

Ministry of Agriculture, Industry and Commerce
Trinidad and Tobago

Vol. III]

[Part I

FLORA
OF
TRINIDAD AND TOBAGO

MICROSPERMAE

HYDROCHARITACEAE (By N. W. SIMMONDS)

BURMANNIACEAE (By N. W. SIMMONDS)

ORCHIDACEAE (By R. E. SCHULTES)



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MONOCOTYLEDONS

SERIES I. MICROSPERMAE

- Water plants with dioecious fls.....1. **Hydrocharitaceae**
Terrestrial or epiphytic plants, monoecious
Fls regular, plants saprophytic2. **Burmanniaceae**
Fls strongly zygomorphic, plants rarely
saprophytic3. **Orchidaceae**

FAMILY 1. HYDROCHARITACEAE

By N. W. SIMMONDS*

Herbs, marine or fresh-water, rooting in mud or floating; *lvs* radical and clustered in a short crown or dispersed on elongated stems; *fls* (in local genera) unisexual, enclosed within a spathe of one bifid bract or of two bracts, the females solitary, the males usually more than one; *per. segs* free to the base, in 1 or 2 series of 3; *stams* 3-numerous; *ovary* inferior, 1-several celled with parietal placentas; *stig* usually as many as the placentas; *ovs* numerous; *frt* globose to linear, dry or more or less pulpy, breaking irregularly when ripe.

Marine plants

Lvs linear, not petiolate.....1. *Thalassia*

Lvs elliptic, petiolate2. *Halophila*

Fresh-water plants, *lvs* orbicular3. *Limnobium*

1. THALASSIA Banks

Herbs, marine; *lvs* clustered, linear; *infls* borne in the leaf clusters, spathaceous, dioecious; *male fls* pedicellate, with 3 petaloid perianth members and 9 subsessile stamens; *female fls* subsessile with 6-12 celled ovary; *frt* pedicellate, longitudinally dehiscent, many-seeded.

1. *T. testudinum* Konig & Sims

Griseb. Fl. 507; Britt. & Wils. Sci. Surv. Porto Rico 5, 17; Rydberg in N. Amer. Fl. 17. 73 (1909).

Herb, submerged; *stems* short, clothed with the persistent remains of old *lvs*; *lvs* 2-5, sheathing, linear, up to 35 cm long x 6-13 mm wide, obtuse; *spathe*, the lobes elliptical, papillose-dentate at the margins; *per. members* of male and female *fls* oblong, obtuse, 10-12 mm long; *anthers* linear, 8 mm long; *stigmas* 9-12, 10 mm long; *frt* elliptical-fusiform, shortly pedicellate, beaked.

Trinidad: Gulf of Paria (Broadway and Alexander, 16.1.1893, in Herb. Trin.); Monos (Herb. Trin. 15031, Dec. 1953); Chacachacare (Herb. Trin. 15032, 2.1.1954); Carenage (Broadway 6157, 6.5.1926, in Herb. Kew); Balandra Bay (Herb. Trin. 15417, 3.2.1957).

*With assistance from N. Y. Sandwith whose help is gratefully acknowledged.

Tobago: Pigeon Point (Herb. Trin. 14228, *ann.* 1948).

Shallow coastal waters, Trinidad and Tobago.

From Florida throughout the West Indies to northern South America.

Note: Of specimens in Herb. Trin., two are fragmentary and none bears flowers.

2. HALOPHILA *Thouars*

Herbs, marine, rhizomatous; *lvs* paired on short erect shoots, petiolate; *fls* monoecious or dioecious, solitary or paired, lacking petals; *ovary* 1-celled; *frt* enclosed in the bract, indehiscent, many-seeded.

1. *H. baillonis* *Asch. apud Hook. fil.*

Britt. & Wils. Sci. Surv. Porto Rico 5, 16.

Herb, with branched filiform rhizome bearing very short, erect shoots; *lvs* one pair at the top of each erect shoot; *pets* slender, 4-10 mm long; *lams* elliptical, 10-13 x 3-8 mm, obtuse, tapered to the base, minutely denticulate or almost entire; *male fls* pedicellate with 3 obtuse oval sepals and 3 oblong subsessile anthers; *female fls* sessile; *seps* 3, minute; *stigs* 3, sessile, filiform; *caps* 3.5-4 x 2 mm with minute globose or subglobose seeds.

Trinidad: Gasparee (R. E. D. Baker, *ann.* 1933, spirit coll. in Herb. Kew); Scotland Bay (Herb. Trin. 15647, 24.9.1957).

Shallow coastal waters, Trinidad.

Martinique, Guadeloupe, St. Vincent, St. Thomas, Puerto Rico, Jamaica, Cuba.

