, but in a growing state it likes a moist atmosphere, almost to saturation.

The other species will grow well under pot cultivation, provided there be a good drainage underneath, which I particularly recommend for all plants; the same compost will do for these as for *Cattleyas*, but the treatment should differ in regard to temperature, as I have found these to grow better in a higher one; the temperature I would recommend is that necessary for the Indian species.

CHAPTER XII.

GENUS LÆLIA.

THIS is also a splendid genus, of the pseudo-bulbous class ; they are found in different parts of South America, growing in a very low temperature and a damp atmosphere. They are rather difficult to manage when first imported.

My method of cultivation, is to place the smaller ones on blocks of wood covered with sphagnum, and suspend them in as light a place as possible, but not allowing the full rays of the sun to shine on them ; if grown in pots, I use a good drainage for them, and a mixture of chopped sphagnum, turfy peat, and a few small potsherds, all mixed together, and the plant elevated a little above the rim ; in growing them this way they will not require so much water, as if grown on blocks of wood ; they require to be kept constantly moist while growing, or else their bulbs will not come to perfection ; the species *L. superbiens* is said to be one of the finest and at the same time the most difficult of all ORCHIDÆ to cultivate ; the

situations where it has been found in a wild state is in the crevices of rocks in Guatemala, sheltered from the northern winds of that climate; in these places its flower spikes are said to attain the immense length of four yards.

This will require a large block of wood to be grown upon, with plenty of sphagnum fastened round it with lead-wire; the plant should be placed on the block and more sphagnum applied over the roots; during its growth too much water cannot be given to it provided it be not saturated. The reason that it does not flower more freely, in my belief, is, that it is grown in too high a temperature; that which I have found to succeed best is from 54° to 60° while growing, but a still lower one while at rest, little or no water during that time should be given to it; pot cultivation will also do for it provided there is a good drainage, and it is grown in a compost of chopped sphagnum, turfy peat, and rotten wood, with a few potsherds mixed together. Water should be but moderately supplied to all of them at the first, but increasing by degrees as they become more strongly rooted, for those on wood will require looking over every day during their growth; the temperature for all of them is in the coolest part of the house devoted to the South American species, and if a free circulation of air can be given to them the better

they will grow, but scarcely any water will be required during resting, or until they again begin to grow. The time best suited for potting or blocking is when they are making their fresh roots from the base of the young shoots.

A slight deviation from this treatment is, however, necessary on the part of *L. acuminata*, which will not fully expand its flowers in a temperature at all lower than 75°; it will grow in as cool a place as any of the others, but the blossoms are then only imperfectly developed.

CHAPTER XIII.

THE GENERA CÆLOGYNE, PAXTONIA, GROBIA,
CÆLIA, EULOPHIA, AND MACRADENIA.

ALTHOUGH these genera are not so conspicuous as some others, yet they are by no means unworthy of cultivation: they are chiefly inhabitants of India, Manilla, and Brazil.

The system that I follow in the cultivation of these, is in pots half filled with broken pottsherds, over this a thin layer of fibrous peat: then using a compost of turfy peat, well-chopped sphagnum, and a little leaf-mould that is half-decayed; these should be well mixed together, and the plant potted a little above the rim, placing some small pieces of turf round the outside, secured down by the means of small pegs thrust through into the mould. This will keep the other from falling off, and the roots will find their way to it; they will require but little water during the first week or ten days after removing, and a little more heat and shading until they are again established.

Some of the genus *Cælogyne* will do equally well on chumps of wood, such as the smaller

growing kinds. The wood for use should first be covered over with sphagnum, and fastened with lead-wire; then placing the plant upon it, and adding more over its roots, fastening it down in the same way; a plentiful supply of water during its growth will be necessary; but during the season of rest very little is required.

The genus *Paxtonia* does not require to be elevated at all, if there be a good drainage in the pot; the same compost will also do for it, excepting the leaf-mould, which should be rotten wood, or small potsherds.

They may likewise be grown on chumps of wood covered with sphagnum; but they then will require a greater supply of water during the time they are growing, which is generally between the latter end of April and the beginning of June, when potting or blocking should be done, as they are then forming their fresh roots from the young shoots which at that time are forming; and when they have completed their season's growth a slight watering will only be required about once a week. Like all other Orchideæ they require a low temperature during the resting season, but while growing, a temperature such as is recommended for the Indian species.

The genus GROBYA and CÆLIA will succeed better in the South American house.

CHAPTER XIV.

THE GENERA CLOWESIA, CYCNOCHES, MOR-
MODES, CATASETUM, MYANTHUS, AND MO-
NOCANTHUS.

THESE genera are found in the various parts of India and South America, partaking more or less of the character of each other, especially in the form of their pseudo-bulbs, and in the circumstances affecting their growth.

They are the most curious of all orchidaceous plants, particularly the two last-named genera, which, I believe, are no more than an abortive form of the genus *Catasetum*, but now classed into two distinct genera.

I have successfully cultivated them in pots of a suitable size, three parts filled with broken sherds; on them should be placed a thin layer of the fibrous part of peat, having the mould beaten out of it, to keep the mould from mixing with the drainage.

The compost for them should consist of turfy-peat, and small potsherds, the first in small pieces, and if naturally mixed with sphagnum it will be the better. The plant should then be potted, so that it will be about two inches

above the rim of the pot, with a layer of small pieces of turfy peat placed upon the outside, to keep the mould together. This may be secured by the means of small pegs thrust through them into the mould. Care must also be taken while potting that the base of the pseudo-bulbs is not covered; for if planted too low, they seldom make much progress, being so liable to damp off when making the young shoots.

The best and most proper time for potting is when they have commenced growing, or at least when they have begun to form new roots. The plant should be made firm after potting; no water should be given them until they have made a good progress in their growth, as the moisture of the house will be sufficient for them during the time I have specified. After that water may be given cautiously at the first, increasing by degrees as the plant becomes more established with roots. A little syringing occasionally will be beneficial to them; but as soon as they have nearly completed their growth, the water must again be reduced, so as to bring them into a regular dormant state. No water will be required for them whilst they are at rest, if placed in a cool house. The temperature while growing should range from 70° to 80° for the first three genera; and for the latter from 65° to 70° , falling to 50° or 55° for the resting season.

CHAPTER XV.

THE GENUS DENDROBIUM.

THIS is a very interesting and beautiful genus. The habits of some of its species differ very much from each other, so much so as to cause many to imagine they are not all of one genus. Nor do I believe it is a true genus, as far as my knowledge of them goes.

Their native country is India and the Indian Islands, a few also are found in New Holland; but those of the latter place are not equal to the others in colour or general appearance; nor, as is to be expected, do they require so high a temperature as is necessary to bring the Indian species to perfection.

I have often found members of this genus in many collections in a fine healthy state, but not flowering freely. This is owing to the want of a proper season of rest; for they are often kept constantly growing all the season round, and only producing a few flowers at a time, instead of allowing them two seasons, one for flowering, and another for growing them. I am positively

convinced that they cannot flower well and grow at the same time, for by being always kept in an excited state, they are unable to ripen their stems to prepare them for flowering; but many persons believe if they can grow them well, they will be sure to flower fine. Such is not always the case; for the principal point is ripening their stems, and bringing them into a proper resting, which may be done by proper attention being paid to them. In their native country they have one season of excessive moisture, and another of dryness; but under artificial treatment, it must not be considered that they require the same amount of humidity as when in their natural position; it is also important to mention that all of them do not flower after the rainy season, as there are some species which flower before it commences.

In order that my mode of cultivation may be more plainly understood, I have divided them into three sections:—

The first section consists of upright growing sorts, requiring pot cultivation. The second, those that are of a pendant habit, and require baskets. And the third is devoted to those that require blocks or rough chumps of wood.

SECTION 1. For these, the pots should be in proportion to the size of the plant intended for them; in forming the drainage a smaller

one should be placed upside down over the hole in the inside, then adding rough broken potsherds in the cavity between the two pots until the larger one is half filled, it will be complete with a thin layer of long sphagnum over the whole, to keep the mould from mixing with the drainage; and finally, the plant should be potted in a mixture of turfy peat, sphagnum, and small potsherds; the first two being well chopped before using. If the plants are large, I pot them three inches above the rim of the pot; they will then require some thin pieces of turfy peat placed round the outside, and pegged down, to keep the mould from falling off by watering. I then cover the whole with fresh sphagnum, which not only gives it a neater appearance, but retains moisture about the roots much longer. The best time for such operations is when the plants begin to make their fresh growth, for if delayed longer their roots are in danger of being broken, and a sudden check would then be given to the plant.

Water will be but little required for the first two or three weeks; by that time they will be well established with roots, and consequently require watering about twice a week; I also syringe them night and day with a fine syringe during growing, or at least until they have three parts made their growth. I then begin to reduce watering to only once a week, and entirely give over syringing.

They very often at that stage of growth begin to make fresh shoots again, which would prove injurious to ripening their former ones for flowering. During their season of rest the mould should be kept moderately moist, so as to keep their shoots from shrivelling; if the house can have a slight steaming two or three times a week, it will be beneficial to them.

SECTION 2. Those that are of a pendant habit will require suspending from the roof of the house in baskets made either of wood or wire. The appearance of the first is more in conformity with that of the plant, but does not last very long, as watering and the moisture of the house soon cause them to decay. If made of iron-wire, they should be well painted before using, or they soon become rusty and injurious to the plant, as well as unsightly; the depth of either should not exceed ten inches, but the width should be in proportion to the size of the plant. The best time for removing them is the same as recommended for the others. The baskets, before using, should be lined with long sphagnum, to keep the mould from falling through, which should consist of the same material as for pot cultivation, and likewise the same treatment should be observed.

SECTION 3. Consists of those that are of the

smaller pseudo-bulbous tribe ; these will require billets of wood, which should be either oak or ash, and the rougher the bark the better will the plant root on it; these, before using, should have a slight covering of long sphagnum, secured down with lead wire. I prefer this to placing them on the bare billets, as moisture remains longer about their roots, which is most essential while the plants are growing ; the other part of the treatment is the same as that for the first section. The temperature for the whole, while growing, should range from 70° to 80° , but when at rest it may fall as low as 55° or 60° .

CHAPTER XVI.

THE GENERA EPIDENDRUM AND BROMHEADIA.

THE species forming the first genus are found extensively in the islands of South America, particularly in those places where moisture is almost inimical to European constitutions at certain periods of the season.

They are extremely variable, both in form and colour of their flowers, and in the manner of their growth, exhibiting the most anomalous collection of shapes to be found in any extant genus; many of them are highly odoriferous, and on this account, and from being so easily cultivated, are highly prized.

I should recommend the majority of them to be grown in pots, but some of the smaller and more delicate kinds may be either grown on billets of wood, or in wire baskets suspended; those in pots should have a good drainage, as they require to be watered freely while growing; the compost for potting should consist of turfy peat and sphagnum, in equal parts, well chopped together, and a few small potsherds mixed with

it, which will keep the mould from becoming too solid, and likewise the plants will root more freely among them, as they retain and emit moisture much longer, and in a gradual manner, without allowing the water to become stagnant about their roots, which is often the case if there is not a proper drainage given to them. When potted, the plant should be about two inches above the rim of the pot; in this case the mould will require some small pieces of turfy peat placed round on the outside, and secured down by the means of small pegs, as I have directed before. No water will be required until their young shoots have made a progress of two or three inches; the moisture of the house will be sufficient to excite the plant into action; but if the mould show the least signs of becoming dry, a slight sprinkling with a fine rose waterpot will be sufficient for the first week or two, afterwards increasing the quantity as the plant gets more strongly established with roots.

During their growth I give them a gentle syringing two or three times a week, if the days are hot and drying; the best and most proper time is towards night: it is then they receive most moisture in their natural state. The time I prefer for potting is the commencement of the growing season. The pseudo-bulbous tribe may be grown on logs of wood covered with sphagnum, or in baskets prepared in the manner I have before

directed, and with the same compost as that for pot plants.

When these two genera have completed their growth, the supply of water should be considerably diminished, allowing only the moisture of the house for their support as long as their stems or pseudo-bulbs do not shrivel; but if they show the least sign of it, a little water will then be required at their roots, but not in such quantity as will excite the plant into growth; a little steaming two or three times a week will be of benefit to them: this may be done by pouring water on the pipes or flues until the plants have become moist. The temperature to grow them is the same that I have directed for the South American species.

CHAPTER XVII.

THE GENUS BARKERIA.

THIS is a beautiful, indeed I may say a lovely genus, a native of the colder parts of Guatemala, and under artificial treatment requires a low temperature compared with many others of this tribe.

My system of growing them is in baskets made of wire, the depth of them not exceeding four inches; these I line with long sphagnum, to keep the mould from falling through, which is composed of turfy peat and sphagnum well chopped together, and mixed with small potsherds; if a little rotten wood can be had to place at the bottom of the mould, so much the better; if not, a few large potsherds, to secure a good drainage, as they require a liberal supply of water while growing, provided it does not remain about their roots too long. The plant should be elevated a little, and when completed the surface of the mould should be covered with long sphagnum, and secured down with lead wire. This not only improves the appearance of the plant, but

likewise keeps the mould longer together. The time I prefer for such purposes is at the commencement of their growing season, which generally is towards the latter end of March, or the beginning of April; the plant should have very little water at the first, but increasing as the plant becomes better rooted until they have completed their growth. During this part of the season the temperature should not exceed 65° by day, but may fall to as low as 58° at night; in the daytime air may be given to them, but not in such a quantity as to chill them.

During their season of rest very little water will be required, so that their roots do not become shrivelled: and the temperature should not exceed 55° by day, or be at nightfall below 45° .

The lovely *Epidendrum Skinnerii* requires the same treatment and temperature as these. They ought to be grown by every admirer of *Orchideæ*.

CHAPTER XVIII.

THE GENUS STANHOPEA.

THIS is another most interesting genus, both from the singular construction of their flowers and the manner in which they are produced; their aromatic fragrance is so varied both in power and tone, that it would be impossible to give a correct idea of that which is produced in the house while a number of them are flowering; their natural habitat extends over a wide expanse of the woods of South America; they are of the pseudo-bulbous class, producing their flowers on a pendant raceme from the base of the bulbs after they have completed their growth.

The mode I pursue in growing them is in baskets made of wire, but not exceeding six inches in depth, as that is sufficient however large the plant may be; the width must be in proportion to the size of the plant; the width of the wires at the bottom from each other should be one square inch, so that the flower spikes may protrude through without injury. They may also be grown on billets of wood, with three upright

pieces nailed to it, and some copper wire fastened round the outside, an inch from each other. Both of these will require lining with long sphagnum, to keep the mould from falling through, which should consist of turfy peat and sphagnum well chopped together; the baskets should be filled, and the plant placed at an elevation of three or four inches above the rim; more mould will be required round them, sloping it from the base of the plant down to the rim of the basket; on the surface some long sphagnum should be placed, and neatly bound down with lead wire, by crossing it in different directions: the surface and underside of the basket should then be trimmed with a pair of scissors, which will give it a clean and neat appearance. In regard to watering, very little will be required for the first week or two, but the supply should be increased as the plant grows. As soon as they are forming their fresh pseudo-bulbs, syringing will be requisite two or three times a week, if the weather is not dull; the most proper time is towards four o'clock in the afternoon. These may also be grown in pots, but will require an elevation of eight or ten inches above the rim of the pot; they should have another placed upside down over the hole in the inside, and the remaining part filled with potsherds level with the top of the pot; the same kind of compost as for baskets will do for them, observing that the surface

of the mould should be covered with some pieces of turfy peat, secured down with wooden pegs. They will not require so much water as in baskets, but I should recommend the latter in preference to either billets of wood or pots, for they are neater in appearance, and the flower spikes are not so apt to decay as in the latter mode: for there are some species that produce their flowers straight down, consequently these would be lost either in the mould or in the drainage. The temperature during the growing season should range from 70° to 80° during the day, but may be allowed to fall as low as 65° at night; air should also be given moderately during fine days; and when they have perfected their growth, water should be diminished from them by degrees, but not entirely suspended so as to cause their bulbs to shrivel, which would certainly be the case if none were given, and a great part of the strength of the bulbs would thus be lost, and consequently, the flowers would not be so fine; for the stronger the bulbs are, the finer they produce their flowers.

CHAPTER XIX.

THE GENERA *ŒCEOCLADUS*, *ORNITHOCEPHALUS*,
BURLINGTONIA, *DENDROCHILUM*, *DINEMA*,
 AND *TRIAS*.

THESE are also inhabitants of the different islands of South America, particularly the West Indian islands, and will require a higher temperature than many of the South American species do while growing, together with a very liberal supply of water during the time.

The whole of these genera should be grown upon billets of wood, the cork barked oak is to be preferred before any other, as I find they root more freely on it, but before using the billets I cover them with sphagnum as far as the plant will occupy, binding it down with lead-wire. I then place the plant upon it, and also secure it down with the same material, observing that all plants that are recommended to be grown on billets of wood should have the head of the plant placed in an inclined position, so that no drip will then lodge in the heart of them, as otherwise damp will follow among the young leaves. Syringing

may be done a little every day, as the billets should not be allowed to get dry while the plants are growing, or else it will retard their growth very much; but, during their resting season, watering once a week will be sufficient for them, or a slight syringing will answer the same purpose.

The genera *Dendrochilum*, *Dinema*, and *Trias* may be grown in pots, but will require a good drainage and a compost of turfy peat, and sphagnum well chopped together and mixed with small potsherds with a slight elevation above the rim of the pot. Watering will only be required once or twice a week at the farthest, for if they once become thoroughly saturated with moisture their roots turn black at the points and die. The temperature while growing should range from 70° to 80° in the day, without the aid of sun heat; but, by night lowered 5° or 10°; during the season of rest the temperature should again be lowered in the day to 60° or 70°, and by night to 50° or 60°.

CHAPTER XX.

THE GENUS PHALÆNOPSIS.

THIS is usually regarded as the gem of all ORCHIDEÆ, both on account of its easy cultivation and free habit of flowering, remaining for upwards of three months at a time in perfect beauty; the extreme scarcity of it in this country makes it to bear a much higher price than almost any other of the tribe. It is a native of Manilla, one of the Philippine islands. The mode I pursue in its cultivation is upon billets of wood, the cork bark oak being the best for the purpose; the size of the block should be according to that of the plant intended for it, the plant should be placed on the billet and secured down with lead-wire so that it will not move about, a little sphagnum will be required about the roots of the plant. From the latter end of March to the beginning of November, I syringe two or three times a day, and immerse the billet in water two or three times a week, but taking care that the head of the plant is placed in an inclined position, so that no water will remain in the heart of it as to cause damp; during the

winter months, syringing will not be required, but dipping two or three times a week, for being destitute of pseudo-bulbs it will require watering a little all the year round. The temperature for it should be the same as recommended for the Indian species.

CHAPTER XXI.

THE GENERA PLEUROTHALLIS, OCTOMERIA,
 STELIS, PHYSOSIPHON, LIPARIS, MICARAN-
 THUS, PHYSINGA, OTOCHILUS, BRYOBIUM,
 EPIPHORA, AND POLYSTACHIA.

THESE genera are not remarkable for the size or colour of their flowers, but still some of them are worthy of being grown, as they produce so many and such extremely curious though minute flowers. Their cultivation is in no way difficult, being well adapted for persons who are about forming a collection, as by this introduction they will become better acquainted with the routine management before they enter upon those which are more expensive. Their native country is in the exposed parts of the Indian islands. They may be grown either on billets of wood or in pots: the latter mode I usually adopt. When they require shifting I put them into a large-size pot, half filling it previously with broken potsherds; using a mixture of equal parts of turfy peat and sphagnum well chopped together, allowing it to be a little above the rim; when

completed they will require a slight watering with a fine rose watering-pot to settle the mould about their roots; when further advanced in their growth, watering will be required more freely; and as soon as they have completed their summer's growth and show signs of resting, it should be again reduced, for but very little will be required during the winter months, if placed in the dampest part of the house with a temperature not exceeding 65° , but when growing 70° to 75° , reducing it at night, as I have before recommended in the other part of this work.

CHAPTER XXII.

THE GENERA MEGACLINIUM, STENIA, MAS-
DEVALLIA, RODRIGUEZIA, FERNANDEZIA,
DICHÆA, TRICHOCENTRUM, NANODES, AND
ORNITHIDIUM.

THESE, like the genera of the previous chapter, are not conspicuous in their flowers but vary in colour, and some of them are extremely fragrant. They are found in some parts of Africa, but more extensively in the South American islands. They may be grown in pots, with a sufficient drainage to carry off the water from their roots, and the usual compost; like most others, the plant should be, when potted, nearly two inches above the rim of the pot, with the mould a little sloping towards the outside of the pot, this should be done at the beginning of the growing season. If I find they do not require fresh potting, only the top part of the mould is removed, taking care at the same time not to damage any of the roots; then, by adding a little fresh mould, a renewed stimulus is given to the plant sufficient to carry it through another season's growth with all the

necessary vigour to ensure a proper development of its flowers. Water will be required but moderately for the first two or three weeks, but afterwards the quantity should be increased if the plants are strong and healthy, until they have completed their summer's growth; a very little will then be sufficient during the time they are at rest, which should be through the winter months.