3. LIMNOBIUM *L. C. Rich.*

Herbs, aquatic, stoloniferous, sometimes floating, dioecious or monoecious; *lvs* orbicular or ovate, petioled, clustered in 2-lobed spathes; *per. segs* 6 in 2 series, sometimes reduced in female *fls*; *stams* 6-12; *ovary* 1-celled with irregularly arranged parietal ovules or 6-9 celled with parietal placentas; *staminodes* 3 or 6 in the female *fls*; *frt* baccate, many seeded.

1. *L. stoloniferum* (G. F. W. Meyer) Griseb.

Hydromystria stolonifera G. F. W. Meyer.

Griseb. Fl. 506; Urb. Symb. Ant. 8. 10; Britt. & Wils. Sci. Surv. Porto Rico 5. 18; Rydberg N. Amer. Fl. 17. 74 (1909); Pulle Fl. Surinam 1. 470 (1947).

Herb, aquatic, perennial, stoloniferous; *lvs* clustered in rosettes, the petioles triquetrous expanded at the base and 1-5 cm long, the blades orbicular or broadly ovate, blunt, rounded or slightly cordate at the base, 20-30 x 15-25 mm, thick and spongy; *fls* unisexual, pedicellate, solitary or few together; *male fls* enclosed in a 2-lobed spathe, cor. white; *stams* 6 borne on a short androphore; *female fls* apetalous, with 6 staminodes and a club-shaped ovary with 6 bifid styles; *frt* oblong, apiculate, 5 mm long.

Trinidad: Cedros (Herb. Trin. 823, 30.8.1850); Oropouche Lagoon (Herb. Trin. 1956, 14.7.1866); *sine loc.* (Crueger in Herb. Kew).

Trinidad, in ponds and canals in the southwest of the island. West Indies, northern South America and Paraguay.

FAMILY 2. BURMANNIACEAE*

By N. W. SIMMONDS†

Herbs, usually saprophytic and non-chlorophyllous, small and erect; *stems* usually simple; *lvs* minute, scale like, alternate; *fls* regular, solitary, racemose, cymose or capitate; *per.* petaloid, tubular, 6-lobed; *stams* 3 or 6 inserted in the *per.* tube, 2-locular, sessile or shortly filamentous, the connective variously appendiculate; *ovary* inferior, 1-celled with 3 parietal placentae or 3-celled with axile placentae, sometimes glandular at the top; *style* simple below, variously branched; *frt* capsular, dehiscing irregularly or transversely, seldom longitudinally; *seeds* numerous, minute.

Ovary 3-celled, with axile placentae.....1. *Burmannia*

Ovary 1-celled, with 3 parietal placentae

Seeds linear-lanceolate or almost linear...2. *Dictyostegia*

Seeds ovoid-ellipsoid to subglobose

Infl. more or less elongated, laxly

racemiform, or reduced to 1 fl.3. *Apteria*

Infl. contracted, 3-7 fld

Perianth limb deciduous with the

stamens4. *Gymnosiphon*

Whole perianth persistent5. *Marthella*

1. BURMANNIA L.

Herbs, with small greenish lvs; *infls* terminal capitate, cymose or laxly cymose or fls solitary; *per.* sometimes winged, outer lobes larger than the inner; *anthers* 3, subsessile, inserted below the inner *per.* lobes; *ovary* 3-celled; *ovules* axile; *style* filiform, simple or variously branched above at the stigmas; *caps.* dehiscing irregularly, many-seeded, crowned by the persistent *per.*; *seeds* oblong or ellipsoid.

1. *B. capitata* (Walt.) Mart.

Griseb. Fl. 606 : Jonker in Pulle, Fl. Surin. 1.1. 178 : Jonker Mon. Burm. 69. (1938) : Britt. & Wils. Sci. Surv. Porto Rico 5. 180 : Urb. Symb. Ant. 3. 450.

*This treatment is largely drawn from Jonker Monogr. Burmanniaceae and in Pulle Fl. Surinam 1, 176 (1938) and Urban Symb. Ant. 3. 430 (1903). Floral details have not been checked for Trinidad material.

†With assistance from N.Y. Sandwith whose help is gratefully acknowledged.

Stems erect, glabrous, terete, 5–20 cm high, usually simple; *lvs* few, the lower ones greenish, subulate, up to 1 cm long, the upper ones reduced to scales; *infls* terminal, capitate; *bracts* minute; *fls* 2–4 mm long, white or creamy white ("light bluish", "seldom blue"—Jonker); *per.* not winged, outer lobes erect, ovate, acute, inner lobes minute; *anths* with minutely appendiculate connective; *style* 3-branched above, each branch bearing a funnel-shaped or peltate stigma; *caps.* irregularly transverse-dehiscent; *seeds* oblong, slightly curved.