These may be also grown in baskets prepared the manner I have before directed, with the same compost as for pots; but I prefer the latter, for the plant when in flower is thus seen to better advantage.

The genus *Rodriguezia* is an exception, which will perhaps appear as appropriately placed on a billet of wood or in a basket, as its flowers being produced on a half-pendant raceme, would show themselves most prominently. The temperature for the whole, both in the growing and resting season, should be the same as for the Indian species.

CHAPTER XXIII.

THE GENERA ISOCHILUS, ARUNDINA, ARPOPHYLLUM, IONOPSIS, PACHYPHYLLUM, SCAPHYGLOTTIS, TETRAPELTIS, GEODORUM, AND PONERA.

THESE genera are inhabitants of various parts of Asia and South America. Their cultivation is but simple, and easily to be followed.

The mode I pursue is in pots half filled with potsherds, afterwards placing a thin layer of the fibrous part of peat when the mould is beaten out of it, and then potting the plant in a mixture of well-chopped sphagnum, turfy peat, a little sand, and a few small potsherds; the plants, when completed, should have their base nearly two inches above the rim of the pot, with the mould sloping a little towards the pot, they do not require large ones or removing very often, as they do not produce their roots so freely as many of this tribe: when the plants get too large for the pots they are in, I shift them again into larger ones; the time I prefer for this operation is from the latter end of April to the beginning of June.

Watering will be required moderately for the first two or three weeks after the commencement of their fresh summer's growth; and at no time will they require it oftener than twice a week; but when they have completed their summer's growth, watering should be reduced just sufficient to keep the mould moist about their roots: during the winter months the temperature should also be lowered, but when growing they will require the coolest part of the house devoted to the Indian species.

CHAPTER XXIV.

THE GENERA HUNTLEYA, CORYANTHES, AND
GRAMMATOPHYLLUM.

THESE are inhabitants of the Philippine Islands and of various parts of South America, where heat and moisture are great at certain periods of the year: their flowers are more or less beautiful, some of their species cannot be surpassed for singularity of form, particularly those of the genus *Coryanthes*.

They succeed to admiration when grown in pots; when the plants require to be repotted, it should be done as soon as they are observed to produce a fresh growth, and young roots are about forming; then select a pot of sufficient size, and particularly observe to supply an efficient drainage, in the manner before directed; the plants should then be potted two inches at least above the rim, in a compost of turfy peat, and a little sphagnum well chopped together, mixed with a few small potsherds. They will require to be watered cautiously for the first week or two, or until they are forming other new roots; after

which, water may be more freely applied to them, but not so as to cause the mould to become saturated, or their roots will turn black at their points, and consequently a great check will be given to the plant.

The genus *Huntleya* is naturally an inhabitant of marshy places, and consequently will require a very liberal supply of water during the time it is making a fresh growth, and hence the necessity of a sufficient drainage in the pot; this must be continued until near the completion of their new parts, when the watering should be by degrees reduced, as scarcely any will be required during the winter months, so long as they remain moist, and the plants do not appear to shrivel; if the house can be steamed a little two or three times a week it will be beneficial to them at all seasons; they require, at either season of growing or resting, the temperature recommended for the Indian species.

CHAPTER XXV.

THE GENUS PERISTERIA.

THIS genus is not very extensive at present, but, as there are some of its species requiring baskets and others pot cultivation, in order to make my system more plainly understood, I have considered it requisite to treat of them separately. They are found in the different islands of America.

For those which produce their flower spikes in a downward position, like *P. Humboldtii* and *P. Barkerii*, I use wire baskets, made in the same form as those described for the genus *Stanhopea*; they are also lined with sphagnum in the same manner. The compost for these should consist of equal parts of turfy peat and sphagnum well chopped together, the surface of the mould when completed should also be covered with sphagnum, and secured down with lead wire, and if trimmed over with a pair of scissors the appearance will be much improved.

The species *P. cerina*, *P. pendula*, and those which produce their flowers on a short scape, seldom longer than six or eight inches, should be elevated at least three inches above the rim of

the pot in which they are grown, with the mould sloping towards the outside, the flowers will then be seen to far better advantage.

The mould required for potting should consist of equal parts of turfy peat and sphagnum chopped together, and mixed with a few small potsherds. The species *P. elata* will not require to be elevated, but, being of a stronger habit, will require plenty of pot room and water when making its summer's growth; the pot for this should be well drained with large potsherds at the bottom, and a quantity of smaller ones placed upon them; over these I generally place a thin layer of fern roots, or the fibrous part of peat after the earth is beaten out of it; the mould I prefer for potting consists of turfy peat, a little sphagnum, and a small quantity of turfy loam mixed together: a few small potsherds may be added with advantage, as they assist to keep the mass from becoming too compact; a few gentle waterings will be required at the first stage of their growth, but, as they begin to form fresh roots from the shoots they are about making, it will be required in larger quantities every day until they have completed them, to be again reduced by degrees, but not entirely suspended during the winter months; the temperature required for them throughout their management is the same as is recommended for the Indian species in the beginning of this work.

CHAPTER XXVI.

THE GENUS CYRTOPODIUM.

THIS genus belongs to the *terrestrial* tribe of *Orchideæ*, producing bulbous stems upwards of three feet long, the leaves being placed alternately up them, and the flowers produced on spikes from the base of the stems: the species *C. punctatum* is said to produce a flower spike fourteen feet long, bearing from four hundred to five hundred flowers; this strength has only been produced in its native country, which is the West India islands.

They should be grown in pots of sufficient size according to that of the plant: and the time most proper for potting is when they commence a new growth. The compost I use for them consists of sphagnum, leaf-mould, and turfy loam, in equal parts, with a few small potsherds mixed together, with a sufficient drainage in the pot to carry off the water, of which they require a very liberal supply: when they are beginning to produce fresh roots from the shoots they are at present making, they will require another shifting into a larger

sized pot, and when they have completed their growth, water must be reduced by degrees, so as to bring them into a proper season of rest: they will then only require watering gently once a week with a fine rose pot, and to have the house steamed, as I have before recommended for those that are at rest; it keeps their bulbs from shriveling, and preserves a genial atmosphere about them. The temperature should be the same as that directed in the last chapter.

CHAPTER XXVII.

THE GENERA ZYGOPETALUM AND CYMBIDIUM.

THESE are natives of Asia, generally, and in particular of China; they are also found in the Brazils of South America, in those places where moisture abounds almost to excess. The system I pursue in the cultivation of them is in pots suitable to the size of the plant: the genus *Cymbidium* will require the pot to be half filled with large potsherds, and potted in a compost of turfy peat, sphagnum, and small potsherds; the first two should be chopped together before using, giving the plant a slight elevation above the rim of the pot, and a liberal watering while in a growing state.

The genus *Zygopetalum* will require the same treatment in regard to watering, but should be elevated full two inches above the pot; the compost should be three parts turfy peat, and one part of sphagnum, both well chopped together before using, and a few small potsherds mixed with it; the time I prefer for potting is either from the beginning of May to the latter end of

June: when they have completed their growth, water should again be reduced by degrees; its application once a week will be sufficient for them during the winter months. The temperature, while the plants are growing, should be from 65° to 75°, and when at rest from 55° to 57°.

CHAPTER XXVIII.

THE GENUS SOBRALIA.

THIS genus is not yet extensive in its species, but some of them are equal to the finest in point of colour: they also form part of the *terrestrial* division of *Orchideæ*. They are found in the cooler parts of Guatemala, usually growing on the margins of gentle streams, occupying in the flora of the country the place of our sedges.

From the natural station of these plants, it is evident that pot cultivation is most appropriate for them, and they should be allowed abundance of root room, as these organs are large and fleshy, and extend very rapidly; the pots should be by all means well drained with large potsherds, placing a layer of the fibrous part of peat over them: the plant should be potted in a mixture of equal parts of turfy peat, sphagnum, and fine sharp sand (that which is in general known as silver sand), a few small potsherds mixed with the soil will be beneficial, from presenting a source of moisture to the roots; the plant will not require any elevation, and but a gentle watering

for the first two or three weeks from the commencement of their fresh growth, but when they begin to produce new roots, it will be required two or three times a week; a little sphagnum, also, should be placed over the surface of the mould, as it will keep the mould from drying, and offer a medium into which the roots will extend themselves with avidity; when the season's shoots are grown seven or eight inches long, I syringe them two or three times a day, if the weather be fine and clear, as it preserves their leaves from the ravages of that minute pest the *thrip*, to which they are extremely subject, if grown in a dry atmosphere. When the plants begin to show signs of flowering, which usually occurs between the beginning of September and the middle of October, syringing should be discontinued, and after they have completed their season's growth, watering also should be reduced through the winter months; they will require a diminished quantity about once a week, and also a lower temperature, but while growing, the same as is recommended for the South American species in the beginning of this work.

CHAPTER XXIX.

THE GENUS CHYSIS.

THIS is a singular and highly ornamental genus, which should be grown in every collection; the general habit of each species is very similar, one to the other, but the flowers are extremely distinct and beautiful. They are found in Venezuela, of South America, and in Mexico, of North America.

While the plants are small, it is preferable, from being less liable to accidents, to grow them upon billets of wood, with their roots covered with sphagnum, and allowing sufficient water to keep the moss moist. When they have gained strength sufficient for pot cultivation, I place the billets, with the plants still remaining on them, in pots, taking care that there be a proper drainage of large potsherds at the bottom. The mould required for them should consist of equal parts of turfy peat, sphagnum, and small potsherds, the first two should be well chopped before being mixed with the latter, and when potted, a gentle watering, with a fine rose watering pot to

settle the mould in the pot, will be required ; but afterwards, very little water will be found sufficient ; they will probably require a moderate quantity once or twice a week, if in a strong growing state, until their season's growth is completed.

The time I prefer for either potting or placing on billets is between the middle of April and the latter end of May. The temperature, while growing and resting, is the same that is described for the Indian species in the beginning of this work.

CHAPTER XXX.

THE GENUS RENANTHERA.

THE flowers of this genus are singular in form and beautiful in colour; it is free of growth, and is found in the woods of China and Java, clinging to the trees like the *ivy* of this country, but not deriving nourishment from them, only a support to its own tortuous stems.

It should be grown upon a thick branch of a tree, which, before being used, should be spread over with clay, made of the consistence of thick paint, then covered with fresh sphagnum, and allowed to dry a little before using; the plant should be bound on with lead wire, and placed in a convenient part of the house, where it either can cling to the wall or be trained to the roof, and from the latter end of March to the latter end of October, it should be syringed two or three times a day; but in the winter months, twice a week will be sufficient, if there be any means of steaming the house once a week, syringing may be dispensed with until they begin to grow again.

The temperature during the season of growth and rest is the same that is recommended in the former part of this work for the Indian species.

CHAPTER XXXI.

TREATMENT OF NEWLY IMPORTED SPECIES.

THOSE that are newly imported, and are unpacked from the cases they have been inclosed in, should be immediately placed in a house that can be kept closed, and shaded for a few weeks if the sun is powerful upon them; they will not require any water until they have begun to grow, and show signs of forming roots: the moisture of the house will be sufficient for them during the time I have specified: neither should their old roots be cut off, as I believe it to be the cause of many being lost. When they have grown sufficiently for either potting or placing on billets of wood, it should be immediately done, in the manner recommended for the several genera to which they may belong, and in order to ensure their safety, they should be placed where no drip from the moisture of the house will fall upon them; all possible care should be taken to shield them from the full heat of the sun, or any other cause likely to exhaust moisture, and thus dry them too much before they get established with roots sufficient to admit of a free watering.

CHAPTER XXXII.

ON THE DESTRUCTION OF INJURIOUS INSECTS.

Wood-lice. Procure some bark from a tree, about six inches to nine inches in circumference, and nine inches long; previous to the removal divide it in the middle, lengthwise; when taken off place the pieces together, compressing the edges of the one to admit of its passing a little way within the other that the upper may form a roof to the lower part to prevent any water from getting in the inside of the cavity; between should be placed a slice of cucumber or potato, the former being preferable when procurable.

The bark should be tied together at each end, and placed on or amongst the pots, with the roof part uppermost, so that the inside may always be dry; the wood-lice will soon find out this hiding place, both for feeding and protection, they may then be destroyed with convenience.

The above system I have practised for a great length of time, and have found it to be a sure method of destroying these most destructive insects, which prevail amongst, and feed upon, the fleshy roots of these plants.

Of all the insects that orchidaceous plants are infested with, *cockroaches* are the worst, they being able to destroy a young shoot or spike of flowers in one night. To destroy them, and likewise the small *American ants*, procure the following mixture, (having first made ready a sufficient number of small twigs four inches long, sharp at one end to penetrate in the mould belonging to the plant, with about an inch of the bark peeled off the other end :) a quarter of a pound of spermaceti wax, such as is used for making candles; melt this thoroughly, and mix two ounces of white arsenic with it, dip the twigs into the liquid until they are well coated, and when cold, they should be inserted in the pots, and may remain in for months, as neither the heat of the house nor the moisture will dissolve it, the insects will soon find this out, and will come to feed upon the wax; the arsenic being mixed with it will poison them.

The method I generally practise for destroying the *mealy bug* is, first washing the plant that is infested, with soap and water, having a very little tobacco soaked in it; afterwards, again washing them in clear water, and finally, dusting the parts affected, with the following mixture: half a pound of *camphor*, dissolved in one pint of *spirits of wine*, the former will dry the latter up, and become a powder: then

mix it with one pound of *black sulphur*, one pound of *black pepper*, and one pound of *Scotch snuff*, and place it in a bottle, keeping it corked close when not wanted.

The *red spider* may be destroyed by mixing a quantity of sulphur in some lime and water, washing the pipes or flues with it, or by placing a quantity of sulphur in pans on the pipes in different parts of the house.

The *white scale* may be destroyed by the immersion of the head of the plant into a solution of chamomile flowers, but, before using, the water should be boiling hot, then poured upon the flowers, and allowed to get cool before it is used; those plants that are too large for this purpose, will require two or three times washing over with a sponge before they are clear of it.

The *thrip* and *red spider* may also be destroyed by the same means as the *white scale*, only substituting the bark of *quassia* instead of chamomile flowers, which may be purchased at the druggists, and prepared in the same way as the former.

A
 SELECT CATALOGUE
 OF
 ORCHIDACEOUS PLANTS.

Scientific Names.	Synonymes.	Native Country.	Year of Introduction.
Acanthophippium			
bicolor	... ..	Ceylon	... 1834
striatum	... ..	India	... 1837
sylhetense	... ..	Sylhet	... 1837
Acropera			
citrina	... ..	Xalapa	... 1836
Loddigesii	<i>Maxillaria</i> <i>Galatea...</i>	—	... 1828
maculata	... ..	—	... 1832
purpurea	... ..	—	... 1836
Ærides			
affine	... ..	India	... 1838
crispum	<i>Æ. Brookii</i>	—	... 1839
maculosum	... ..	Bombay	... 1841
odoratum	<i>Æ. cornutum</i>	India	... 1830
— major	... ..	—	... 1838
— alba	... ..	—	... 1839
purpurescens	... ..	—	... 1839
quinquevulnera	... ..	Manilla	... 1837
rubrum	... ..	India	... 1839
virens	... ..	Java	.. 1843
Aganisia			
pulchella	... ..	Demerara	... 1837
Angræcum			
bilobum	... ..	Cape Coast	... 1839
caudatum	... ..	Sierra Leone...	1836
distichium	... ..	—	... 1836

Scientific Names.	Synonymes.	Native Country.	Year of Introduction.
<i>Angræcum</i>			
<i>eberneum</i>	... ..	Madagascar	... 1826
<i>pellucidum</i>	.. ..	Sierra Leone	... 1840
<i>christalinum</i>	... ..	Ashantee	... 1840
<i>Anæctochilus</i>			
<i>setaceus</i>	<i>Chrysobaphus</i> <i>Roxburghii</i>	Ceylon	... 1836
<i>Anguloa</i>			
<i>Clowesii</i>	... ..	Peru	... 1843
<i>superba</i>	... ..	—	...
<i>uniflora</i>	... ..	—	... 1843
<i>Aporum</i>			
<i>cuspidatum</i>	... ..	India	... 1838
<i>pulchellum</i>	... ..	Manilla	... 1837
<i>Acineta</i>			
<i>Barkerii</i> ,	<i>Peristeria</i> <i>Barkerii</i> ...	Mexico	... 1837
<i>Humboldtii</i>	<i>Peristeria</i> <i>Humboldtii</i>	Columbia	... 1839
<i>Arpophyllum</i>			
<i>giganteum</i>	... ..	Jamaica	... 1839
<i>spicatum</i>	... ..	—	... 1840
<i>Arundina</i>			
<i>bambusifolia</i>	... ..	India	.. 1839
<i>densa</i>	... ..	—	.. 1840
<i>Barkeria</i>			
<i>elegans</i>	... ..	Mexico	... 1836
<i>Lindleyii</i>	... ..	Guatemala	... 1841
<i>spectabilis</i>	... ..	—	... 1842
<i>Bifrenaria</i>			
<i>aurantiaca</i>	... ..	Brazil	... 1836
<i>atropurpurea</i>	<i>Maxillaria</i> <i>atropurpurea</i>	—	... 1828
— <i>pallida</i>	... ..	Mexico	... 1828
<i>longicornis</i>	... ..	Guiana	... 1836
<i>fragellifera</i>	... ..	—	... 1837
<i>Brassia</i>			
<i>caudata</i>	<i>Epidendrum</i> <i>caudatum</i>	Guiana	... 1836
<i>Clowesii</i>	<i>Miltonia</i> <i>Clowesiana</i>	Brazil	... 1839

Scientific Names.	Synonymes.	Native Country.	Year of Introduction.
Brassia			
— nebulosa	...	Brazil	... 1843
Henchmanii	...	Demerara	... 1836
Lanceana	...	Surinam	... 1828
Laurenceana	...	Brazil	... 1839
maculata	...	Jamaica	... 1806
— major	...	—	... 1834
macrostachya	...	Demerara	... 1836
verrucosa	...	Mexico	... 1839
Wrayæ	...	Guatemala	... 1840
Brassavola			
cordata	...	Jamaica	... 1835
cucullata	<i>Epidendrum cucullatum</i> , <i>Cymbidium cucullatum</i>	Trinidad	... 1837
emarginata	...	Brazil	... 1838
glauca	...	Mexico	... 1837
grandiflora	...	—	...
martiana	...	Demerara	... 1836
Clowesii	...	Mexico	...
Bolbophyllum			
leopardianum	...	India	... 1836
macranthum	...	—	... 1840
Bromheadia			
palustris	<i>Grammatophyllum Finlaysonianum</i>	Sincapore	... 1839
Broughtonia			
aurea	...	Mexico	...
sanguinea	...	Jamaica	... 1810
Burlingtonia			
candida	...	Demerara	... 1837
maculata	...	Brazil	... 1838
rigida	...	—	... 1836
venusta	...	—	... 1836
Cattleya			
Aclandæ	...	Bahia	... 1839
candida	...	Brazil	... 1842
Cantii	...	Mexico	... 1838
citrina
crassifolia	...	—	... 1839

Scientific Names.	Synonymes.	Native Country.	Year of Introduction.
Cattleya			
crispa	...	Brazil	... 1830
guttata	...	—	... 1830
Harrisoniæ	...	—	... 1835
— alba	...	—	... 1840
— violacea	...	—	... 1839
— superba	...	—	... 1842
labiata	...	—	... 1818
— atropurpurea	...	La Guayra	... 1839
Loddigesii	<i>Epipendrum violaceum</i>	Brazil	... 1818
Mossiæ	...	—	... 1836
— speciosissima	...	—	... 1843
pinella	<i>C. pumila,</i> <i>C. marginata</i>	—	
Skinnerii	...	Guatemala	... 1837
superba	—	Guiana	... 1836
Catasetum			
atratum	...	Brazil	... 1837
barbatum	<i>Myanthus barbatus</i>	Demerara	... 1835
cernuum	<i>M. cernuum</i>	Rio Janeiro	... 1839
cornutum	<i>M. cornutum</i>	Demerara	... 1837
cristatum	<i>M. cristatum</i>	Guiana	... 1839
deltoides	<i>M. deltoides</i>	Demerara	... 1837
Millerii	...	Brazil	... 1837
maculatum	...	Guatemala	... 1837
— luteum	...	Mexico	... 1837
— giganteum	...	—	... 1837
planiceps	...	Spanish Main	1840
rosea albus	...	Para	... 1839
tridentatum	...	Trinidad	... 1834
— atro fuscum	...	Brazil	... 1836
reflexum	...	—	... 1834
Calanthe			
masuca	...	Nepal	
veratrifolia	...	Indian Islands	1830
Camarotis			
obtusata	...	India	... 1842
purpurea	...	Khoosea	... 1837
Cirrhopetalum			
auratum	...	Manilla	... 1838