Trinidad : O'Meara savanna (Herb. Trin. 1608, 15.11. 1861, Crueger 237 cited by Urban *loc. cit.*); Aripo savanna (Herb. Trin. 1811, Febr. 1851); Piarco savanna (Herb. Trin. 4981, Dec. 1891; Herb. Trin. 5184, 18.1.1893; Herb. Trin. 8017, 28.12.1912); O'Meara savanna (Herb. Trin. 13246, 4.12.1937); Long Stretch Gravel Pit (Herb. Trin. 14183, 22.2.1948).

Open savannas, Trinidad.

Southern U.S.A., British Honduras, West Indies and tropical South America.

2. DICTYOSTEGA Miers

Herbs, saprophytic; *lvs* reduced to scales; *infls* cymose, simple or bifid; *per. lobes* 6, the outer 3 larger than the inner, acute and erect, the inner obtuse, whole *per.* persistent in fruit; *anths* 3, subsessile with broad connectives; *style* simple below, 3-branched above, each branch with one curved funnel-shaped stigma; *ovary* 3-sulcate, 1-celled, with 3 parietal eglandular placentae; *caps* irregularly dehiscent in 3 valves, crowned by the persistent *per.*; *seeds* numerous, linear-lanceolate with a reticulate, transparent testa.

1. *D. orobanchioides* (Hook.) Miers

Griseb. Fl. 606: Jonker in Pulle, Fl. Surin. 1.1.184: Jonker Mon. Burm. 215 (1938): Urb. Symb. Ant. 3. 442 (as *Dictyostegia orobanchoides*).

Stems, erect, glabrous, terete, usually simple, 10–38 cm high; *lvs* reduced to minute ovate scales; *infls* bifid into two cymose branches, rarely simple; *peds* 1–2 mm long; *fls* white, 2.5–5 mm long, deflexed-drooping; *per. lobes* 6, the outer 3 erect, ovate, acute with inflexed margins, the inner 3 smaller, obtuse, erect, later

reflexed; *anths* sessile with broad 2-acuminate connectives; *ovary* rounded, trigonous; *style* thickened at the base, and swollen above into the 3 branches which bear the triangular, curved, funnel-shaped stigmas; *caps.* dehiscent in 3 valves, crowned by the persistent perianth; *seeds* yellowish.

Trinidad: *sine loc.* (Fendler 547, in Herb. Kew., *det.* Jonker. *loc. cit.*).

var. *parviflora* (Benth.) Jonker. Fls smaller, about 2 mm long.

Trinidad: Arima (Herb. Trin. 1609, 15.10.1861=Crueger 236 cited by Urban and Jonker, *loc. cit.*); Aripo savanna (Herb. Trin. 1612, 21.1.1861; Alexander, April 1896 in Herb. Trin.; Herb. Trin. 8026, 13.2.1915); Long Stretch, in forest (Herb. Trin. 13818, 26.12.1946).

Savannas and the neighbouring marsh-forests, northern Trinidad.

Tropical South and Central America; the variety in northern tropical South America.

3. *APTERIA* Nutt.

Herbs, saprophytic; *lvs* reduced to scales; *infls* few-flowered; *per.* persistent in fruit, tubular-campanulate, 6-lobed, the inner series smaller than the outer; *stams* inserted on short filaments in crescent-shaped sacks below the inner *per.* segs, transversely dehiscent, the connectives large; *ovary* 1-celled with 3 parietal placentae, eglandular, ovoid, narrowed at the top into the 3-branched style; *caps.* 3-valved, dehiscing between the placentae; *seeds* numerous, minute, oblong or ellipsoid, sometimes slightly curved.

1. *A. aphylla* (Nutt.) Barnh. ex Small

var. *hymenantha* (Miq.) Jonker

Griseb. Fl. 606: Jonker in Pulle Fl. Surin. 1. 186; Jonker Mon. Burm. 207 (1938): Britt. & Wils. Sci. Surv. Porto Rico 5. 179 (with different synonymy): Urb. Symb. Ant. 3. 448.

Stems 3–12 cm, terete, usually simple, purple; *lvs* reduced to minute scales; *fls* 1–2, on peds 5–10 mm long; *per.* campanulate, 5–10 mm long, white at the base, purple or violet above, the lobes 6 in two series, the inner as long as the outer but narrower and

blunter; *anths* 3, shortly winged-filamentous, inserted in crescent-shaped sacks below the inner *per.* lobes; the connectives broad; *ovary* ovoid, eglandular, with 3 parietal placentae; *style* 3-branched, equal to the anthers; *caps.* ovoid or obovoid, crowned by the persistent perianth; *seeds* brown.