Scientific Names.	Synonymes.	Native Country.	Year of Introduction.
Cirrhopetalum			
Cummingii	...	Manilla	... 1838
Macraei	...	India	...
nutans	...	Philippines	... 1838
Thouarsii	...	Manilla	... 1837
Wallichii	...	India	... 1838
Cirrhæa			
atropurpurea	...	Mexico	... 1838
albo viridis	...	Brazil	... 1838
fuscolutea	...	—	... 1836
Loddigesii	<i>Cymbidium dependens</i>	China	... 1824
obtusata	...	Brazil	... 1838
pallida	...	—	... 1837
picta	...	—	... 1830
Russelliana	...	—	... 1837
rubro purpurea	...	—	... 1838
tristis	...	Xalapa	... 1828
viridipurpurea	<i>Gongora viridipurpurea</i>	Brazil	... 1832
Warreana	...	Brazil	... 1830
Chysis			
aurea	...	Venezuela	... 1834
bractescens	...	Mexico	... 1837
lævis	...	—	... 1837
Cleisostoma			
maculata	...	Ceylon	... 1837
rosea	...	Manilla	... 1838
tridentata	...	New Holland	1838
Clowesia			
rosea	...	Brazil	... 1840
Comparettia			
coccinea	...	Brazil	... 1837
falcata	...	Mexico	... 1836
rosea	...	Trinidad	... 1839
Coryanthes			
lentiginosa	...	Guiana	... 1837
— aurantia	...	Trinidad	... 1836
maculata	...	Demerara	... 1829
— Parkerii	...	—	... 1838
rubra	...	Guiana	... 1837

Scientific Names.	Synonymes.	Native Country.	Year of Introduction.
Coryanthes			
<i>macrantha</i>	<i>Gongora macrantha</i> ...	Trinidad	... 1836
<i>speciosa</i>	<i>Gongora speciosa</i> ...	Demerara	... 1834
— <i>alba</i>	... ..	—	... 1837
— <i>major</i>	... ..	—	... 1837
— <i>straminea</i>	... ..	—	... 1837
Cœlia			
<i>Baueriana</i> ,	<i>Cymbidium tripterum</i> , <i>Epidendrum tripterum</i>	Jamaica	... 1834
Cœlogyne			
<i>barbata</i>	... ..	Bengal	... 1837
<i>cristata</i>	... ..	Nepal	... 1837
<i>Cunningii</i>	... ..	Sincapore	... 1838
<i>decora</i>	... ..	India	... 1837
<i>elata</i>	... ..	Khoosea	... 1837
<i>flacida</i>	... ..	Nepal	... 1837
<i>fuliginosa</i>	... ..	India	... 1837
<i>Gardneriana</i>	... ..	—	... 1836
<i>interrupta</i>	... ..	Mount Opher	1839
<i>longicaulis</i>	... ..	Khoosea	... 1837
<i>media</i>	... ..	—	... 1837
<i>ovalis</i>	... ..	E. Indies	... 1837
<i>undulata</i>	... ..	Khoosea	... 1837
<i>Wallichiana</i>	... ..	—	... 1837
Cynoches			
<i>chlorochilum</i>	... ..	La Guayra	... 1836
<i>Egertonianum</i>	... ..	Guatemala	... 1841
<i>Loddigesii</i>	... ..	Surinam	... 1830
<i>maculata</i>	... ..	La Guayra	... 1839
— <i>pentadactylon</i>	... ..	—	... 1840
<i>ventricosa</i>	... ..	Guatemala	...
Cymbidium			
<i>bicolor</i>	... ..	Ceylon	... 1838
<i>chlorantha</i>	... ..	India	... 1840
<i>Devoniana</i>	... ..	—	...
<i>giganteum</i>	... ..	Nepal	... 1837
<i>lancifolium</i>	<i>Gibsonii</i> ...	Sylhet	... 1835
<i>madidum</i>	... ..	New Holland	1835

Scientific Names.	Synonymes.	Native Country.	Year of Introduction.
Cymbidium			
marginatum			
Mastersii	...	India	1839
pendulum	...	—	1838
— brevilabre	...	Sincapore	1842
Cyrtochilum			
bictoniensis	<i>Odontoglossum bictoniensis</i>	Guatemala	1836
flavescens	...	Mexico	1836
hastatum	<i>Odontoglossum hastatum, Oncidium hastatum</i>	Oaxaca	1836
maculatum	...	Vera Cruz	1837
— parviflorum	...	Mexico	1839
mystacinum	...	Peru	1836
stellatum	...	Brazil	1840
Cyrtopodium			
Andersonii	...	W. Indies	1804
ristatum	...	Brazil	...
cupræum	...	—	1835
flavum	...	Mexico	1831
punctatum	...	Guatemala	1836
Willmorei	...	Venezuela	1834
Dendrochilum			
abbreviatum			
glumaceum	...	Manilla	1837
filiforme	...	—	1839
latifolia	...		
Dendrobium			
aduncum	...	India	1839
aggregatum	...	—	1835
amænum	...	Bombay	1840
ampleum	...	India	1836
aureum	...	Ceylon	1836
biflorum	...	India	1838
Cambridgeanum	...	—	1837
calceolaria	...	—	1832
cœrulescens	...	—	1838
— pulcherrimum	...	—	1838
chrysanthum	...	—	1837
complinatum	...	—	1840

Scientific Names.	Synonymes.	Native Country.	Year of Introduction.
Dendrobium			
compressum			
crumenatum		Sumatra	...
— violaodora	Java	... 1838
cucumerinum	...	India	... 1839
densiflorum	Nepal	... 1829
Devonianum	Khooseea	... 1837
fimbriatum	Nepal	... 1823
formosum	Khooseea	... 1837
Gibsonianum	—	... 1837
heterocarpum	...	—	... 1837
Heyneanum	Bombay	... 1838
insigne	Khooseea	... 1837
Jenkinsii	India	... 1837
lentiginosum	—	
longicorne	Nepal	... 1828
macrophyllum	<i>D. macran-</i>		
	<i>thum</i> ...	Philippines	... 1838
moniliforme	Japan	... 1824
moschatum	E. Indies	... 1828
nobile	China	... 1836
Paxtonianum	India	... 1840
Pierardii	<i>D. cucullatum</i>	E. India	... 1815
— latifolium	India	... 1830
pulchellum	Sylhet	... 1830
— purpureum...	...	Rajabassa	... 1834
revolutum	Sincapore	... 1840
Rhombeum	Manilla	... 1842
Ruckerianum	India	... 1840
sulcatum	Khooseea	... 1837
secundum	Malacca	... 1828
— atropurpureum	...	China	... 1844
sanguinolentum	...	India	
— pallidum	—	
taurinum	—	
tetragonum	Philippines	... 1838
undulatum	<i>D. discolor</i>	Java	... 1838
Wallichianum	...	India	... 1837
Epidendrum			
adenocarpum	<i>E. papillosum</i>	Mexico	... 1837
æmulum	Para	... 1835

Scientific Names.	Synonymes.	Native Country.	Year of Introduction.
Epidendrum			
altissimum ...	...	Bahamas	... 1837
aromaticum ...	...	Guatemala	... 1835
aurantiacum	<i>Cattleya</i>		
	<i>aurantiaca</i>	—	... 1835
alatum ...	...	—	... 1838
arbuscula ...	...	Mexico	
bicornutum ...	...	W. Indies	... 1836
Boothianum ...	...	Cuba	... 1835
calamarium ...	...	Brazil	... 1837
chloranthum ...	...	Demarara	... 1837
calocheilum ...	...	Guatemala	... 1839
cinnabarinum	...	Pernambuco	... 1837
ciliare ...	...	Martinique	... 1790
— latifolium ...	...	Trinidad	... 1836
cuspidatum ...	...	Mexico	... 1808
decromum	<i>E. Guesnelianum</i>	Brazil	
densiflorum			
ferrugenium ...	...	Guatemala	... 1836
— pallidum ...	...	—	... 1837
floribundum ...	...	Mexico	... 1836
fucatum ...	...	Havanah	... 1835
glaucum	<i>Epithecia glauca</i>	Mexico	... 1837
Guilleminianum	...	Brazil	... 1840
Grahamii ...	...	Mexico	... 1838
Hanburii ...	...	—	... 1842
ionosmum ...	...	Essequibo	... 1837
inversum ...	...	Brazil	... 1839
latilabrum			
lamellatum ...	...	—	... 1837
lacertinum ...	...	Guatemala	... 1838
leucochilum			
lividum ...	...	Columbia	... 1837
macrochilum ...	...	Mexico	... 1836
— roseum ...	...	—	... 1840
Monroeanum ...	...	Guatemala	
nutans ...	...	Jamaica	... 1793
odorotissimum	<i>Encyclia</i>		
	<i>patens</i>	Rio Janeiro	... 1835
oncioides ...	...	South America	1836
pachyanthum	...	Guiana	... 1837

Scientific Names.	Synonymes.	Native Country.	Year of Introduction.
Epidendrum			
pastoris	...	Mexico	... 1837
patens	...	St. Vincent	... 1828
Parkinsonianum	...	Mexico	... 1838
pictum	...	OrganMountains	1836
primulinum	...	Guatemala	... 1837
phœniceum	...	Cuba	...
rhizophorum	...	Guatemala	... 1836
rigidum	...	Jamaica	... 1836
rubrocinctum			
Schomburgkii	...	Guiana	... 1837
Skinnerii	...	Camana	... 1836
— major	...	Guatemala	... 1840
selligerum	...	Mexico	... 1836
smaragdinum	...	Demarara	... 1836
Stamfordianum	...	Guatemala	... 1836
tessellatum	...	—	... 1836
trydactylum	...	Brazil	... 1836
uniflorum	<i>Hormidium</i> ... <i>uniflorum</i>	Mexico	... 1837
variegatum	...	Demerara	... 1836
— coriaceum	...	—	... 1839
varicosum	...	Guatemala	... 1840
vitellinum	...	Oaxaca	... 1840
verrucosum	...	Jamaica	... 1829
viscidum			
virgatum			
viridiflorum	<i>Encyclia</i> ... <i>viridiflorum</i>	Brazil	... 1825
Eria			
convallarioides	...	India	... 1838
densiflora	...	—	... 1838
denticulata	...	—	... 1839
ferruginia	...	—	... 1837
floribunda	...	Sincapore	... 1840
longicaulis	...	Chirra	... 1837
longilabris	...	Panay	... 1838
paniculata	...	E. Indies	... 1837
pulchella	...	India	
rosea	...	China	... 1824
velutina	...	Sincapore	... 1840