Trinidad: El Tucuche (Herb. Trin. 1511, 3.2.1857); Las Cuevas (Herb. Trin. 1611, 4.1.1861); St Ann's (Herb. Trin. 1810, 5.1.1846); Las Cuevas (Herb. Trin. 1812, 16.10.1850); El Tucuche (Herb. Trin. 5244, 27.2.1893); Aripo savanna (Herb. Trin. 8037, 13.2.1915); El Tucuche (Herb. Trin. 10698, 17.1.1924); Aripo road (Herb. Trin. 10920, 23.1.1925); Aripo savanna (Herb. Trin. 11208, 1.2.1922); Long Stretch (Herb. Trin. 13802, 20.9.1947);

Forests and savannas in the north of Trinidad.

West Indies and northern South America.

4. GYMNOSIPHON Bl.

Herbs, saprophytic; *lvs* reduced to scales; *infls* bifid cymes (cincinni), sometimes contracted into heads or reduced; *per.* the tube persistent in fruit, the limb deciduous, outer segments simple or 3-lobed at the tips, inner segments absent or minute; *anths* 3, subsessile, with rather large connectives; *ovary* 1-celled, with 3 parietal placentae, each surmounted by a pair of subglobose glands; *style* filiform, 3-branched above with stigmas often lobed or appendaged; *caps.* irregularly dehiscent with many minute subglobose seeds.

Infls 3-4 fld, anther connectives

apiculate 1. *G. arcuatus*

Infls usu. many-fld, connectives

not apiculate 2. *G. mattogrossensis*

1. *G. arcuatus* Urb.

Urb. Symb. Ant. 3. 443 (1903): Jonker in Pulle Fl. Surin. 1. 182: Jonker Mon. Burm. 191 (1938).

Stems slender, 4-12 cm, white, terete, simple; *lvs* reduced to white scales; *fls* (1-) 3, white, 1 terminal with 2 shortly pedicellate laterals; *per.* 5 mm, the tube 3 mm, the outer lobes 2 mm themselves shortly 3-lobed, the inner lobes minute, entire, ovate; *per. limb*, with the stamens, deciduous after flowering; *anths* sessile,

with broad mucronulate connectives; *ovary* obovoid with 6 prominent rounded glands; *style* 3-branched with 3 stigmas each bearing 2 filiform appendages; *caps.* more or less globose, crowned by the persistent per. tube; *seeds* subglobose, brown.

Trinidad: Fendler 616 in Herb. Kew, *det.* Jonker, the only record. Treatment of this species is, curiously, omitted by Urban, *loc. cit.*

Brazil, Guiana, Trinidad and Grenada (Jonker).

2. *G. mattogrossensis* (Malme) Jonk.

Jonker Mon. Burm. 192 (1938).

Stems 7.5–16 cm high, simple or branched; *lvs* scale-like, minute; *infl.* a 5–15 fld bifid cincinnus, each branch 15–35 mm long; *fls* erect, shortly pedicellate, 7–8 mm long, white or yellowish in colour; *per. lobes* the outer obtuse ovate, the inner linear; *anths* inserted in the upper part of the tube, connectives not apiculate; *style* branched into three stigmas each 2-appendaged; *caps.* 2.5 mm long, globose, crowned by the persistent per. tube.

Trinidad: *Sine loc.* (Fendler 505 in Herb. Kew, *det.* Jonker, *loc. cit.*).

Brazil.

5. *MARTHELLA* Urban

Herb. saprophytic; *infl.* a cyme or cincinnus, contracted into a head; *per.* persistent in fruit, inner segments absent; *stams* inserted on the perianth tube, shortly filamentous, connective short and not appendiculate; *ovary* obovoid-turbinate, shortly pedicellate, surmounted by 3 short-stalked connate glands, 1-locular with 3 parietal placentae; *style* simple below, 3-branched above with 3 saucer-shaped stigmas; *seeds* subglobose.

1. *M. trinitatis* (Johow) Urban

Burmannia capitata Johow non Mart.

Gymnosiphon trinitatis Johow

Urb. Symb. Ant. 3. 448 (1903): Jonker Mon. Burm. 212 (1938).

Stems simple, 5–10 cm, purplish; *lvs* reduced to scales; *infl.* a capitulate cincinnus with axis 2 mm long, 3–7 fld; *peds* 0.6–1 mm long, erect; *per.* yellow, 4 mm long, 3-lobed, the constricted tube 3 mm; *anths* shortly filamentous, the connectives not appendiculate

or at most minutely acuminate; *ovary* obovoid, 3-glandular at the top, 1-locular with 3 parietal placentae; *caps.* obovoid-turbinate, 2 x 1.5 mm, crowned by the persistent perianth; *seeds* ovoid-subglobose, brown, 0.3 mm long.