Scientific Names.	Synonymes.	Native Country.	Year of Introduction.
Eulophia			
<i> barbata</i>	... ..	C. G. H.	... 1825
<i> ensata</i>	... ..	—	... 1822
<i> guineensis</i>	... ..	Isle Delos	... 1830
<i> longicornis</i>	... ..	C. G. H.	... 1825
Fernandezia			
<i> elegans</i>	<i> Lockhartia elegans</i>	Trinidad	... 1822
<i> lunata</i>	... ..	Brazil	... 1836
<i> robusta</i>	... ..	Guatemala	... 1840
Galeandra			
<i> Bauerii</i>	... ..	French Guiana	1839
<i> Devoniana</i>	... ..	Guiana	... 1839
Geodorum			
<i> dilatatam</i>	... ..	East Indies	... 1800
<i> purpureum</i>	... ..	—	... 1800
Gongora			
<i> atropurpurea</i>	... ..	Demerara	... 1832
— <i> picta</i>	... ..	—	... 1837
<i> Bufonia</i>	... ..	Brazil	... 1837
<i> Batemannii</i>	... ..	Guatemala	... 1840
<i> Henshallii</i>	... ..	Brazil	... 1843
<i> maculata</i>	... ..	Demerara	... 1829
— <i> alba</i>	... ..	Guiana	... 1836
— <i> fulva</i>	... ..	—	... 1837
<i> maculata grisea</i>	... ..	Demerara	... 1836
— <i> Ruckerii</i>	... ..	Guiana	... 1842
— <i> sanguinea</i>	... ..	Demerara	... 1836
— <i> squalens</i>	... ..	Guiana	... 1837
— <i> tricolor</i>	... ..	...	...
<i> nigrita</i>	... ..	Demerara	... 1837
<i> Shepherdii</i>	... ..	Panama	... 1841
<i> tuberculata</i>	... ..	Demerara	... 1840
<i> vitellina</i>	... ..	...	...
Govenia			
<i> liliacea</i>	... ..	Mexico	... 1837
<i> lagenophora</i>	... ..	—	... 1837
<i> pallida</i>	... ..	...	...
<i> superba</i>	<i> Maxillaria superba</i>	Mexico	... 1828
Grammatophyllum			
<i> multiflorum</i>	... ..	Manilla	... 1837
— <i> tigrinum</i>	... ..	Philippines	... 1839

Scientific Names.	Synonymes.	Native Country.	Year of Introduction.
Grammatophyllum			
speciosum	<i>Angracum scriptum</i> ...	Pulo. dinding	1835
	<i>Cymbidium scriptum</i>		
	<i>Epidendrum scriptum</i>		
Grobya			
Amherstii	... ..	Brazil	... 1834
galeata	... ..	—	... 1837
Huntleya			
Cochlearii	... ..	Trinidad	... 1836
meleagris	... ..	Brazil	... 1839
violacea	<i>H. sessiliflora</i>	Demerara	... 1835
Houlletia			
Brocklehurstii	<i>Maxillaria Brocklehurstii</i>	Brazil	... 1839
stapelæflora	... ..	Brazil	... 1840
vittata	... ..	—	... 1840
Isochilus			
gramineus	... ..	W. Indies	
linearis	... ..	—	... 1826
lividum	... ..	—
Leptotes			
bicolor	... ..	Brazil	... 1830
glaucophylla	... ..		... 1830
concolor	... ..	...	... 1838
serrulata	... ..	...	... 1840
Lælia			
albida	... ..	Bolanos	... 1840
anceps	... ..	Oaxaca	... 1828
— Barkerii	... ..	Mexico	... 1839
acuminata	... ..	Guatemala	... 1839
autumnalis	... ..	Bolanos	... 1839
caulescens			
cinnabarina	... ..	Brazil	... 1836
cœrulescens			
furfuracea	... ..	Mexico	... 1839
flava	... ..	—	... 1839
grandiflora	... ..	Real. de Monte	1839
majalis	... ..	Bolanos	... 1840
peduncularis	... ..	Mexico	
Perrinii	<i>Cattleya Perrinii</i>	Brazil	... 1838

Scientific Names.	Synonymes.	Native Country.	Year of Introduction.
Lælia			
purpurescens ...	...	Oaxaca	
rubescens ...	...	Mexico	... 1840
superbiens ...	...	Guatemala	
Lycaste			
aromatica	<i>Maxillaria</i> <i>aromatica</i>	Mexico	... 1834
cruenta	<i>M. cruenta</i>	Mexico	... 1840
Deppii	<i>M. Deppii</i>	Xalapa	... 1828
Harrisonii	<i>M. Harrisonii</i> <i>Colax Harrisonii</i>	Brazil	... 1835
macrophylla	<i>M. macro-</i> <i>phyllum</i>	Columbia	... 1838
Skinnerii	<i>M. Skinnerii</i>	Guatemala	... 1841
tetragonum	<i>M. tetragonum</i>	Brazil	... 1835
plana	... ..	Bolivia	... 1842
Masdevallia			
infracta	... ..	Organ Mountains	1836
Maxillaria			
aurea fulva	... ..	Brazil	... 1828
Boothiana	... ..	Guatemala	... 1835
Macleri	... ..	—	... 1837
Parkerii	... ..	Demerara	... 1835
picta	... ..	Brazil	... 1836
punctata	... ..	—	... 1830
placentera	<i>M. virides</i> ...	—	... 1835
racemosa	... ..	—	... 1838
rhombea	... ..	—	... 1836
vitellina	... ..	—	... 1836
Miltonia			
bicolor	... ..	—	... 1839
candida	... ..	—	... 1839
— grandiflora	... ..	—	... 1841
— flavescens	... ..	—	... 1840
cuneata	... ..	—	... 1838
Russelliana	... ..	—	... 1836
spectabilis	<i>Macrochilus</i> <i>tryanus</i>	—	... 1837
— colorata	... ..	—	... 1838
Monocanthus			
discolor	<i>Catasetum</i> <i>discolor</i>	Guiana	... 1836

Scientific Names.	Synonyms.	Native Country.	Year of Introduction.
Monocanthus			
monstrum	<i>C. monstrum</i>	Demerara	... 1838
Bushmanii	<i>C. Bushmanii</i>	Brazil	... 1839
Mormodes			
aromatica	...	Bahia	... 1842
atropurpurea	...	Spanish Main	
buccinator			
citrina	...	Mexico	... 1837
lineata	...	Guatemala	... 1839
pardina	...	Oxaca	... 1839
— unicolor	...	Mexico	... 1840
Russelliana	<i>C. Russellianus</i>	Guatemala	... 1838
Megaclinum			
bufo	...	Sierra Leone	... 1840
maximum	...	—	... 1830
oxypeterum	..	—	... 1833
Monomeria			
nitida	<i>Dendrobium nitidum</i>	Mexico	... 1841
Notylia			
aromatica			
Barkerii	...	Mexico	... 1837
punctata	...	Trinidad	... 1822
Odontoglossum			
citrosimum	...	Mexico	...
Cervantesii			
grande	...	Guatemala	... 1838
Bergami	...	Mexico	... 1843
Lindleyii	...	—	... 1844
membranaceum			
maculatum	<i>O. cordatum</i>	Brazil	... 1840
pulchellum	...	Guatemala	... 1840
Rossi	...	—	... 1840
Oncidium			
albo violaceum	...		
altissimum	...	Jamaica	... 1830
— Bauerii	...	Demerara	... 1830
ampliatum	...	Trinidad	... 1835
major	...	Guatemala	... 1840
barbatum	...	Brazil	... 1818
bicornutum	...	Rio Janeiro	
bicolor			

Scientific Names.	Synonymes.	Native Country.	Year of Introduction.
Oncidium			
bifolium	...	Monte Video	1811
bicallosum	...	Guatemala	... 1842
Batemanii	...	—	... 1838
Boydii	...	W. Indies	
carthagenense	<i>Epidendrum undulatum</i>	Carthage	... 1791
Cavendishianum	...	Guatemala	... 1838
ciliatum	...	Brazil	... 1835
citrinum	...	Trinidad	... 1834
Cebolleti	...	Demerara	... 1835
confragosum	...	Mexico	... 1839
cornigerum	...	Brazil	
constrictum	<i>Cyrtochilum constrictum</i> , Mexico <i>Odontoglossum constrictum</i> , <i>Cyrtochilum floribundum</i>		
concolor	...	Brazil	... 1840
crispum	...	—	... 1831
— luteum	...	Organ Mountains	1829
— pallidum	...	Brazil	... 1839
deltoideum	...	Lima	... 1836
Devonianum	...	Guatemala	... 1836
divaricatum	...	Brazil	... 1826
— cuprœum	...	—	... 1836
flexuosum	...	—	... 1818
Forbesii	...	—	... 1837
Galeottii			
Henchmannii	<i>O. sanguineum</i> <i>O. roseum</i>	Mexico	... 1837
Huntianum	...	Rio Janeiro	... 1830
Harrisonianum	...	Brazil	... 1830
intermedium	...	Cuba	
Insleyanum	...	Mexico	
	<i>Odontoglossum Insleyanum</i>		
iridifolium	...	La Guara	... 1836
incurvum	...	Mexico	... 1838
Lanceanum	...	Surinam	... 1830

Scientific Names.	Synonymes.	Native Country.	Year of Introduction,
Oncidium			
— obscurum	Surinam	... 1836
— majus	Guiana	... 1841
— album	—	... 1842
Lemonianum	Tortola	... 1834
leucochilum	Guatemala	... 1835
lunatum	Demerara	... 1836
luridum	W. Indies	... 1834
— guttatum	—	... 1838
— major	—	... 1839
— superbum	—	... 1840
longifolium	Demerara	... 1838
microchilum	Guatemala	... 1840
nebulosum	<i>Odontoglossum nebulosum</i>	—	... 1839
pachyphyllum	...		
Phelpsianum	...		
Papilio	Trinidad	... 1823
— limbatum	—	... 1823
— marginatum	—	... 1833
superbum	—	... 1839
phymatochilum	<i>Odontoglossum phymatochilum</i>		
pectorale	Rio Janeiro	
pictum	Peru	
pulchellum	Jamaica	
pulvinatum	Brazil	... 1837
ramosum	—	... 1830
reflexum	Mexico	... 1836
Reidanum		
Russellianum	Rio Janeiro	... 1835
sphacelatum	Guatemala	
straminium	Mexico	... 1837
Suttonii	Guatemala	... 1837
tetrapetalum	Cuba	... 1838
tigrinum	Mexico	...
tricolor	Jamaica	... 1844
triquetrum	—	... 1836
urophyllum	Brazil	... 1838
variegatum	Guatemala	... 1839
viperinum	Urquay	... 1836

Scientific Names.	Synonymes.	Native Country.	Year of Introduction.
Oncidium			
Wentworthianum	...	Guatemala	... 1837
Wrayæ	... ..	Mexico	...
Ornithocephalus			
ciliatus	... ..	Guiana	... 1837
gladiatus	... ..	Trinidad	... 1823
trichorhizus	... ..	—	... 1835
Paphinia			
cristata	<i>Maxillaria</i> <i>cristata</i>	Demerara	... 1838
Paxtonia			
rosea	... ..	Manilla	... 1837
Peristeria			
cerina	... ..	Spanish Main	1836
elata	... ..	Panama	... 1822
guttata	... ..	Mexico	...
pendula	... ..	Demerara	... 1837
stapælioides	... ..	Mexico	... 1836
Phalænopsis			
amabile	... ..	Manilla	... 1837
<i>var. rotundifolia</i>			
<i>var. longifolia</i>			
Phajus			
albus	<i>P. niveus</i> ...	India	... 1842
bicolor	... ..	Ceylon	... 1837
flavus	... ..	India	... 1837
grandifolius	... ..	China	... 1778
maculatus	... ..	India	... 1820
striatum	<i>P. albus</i>	—	... 1837
Wallichianum	... ..	—	... 1840
Ponera			
striatum	... ..	Guatemala	... 1840
Promenœa			
lentiginosa	<i>Maxillaria</i> <i>lentiginosa</i>	Brazil	... 1838
Rollissonii	<i>M. Rollissionii</i>	—	... 1830
stapæliodes	<i>M. stapæliodes</i>	Brazil	... 1835
Xanthina	<i>M. Xanthina</i>	Organ Mountains	
Physuris			
pictus	<i>Anætochilus</i> <i>argenteus</i> <i>Spiranthus argenteus</i>	Brazil	... 1842

Scientific Names.	Synonymes.	Native Country.	Year of Introduction.
Rodriguezia			
secunda	... ..	Trinidad	... 1834
— latifolia	... ..	—
Renanthera			
arachnites	<i>Aerides</i> <i>arachnites</i>	Java	... 1839
coccinea	... ..	China	... 1816
matutina	... ..	Brazil	...
Saccolabium			
bifidum	... ..	Manilla	... 1837
Blumei	... ..	Java	... 1839
Cumingii	... ..	Philippines	... 1836
compressum	... ..	—	... 1838
carinatum	... ..	India	... 1838
denticulatum	... ..	—	... 1837
giganteum	... ..	Manilla	...
guttatum	<i>Sarcanthus</i> <i>guttatus</i>	India	... 1834
præmorsum	... ..	India	... 1834
Sarcanthus			
paniculatus	... ..	China	... 1830
rostratus	... ..	—	... 1830
— purpurescens	... ..	Manilla	
Scaphyglottis			
reflexa	... ..	Demarara	
violacea	... ..	—
Scuticaria			
Steelii	<i>Maxillaria</i> <i>flagellifera</i> ... <i>Bifrenaria</i> <i>flagellifera</i>	Guiana	... 1837
Schomburgkia			
crispa	... ..	Demerara	... 1836
marginata	<i>S. Brocklehurstii</i>	Guiana	... 1836
tibicina	<i>Epidendrum tibicina</i>	Honduras	... 1837
Sobralia			
decora	... ..	Guatemala	... 1840
— alba	... ..	—	... 1840
liliastrum	... ..	Guiana	... 1839
macrantha	... ..	Guatemala	... 1841
sessilis	... ..	Guiana	... 1837

Scientific Names.	Synonymes.	Native Country.	Year of Introduction.
Sophronites			
cernua	<i>Sophronia cernua</i>	Brazil	... 1836
coccinea	Brazil	...
grandiflora	<i>Cattleya coccinea</i>	—	... 1840
pterocarpum	Guatemala	...
violacea			
Stanhopea			
atrosacca			
aureum	—	... 1837
Barkerii	Mexico	...
Cooperii	—	...
Devoniana	—	... 1840
grandiflora	Trinidad	... 1824
graveolens	Brazil	... 1840
insignis	Brazil	... 1837
— atrorubens	—	... 1839
— guttata	—	... 1840
Lindleyi	Mexico	...
maculosa			
Martiana	Guatemala	... 1837
— bicolor	—	... 1841
oculata	Xalapa	... 1829
— aureum	Mexico	... 1839
— cinnamomum	—	...
quadricornis	Spanish Main	1836
saccata	Guatemala	... 1836
tigrina	Mexico	... 1836
— purpurea	Guatemala	... 1836
— superba	—	...
venusta	—	... 1837
Wardii	La Guayra	... 1836
— aureum	—	... 1840
Stenia			
pallida	Demerara	... 1837
Trichopelia			
tortilis	Mexico	... 1837
Trichocentrum			
fuscum	<i>Acoidium fuscum</i>	Brazil	... 1836
iridifolium	Demerara	... 1836
candidum	Guatemala	... 1840

Scientific Names.	Synonymes.	Native Country.	Year of Introduction.
Tetrapeltis			
fragrans	...	Bengal	... 1837
Vanda			
conjecta	...	Ceylon	... 1837
cristata	...	India	... 1840
lamellata	...	Manilla	... 1837
Roxburghii	...	India	... 1830
— cœrulea	...	—	... 1830
— rubra	...	—	... 1830
— unicolor	...	—	... 1828
spathulata	...	E. Indies	...
tessellata	...	India	...
teres	...	—	... 1830
violacea	...	Manilla	... 1838
Warrea			
bicolor	<i>W. bidentata</i>	...	Brazil ... 1843
cœrulea	Brazil ... 1842
tricolor	<i>Maxillaria</i> <i>Warreana</i>	—	... 1829
Zygopetalum			
africanum	...	Sierra Leone	... 1839
crinitum	...	Brazil	... 1829
— album	...	—	... 1840
— cœruleum	...	—	... 1837
— roseum	...	—	... 1837
Mackayi	...	—	... 1830
— grandiflorum	...	—	... 1839
— intermedium	...	—	... 1830
— maxillare	...	—	... 1830
Murrayanum	...	—	... 1838
rostratum	...	Demerara	... 1836
stenochilum	...	Brazil	... 1836

END.

Works on Botany, Gardening, and Farming,

PUBLISHED BY R. GROOMBRIDGE AND SONS,

5, PATERNOSTER ROW.

FLORIGRAPHIA BRITANNICA;

OR

Engravings and Descriptions

OF THE

FLOWERING PLANTS AND FERNS OF GREAT BRITAIN.

By DR. DEAKIN.

The object of the present publication is to place in the hands of the Young Botanist the cheapest, as well as one of the most useful works on British Botany. The ILLUSTRATIONS will consist of Engravings from original drawings of every ascertained species of British Flowering Plants and Ferns, with dissections of those parts of the Plants most important to be known in distinguishing the various genera and species. In the descriptions, as few technical terms will be used as is consistent with clearness and distinction. The Generic and Specific characters of the Plants will be described, and the localities mentioned in which such species is found, as also the time of flowering.

The work will be published in Monthly Parts, each part containing Sixty Engravings of different Plants, with Forty pages of Letter-press description, price 2s. 6d.; or, with the Plates Coloured, price 5s.; and will be completed in about Thirty Parts, forming Three Thick Octavo Volumes; in the concluding Part will be given a Glossary or Dictionary of Words used in the description of the Plants.

Five Parts are already issued.

HOTHOUSES, CONSERVATORIES, &c.

A Practical Treatise on the Construction of Stoves and other Horticultural Buildings, and on the PRINCIPLE OF HEAT as applied to Hothouses, Conservatories, Green-houses, &c.

By J. W. THOMPSON. 26 Wood Engravings, 8vo, 2s. 6d.

THE FLORIST'S JOURNAL FOR 1844.

Illustrated with 14 superior coloured Engravings, 8s., cloth.

Continued in Monthly Numbers, price 6d. each, embellished with some new or favorite Flower, coloured in the best manner.

To the florist, the general cultivator of plants, and especially to the amateur grower, this work offers a medium through which sound practical knowledge may be obtained: for while the more abstruse points of the science are rendered clear and familiar, the attention of those who contribute is at the same time directed to the best means of cultivating, and the general management of all plants at all seasons.

"This work is well conducted, and the articles sensibly written: the Numbers under review contain useful and interesting papers, supplied by experienced men. The embellishments are good."—*Gardener's Chronicle*, Nov. 25.

"This periodical is the only one worthy of notice that attempts to give coloured portraits of florist's flowers, and it seems to have taken the ground originally occupied by the Horticultural Journal, which was discontinued. The writing of this work is, for the most part, sound; the price literally under the worth of the plate which embellishes it; and, standing alone, as it does, it can hardly fail. It is not so strictly confined to florist's flowers as the Horticultural Journal, but probably this diversity has its charms."—*Gardener's Gazette*, Oct. 25.

A few Copies remain of Vols. I, II, III, and IV.

MAUND'S BOTANIC GARDEN.

The Number for January, 1845, contains the commencement of

THE FRUITIST,

A treatise on useful Fruits, with Engravings.

This addition will be given monthly, without extra charge, to meet the increasing taste for the cultivation of Garden Fruits, particularly the improved varieties of Apples and Pears. The smallest Gardens are not unsuitable to the growth of these; and from trees of the size of gooseberry bushes, a large produce of delicious fruit may be obtained.

Persons desirous of possessing the work should order it of their Bookseller from the above date, the commencement of the Volume. Price, large 1s. 6d.; small 1s. Monthly.

For the accommodation of Gardeners and small Cultivators, who desire to obtain a knowledge of Flowers and Gardening, for pecuniary advantage, or for pleasure, a reprint of the early Numbers is issued monthly, called "*The Gardener's Edition of the Botanic Garden.*" The plates are partially coloured, and the price but 6d. each month. Of this, Two Parts, of Twelve Numbers each, are completed, price, in gilt cloth, 7s. 6d. each part.