Trinidad: "On rotten wood and dead leaves in woods of the northern mountains, Feb. 1883: Johow" (Urban *loc. cit.*); not otherwise known.

Endemic.

FAMILY 3. ORCHIDACEAE

By R. E. SCHULTES

Perennial plants, herbaceous, shrubby or rarely vine-like or climbing, terrestrial, epiphytic, occasionally lithophytic, semi-aquatic or, rarely, subterranean, autophytic or saprophytic. Rhizome fibrous, coral-like or fleshy and tuberous. Roots subterranean or aerial, fibrous, fleshy, tuberous or corm-like. Stems terete, flattened or angular, often swollen to form variously thickened pseudobulbs; pseudobulbs from slender and stem-like to globose, fusiform or pyriform, bearing one or more leaves, subtended by cataphylls. Leaves solitary or numerous, radical or cauline, alternate or occasionally whorled, simple, varying from a sheathing bract to a definite blade which is membranaceous, papyraceous, coriaceous or fleshy, usually parallel-veined. Inflorescence terminal or lateral, from 1- to many-flowered, spicate, racemose or paniculate. Flowers minute and inconspicuous to large and showy, often sweet-scented, gynandrous, usually hermaphroditic, rarely unisexual or polymorphic, sometimes cleistogamous. Perianth of 2 trimerous whorls of free or variously united segments: outer whorl of 3 sepals; inner whorl of 2 petals, 1 lip or labellum. Sepals usually more or less adnate to inferior ovary. Petals usually similar to sepals. Lip variously modified. Column in centre of flower consisting of united stamens and pistils. Stigmas 3, borne ventrally on front of column, in *Diandrae* free at apex of column, in *Monandrae* 2 fertile ones somewhat confluent into an apparent single body, third one sterile and modified to form rostellum which separates anther from stigmatic surface. Anthers 1 or 2, versatile or rigidly attached on or near apex of column or laterally. Pollen powdery, granular, waxy or cartilaginous, usually (except in *Cypripedioideae*) compressed (as pollen tetrads) into 2 to 8 distinct masses or pollinia. Fruit a dry capsule or fleshy pod. Seeds indefinitely numerous, minute and dust-like, without endosperm.

- | | | | | |
|--|-----|------------------------|-----|---|
| 1. Fertile stamens 2, a third forming large stamino- | | | | |
| node. Pollen not united into masses | ... | 1. <i>Selenipedium</i> | | |
| | | dium | | |
| 1A. Fertile stamen 1, with 2 laterals aborted or | | | | |
| forming small staminodes. Pollen united | | | | |
| into masses or pollinia | ... | ... | ... | 2 |

- | | | | | | | |
|------|---|-----|-----|-----|----------------------------|----|
| 2. | Caudicle and gland arising from basal part of anther. Anthers erect or more or less resupinate, never deciduous. Pollinia always coarsely granular | ... | ... | ... | 2. Habenaria | |
| 2A. | Caudicle and gland arising from apex of anther. Anthers erect or incumbent, usually deciduous (if persisting, soon withering). Pollinia granular, waxy or cartilaginous | ... | ... | ... | | 3 |
| 3. | Pollinia granular, soft. Inflorescence usually terminal | ... | ... | ... | | 4 |
| 3A. | Pollinia waxy or cartilaginous. Inflorescence terminal or lateral | ... | ... | ... | | 14 |
| 4. | Stems climbing and vine-like | ... | ... | ... | 6. Vanilla | |
| 4A. | Stems erect or suberect, often from creeping rhizome | ... | ... | ... | | 5 |
| 5. | Apex of ovary with persistent dentate crown | | | | 7. Epistephium | |
| 5A. | Apex of ovary naked | ... | ... | ... | | 6 |
| 6. | Plant leafless | ... | ... | ... | 10. Wulfschlaegelia | |
| 6A. | Plant leaf-bearing | ... | ... | ... | | 7 |
| 7. | Leaves deciduous, articulated. Stems cane-like | ... | ... | ... | 8. Elleanthus | |
| 7A. | Leaves persistent, not articulated. Stems not cane-like | ... | ... | ... | | 8 |
| 8. | Leaves conspicuously clasping stem | ... | ... | ... | | 9 |
| 8A. | Leaves not conspicuously clasping stem | ... | ... | ... | | 10 |
| 9. | Anther decumbent, mobile | ... | ... | ... | 4. Pogonia | |
| 9A. | Anther erect, rigidly attached to the column | | | | 3. Triphora | |
| 10. | Roots arising from nodes on decumbent stem or rhizome | ... | ... | ... | | 11 |
| 10A. | Roots not arising from nodes on decumbent stem or rhizome | ... | ... | ... | | 12 |
| 11. | Lip spurred | ... | ... | ... | 14. Erythrox | |
| 11A. | Lip not spurred | ... | ... | ... | 5. Psilochilus | |
| 12. | Leaves distributed along stem | ... | ... | ... | 9. Palmorchis | |
| 12A. | Leaves basal | ... | ... | ... | | 13 |