Complete in 5 vols. 4to, either together or separate, at 32s. large, and 20s. small, gilt cloth,

THE BOTANIST.

By B. MAUND, F.L.S., assisted by the Rev. J. S. HENSLOW, M.A. F.L.S. &c.
Regius Professor of Botany in the University of Cambridge.

Containing beautifully executed coloured Engravings of the most admired Plants, cultivated in the Greenhouse, Stove, or open Garden. The drawings accurately coloured from nature, of the full size of the flowers. Generic and specific distinctions are accompanied by popular information on the History, Properties, Habits, Culture, and Geographical Distribution of the subjects figured. With portions of an easy Guide to Botany, and Botanical Dictionary, written by Prof. HENSLOW, illustrated by numerous cuts.

The literary periodicals have unanimously bestowed the highest praise on THE BOTANIST. A few concise extracts may be given as examples.

Gardener's Magazine.—"The plates are remarkably well executed, and the whole work has the neat appearance of Mr. Maund's Botanic Garden."

Medical Gazette.—"We do not know any work better calculated to inspire a love for botany, and gratify it when awakened."

Literary Gazette.—"The plan is excellent, and the illustrations finely executed."

Congregational Magazine.—"The figures of ornamental plants are beautifully coloured, and the descriptions happily combine scientific, popular, and moral instruction."

Metropolitan Magazine.—"The engraving and the colouring of the flowers are really excellent specimens of the art."

AN ESSAY ON THE IMPROVEMENT

TO BE MADE IN THE

CULTIVATION OF SMALL FARMS,

By the introduction of Green Crops, and Housefeeding the Stock thereon.

By WILLIAM BLACKER. Fifth Edition, 18mo, 1s. 6d.

The Gardener and Practical Florist.

Each volume may be had separately; 1st vol. 7s. 6d.; 2d vol. 10s. 6d.; 3d vol. 15s.

The following is a summary of the principal contents of this valuable work.

Properties of Pansey.
 Culture of Horse Radish.
 Culture of Auricula.
 Properties of Auricula.
 Properties of Dahlia.
 Culture of Astromerias.
 Glenny's List of Dahlias.
 Properties of Carnation.
 Improvement of Bad Soils.
 Properties of Azalia Indica.
 Properties of Pink.
 Cultivation of Verbena.
 Culture of Ranunculus.
 Properties of Ranunculus.
 The Chrysanthemum.
 Culture of Carnation.
 Potatoes from Seed.
 Culture of Pansey.
 Culture of Strawberry.
 Properties of Petunia.
 Climbing Plants.
 Theory of Horticulture.
 The Polyanthus.
 Roses in Pots.
 Properties of Crocus.
 The Cultivation of Roses.
 Properties of Hyacinth.
 Treatise on Dahlia.
 Culture of Potato.
 The Culture of Fuchsia.

Properties of Narcissus.
 The Rhododendron.
 Properties of Auricula.
 Cultivation of Camellia.
 Culture of Caper Plants.
 Properties of Ranunculus.
 Properties of Calceolaria.
 Culture of Gloxinias.
 Culture of Hyacinth.
 Culture of Cape Heaths.
 Strawberries in Pots.
 Cultivation of Ranunculus.
 The Onion.
 Culture of Cactus.
 Properties of Fuchsia.
 Culture of Rose.
 Properties of Rose.
 Cucumbers in Pots.
 Culture of Geranium.
 Soils and their Properties.
 Potato from Seed.
 Pruning Wall-Fruit Trees.
 Cultivation of Trailing Plants.
 The Natural Orders.
 Laying out Gardens.
 Culture of Rhubarb.
 Of Pruning Fruit Trees.
 Culture of Brassica.
 Culture of Parsnips.
 Culture of Celery.

Cultivation of Asparagus.
 Properties of the Pear.
 Management of Cut Flowers.
 Window Gardening.
 Culture of Peach Trees.
 The Carnation.
 Landscape Gardening.
 Propagating Tender Plants.
 Landscape Gardening.
 Hybridizing.
 Rustic Work.
 Tea Tree in Europe.
 Standard Roses.
 Hybridizing Explained.
 Coverings from Frost.
 The Pine Apple.
 Treatment of Stove Plants in Winter.
 Protection of Peach Trees.
 Dr. Murray's Lecture on Earths
 Guano, its Action, &c.
 Arboriculture.
 Experiments in Horticulture.
 The Vine.
 The Orchard.
 Descriptive Lists of the best Flowers.
 Fruits.
 Plants.

In the Third Volume will be found
 THE GARDEN PRACTICE FOR THE ENTIRE YEAR.

THE FLORICULTURAL MAGAZINE

AND

Miscellany of Gardening.

Illustrated with 72 beautifully coloured Engravings of Flowers and other Illustrations.
 The 6 Volumes complete, price 17. 10s.

LETTERS TO THE FARMERS OF SUFFOLK.

By the Rev. J. S. HENSLAW, M.A. Svo, sewed, 2s.

By the same Author,

AN ADDRESS TO LANDLORDS.

On the Advantages to be expected from the general establishment of

A SPADE TENANTRY

From among the Labouring Classes.

Price 1s.

THE GARDENER'S RECEIPT BOOK,

OR METHODS FOR DESTROYING

All kinds of Vermin and Insects injurious to the Garden.

LIKEWISE

PREVENTIVES AND CURES FOR THE DIFFERENT DISEASES OF PLANTS.

WITH DIRECTIONS FOR THE

PRESERVATION OF TREES, FRUITS, FLOWERS, &c. &c.

By WILLIAM JONES.

Price 2s. 6d.

BRITISH BOTANY,

Familiarly explained and described in a Series of Dialogues.

By a LADY. 28 coloured plates, 12mo. 10s. 6d.

THE BOTANIST'S MANUAL;

Comprising a complete List of the British Flowering Plants and Ferns, designed principally for the out-door convenience of Botanical Students and Amateurs, as a book of entry for the discovery of Plants or Habitats, and also as a convenient Pocket Companion for persons engaged in collecting materials for local Floras.

18mo, 2s. 6d.

FRUIT TREES;

A TREATISE ON THEIR CULTURE AND MANAGEMENT.

By CHARLES HARRISON, F.H.S. Second Edition, 8vo, 21s.

CULTIVATION OF THE CUCUMBER

IN THE

Winter Season.

To which is added, A CHAPTER ON MELONS.

By THOMAS MOORE, Royal Botanic Gardens, Regent's Park. 12mo, 5s.

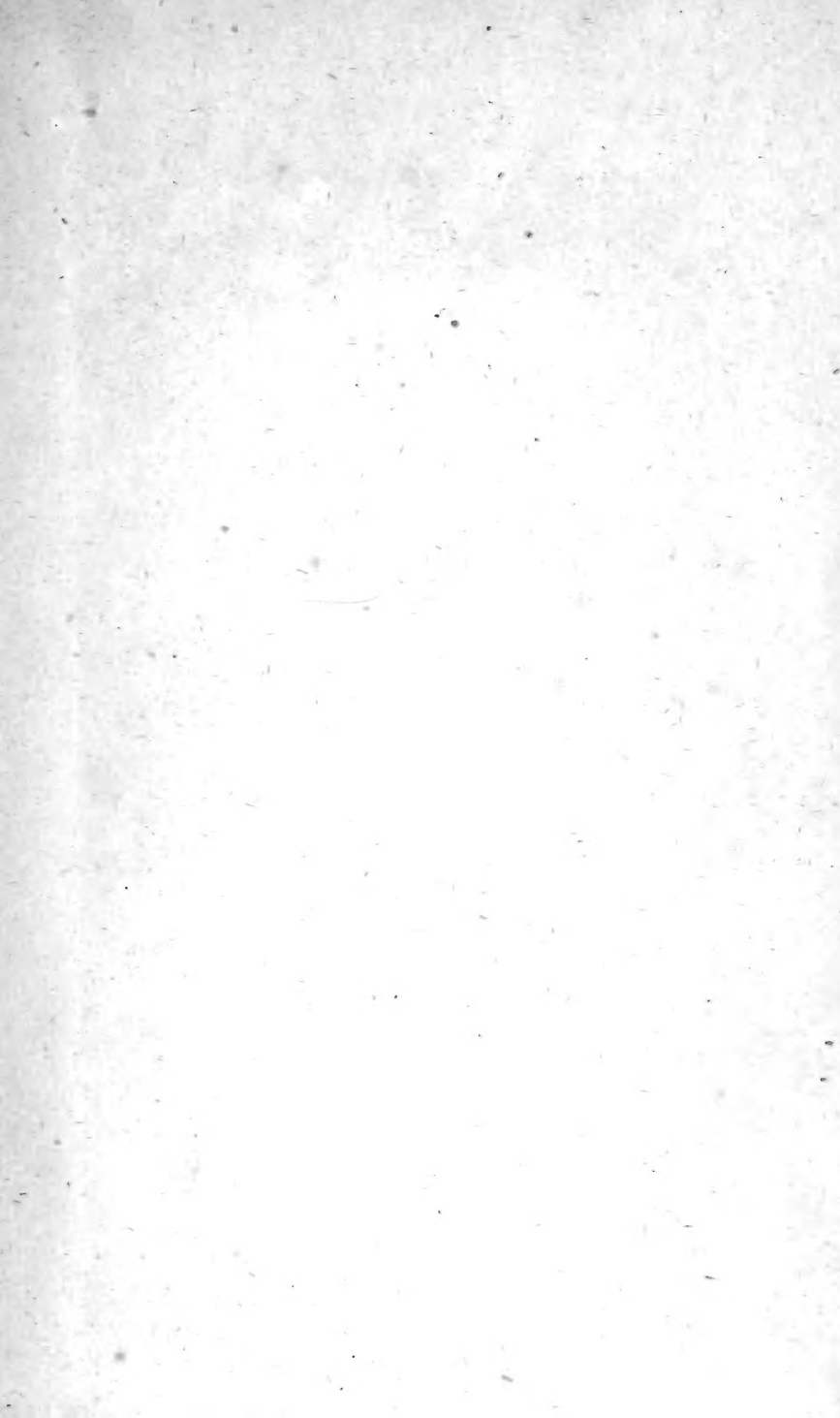
B E E S.

THE BEE-KEEPER'S MANUAL;

Or Practical Hints on the Management and complete Preservation of the HONEY BEE.

By HENRY TAYLOR,

Second edition, enlarged and with additional illustrations, 12mo, 4s.





New York Botanical Garden Library



3 5185 00224 8738