13.	Lip on lower side of flower	...	...	13. <i>Spiranthes</i>	
13A.	Lip on upper side of flower	...	...	12. <i>Cranichis</i>	
14.	Inflorescence normally terminal or by abortion axillary in uppermost leaves	...	...		15
14A.	Inflorescence lateral, produced from base of pseudobulbs or in axils of lowermost leaves or sheaths	...	...		30
15.	Viscid disk wanting, or, if present, usually irregular, sometimes rudimentary, produced from apex of rostellum	...	...		16
15A.	Viscid disk present and distinct (with margins well defined), produced dorsally from apex of rostellum	...	...	30. <i>Polystachya</i>	
16.	Ovary articulated to pedicel. Pedicel persistent. Stems slender, rigid, usually 1-foliate	...	...		17
16A.	Ovary not articulated to pedicel. Pedicel falling away with flower. Stems slender or fleshy-thickened, 1- to several-leaved	...	...		19
17.	Sepals all connate	...	...	15. <i>Stelis</i>	
17A.	Sepals not all connate, at least with dorsal sepal free or nearly free	...	...		18
18.	Pollinia 2	...	...	16. <i>Pleurothallis</i>	
18A.	Pollinia 8	...	...	17. <i>Octomeria</i>	
19.	Pollinia without appendages	...	...		20
19A.	Pollinia appendaged either with viscid disk or caudicle with viscid apex	...	...		21
20.	Column very short. Anthers erect	...	...	18. <i>Malaxis</i>	
20A.	Column elongated. Anthers terminal, incumbent	...	...	19. <i>Liparis</i>	
21.	Column without foot. Lip more or less adnate to base of column	...	...		22
21A.	Column with distinct foot. Lip not adnate to base of column, or, at most, adnate to base of column-foot	...	...		29
22.	Pollinia 4, 2 in each anther-cell	...	...		23

- | | | | | | |
|------|---|-----|---------------------|------------------------------|----|
| 22A. | Pollinia 8, 4 in each anther-cell | ... | ... | ... | 27 |
| 23. | Lip geniculate at base | ... | ... | ...20. <i>Hexisea</i> | |
| 23A. | Lip not geniculate at base | ... | ... | ... | 24 |
| 24. | Lateral sepals forming sack with base of lip | 27. | <i>Jacquiniella</i> | | |
| 24A. | Lateral sepals not forming a sack with base of lip | ... | ... | ... | 25 |
| 25. | Disk of lip with 2 hollow, horn-like protuberances | ... | ... | ...22. <i>Caularthron</i> | |
| 25A. | Lip without horn-like protuberances | ... | ... | ... | 26 |
| 26. | Flowers very large, showy. Lip free, more or less surrounding column | ... | ... | ...24. <i>Gattleya</i> | |
| 26A. | Flowers usually not large or showy. Lip more or less adnate to column and lamina spreading | ... | ... | ...21. <i>Epidendrum</i> | |
| 27. | Leaves basal or almost basal, equitant, distichous | ... | ... | ...23. <i>Tetramicra</i> | |
| 27A. | Leaves 1 or 2, terminating in a pseudobulb | ... | ... | ... | 28 |
| 28. | Floral segments linear to acicular. Column very short | ... | ... | ...26. <i>Brassavola</i> | |
| 28A. | Floral segments relatively broad. Column more or less elongate | ... | ... | ...25. <i>Laelia</i> | |
| 29. | Leaves terminal on pseudobulbs or short-thickened stems, not distichous on elongated stem | ... | ... | ...29. <i>Scaphyglottis</i> | |
| 29A. | Leaves distichous and scattered along elongated stem | ... | ... | ...28. <i>Isochilus</i> | |
| 30. | Plants forming a monopodium (stems with unlimited apical growth) | ... | ... | ... | 31 |
| 30A. | Plants forming a sympodium (stems approximate or super-imposed and terminated by usually smaller apical leaves) | ... | ... | ... | 32 |
| 31. | Inflorescence 1-flowered. Lip not spurred | ... | ... | ...67. <i>Dichaea</i> | |
| 31A. | Inflorescence several- to many-flowered. Lip basally spurred | ... | ... | ...68. <i>Campylocentrum</i> | |
| 32. | Pollinia without a stipe. Viscid disk usually rudimentary | ... | ... | ... | 33 |

- 32A. Pollinia with a definite stipe. Viscid disk distinct ... 34
33. Rhizome short, corm-like. Pseudobulbs lacking ... 31. *Bletia*
- 33A. Rhizome elongated. Stems pseudobulbose... 32. *Bulbophyllum*
34. Pollinia waxy in texture, easily compressed ... 35
- 34A. Pollinia cartilaginous in texture, not easily compressed ... 39
35. Lip spurred or strongly saccate at base ... 33. *Eulophia*
- 35A. Lip not spurred nor saccate at base ... 36
36. Lip subentire ... 46. *Otostylis*
- 36A. Lip usually conspicuously 3-lobed ... 37
37. Pseudobulbs conspicuous, elongate-fusiform, several-jointed. Sepals and petals conspicuously undulate ... 34. *Gyrtopodium*
- 37A. Pseudobulbs lacking or, if present, very small, not jointed. Sepals and petals usually not undulate ... 38
38. Rhizomes elongated. Pseudobulbs distant. Callus of lip cristate. Flowers large, showy... 45. *Aganisia*
- 38A. Rhizomes abbreviated. Pseudobulbs, if present, usually approximate. Callus of lip 2-lobed. Flowers small, not showy ... 44. *Koellensteinia*
39. Leaves convolute in vernation ... 40
- 39A. Leaves conduplicate in vernation ... 48
40. Pseudobulbs large, fusiform, homoblastic, several-leaved... 35. *Catasetum*
- 40A. Pseudobulbs short, heteroblastic ... 41
41. Lip continuous with base of column or adnate to column-foot ... 42
- 41A. Lip articulated to apex of column-foot ... 47
42. Epichile galeate or naviculate ... 43
- 42A. Epichile flat ... 44
43. Lip with horns. Column with basal foot ... 40. *Gongora*
- 43A. Lip without horns. Column footless ... 41. *Coryanthes*

- | | | | | |
|------|--|--------|----------------------|-------------------|
| 44. | Sepals and petals very unequal ... | ...39. | Stanhopea | |
| 44A. | Sepals and petals subequal ... | ... | ... | 45 |
| 45. | Rhachis densely red- or brown-glandular-pilose. Flowers small: lateral sepals up to 18 mm long ... | ... | ...36. | Kegeliella |
| 45A. | Rhachis glabrous. Flowers large: lateral sepals 20-50 mm long ... | ... | ... | 46 |
| 46. | Column with basal foot. Lateral sepals forming mentum with column-foot ... | ...38. | Paphinia | |
| 46A. | Column footless. Lateral sepals not forming mentum ... | ... | ...37. | Peristeria |
| 47. | Flowers with conspicuous spur-like mentum | 42. | Xylobium | |
| 47A. | Flowers without spur-like mentum | ...43. | Bifrenaria | |
| 48. | Column with foot, usually forming mentum with lateral sepals ... | ... | ... | 49 |
| 48A. | Column footless ... | ... | ... | 53 |
| 49. | Callus at base of lip transverse, often flabellate ... | ... | ... | 50 |
| 49A. | Callus at base of lip longitudinal | ...51. | Maxillaria | |
| 50. | Lip saccate ... | ...48. | Stenia | |
| 50A. | Lip not saccate ... | ... | ... | 51 |
| 51. | Callus of lip long-fimbriate ... | ...50. | Huntleya | |
| 51A. | Callus of lip not long-fimbriate ... | ... | ... | 52 |
| 52. | Plant with pseudobulbs ... | ...47. | Batemannia | |
| 52A. | Plant without pseudobulbs or pseudobulbs rudimentary ... | ...49. | Cochle-anthes | |
| 53. | Anther incumbent. Rostellum, when present, porrect or deflexed ... | ... | ... | 54 |
| 53A. | Anther dorsal and erect. Rostellum erect or ascending ... | ... | ... | 64 |
| 54. | Base of lip either spurred or lateral sepals connate and saccate at base ... | ... | ... | 55 |
| 54A. | Base of lip not spurred. Lateral sepals, if connate, not saccate at base ... | ... | ... | 56 |
| 55. | Base of lip spurred. Lateral sepals connate but not deeply saccate at base ... | ...54. | Rodriguezia | |

55A. Base of lip not spurred. Lateral sepals connate and usually distinctly saccate at base ...	...53. Ionopsis	
56. Pollinia 2 ...	...	57
56A. Pollinia 4 ...	...63. Ornithocephalus	
57. Leaves articulated at base, deciduous ...	...	58
57A. Leaves not articulated, persistent ...	...62. Lockhartia	
58. Inflorescence glomerate-capitate ...	...55. Trizeuxis	
58A. Inflorescence loosely racemose or paniculate ...	...	59
59. Auricles of column arising from anther-bed or clinandrium... ..	...56. Quekettia	
59A. Auricles of column absent or, if present, not arising from anther-bed	...	60
60. Base of lip enfolding column, shortly adnate near base of column	...58. Trichopilia	
60A. Base of lip not enfolding column	...	61
61. Lip inserted on column near middle ...	...57. Aspasia	
61A. Lip not inserted on column near middle	...	62
62. Sepals and petals long-caudate ...	...59. Brassia	
62A. Sepals and petals not caudate	...	63
63. Column usually with 2 slender arms on each side near middle	...61. Leochilus	
63A. Column without arms on each side near middle	...60. Oncidium	
64. Lip entire	...64. Notylia	
64A. Lip variously lobed	...	65
65. Lip fleshy-clawed, 4-lobed	...65. Cryptarrhena	
65A. Lip not clawed, 3-lobed	...66. Macradenia	

1. SELENIPEDIUM *Rchb. f.*

Tall terrestrial herbs. Stems leafy, often branched. Leaves narrow, inarticulate, convolute when young. Inflorescence a terminal, many-flowered raceme. Flowers small to medium-sized, resupinate. Dorsal sepal free; laterals connate nearly to apex, broader than dorsal. Petals narrower than sepals, free. Lip

slipper-shaped. Column short, terete. Fertile stamens 2, stipitate at sides of rostellum. Stigma papillose. Capsule rather fleshy, cylindrical or fusiform, crowned with persistent, withered perianth.

Selenipedium: Greek, 'little crescent-slipper', in allusion to the form of the lip.

Several species from Costa Rica to Colombia and Brazil and in Trinidad.

Selenipedium palmifolium (Lindl.) Rehb. f. *Xen. Orch.* 1 (1854) 5, t. 2, f. 6-9.

Cypripedium palmifolium Lindl. *Gen. and Sp. Orch. Pl.* (1840) 527.

Up to 2 m. Stem sparsely branched above. Branches densely and coarsely glandular-villose. Leaves oblong-lanceolate to elliptic-lanceolate, acute, glabrous above, sparsely pilose beneath, about 8-nerved, 11-22 cm long, 2-6 cm wide. Inflorescence up to 20 cm long. Bracts broadly lanceolate, acute, coarsely glandular-pilose, up to 2 cm long. Flowers yellowish; lip lemon-yellow with purple spots. Sepals setose-ciliate, minutely pilose without; dorsal sepal elliptic-ovate, obtuse, about 18 mm long, 8 mm wide; laterals shorter and wider, connate into an apically 2-dentate lamina. Petals linear, acute, undulate, 19 mm long. Lip broadly elliptic, about 18 mm long; mouth round. Capsule 3-sulcate, 5 cm long.

Flowers: October-November.

British Guiana, Venezuela, Brazil, Trinidad.

TRINIDAD: Valencia, October 15, 1862 (*Herb. Trin.* 1819; *Herb. Ames* 67803A, 67172); between Tamana Road and next mile post, November 6, 1924, Williams & Freeman s.n. (*Herb. Trin.* 10835; *Herb. Ames* 67803).

2. HABENARIA Willd.

Terrestrial, often palustrine, herbs with tuberous or fleshy roots. Stems simple. Leaves basal or cauline, thinly membranaceous to fleshy, sometimes reduced to bracts. Inflorescence a few- to many-flowered spike or raceme. Flowers small to large. Bracts sometimes large. Sepals usually subequal; dorsal sepal often hooded; laterals spreading or reflexed. Petals free, simple to usually 2-fid (rarely multifid). Lip very short, adnate to column, entire or variously lobed, basally spurred. Column wingless, footless; rostellum elongated, often papillose. Capsule usually narrowly ellipsoidal, often beaked.

Habenaria: Latin, 'strap', in reference to the strap-like segments of petals of many species.

World-wide genus; 450-500 species in temperate, tropical and subtropical regions, many preferring very damp areas.

1. Leaves marginally undulate-scarious.
 Leaf sheaths maculate.....4. *Habenaria monorrhiza*
- 1A. Leaves marginally not undulate-scarious.
 Leaf sheaths not maculate
2. Lip entire or with minute tooth on
 each side of base.....1. *Habenaria alata*
- 2A. Lip conspicuously 3-lobed
3. Leaves linear-oblong to linear-lanceolate
4. Inflorescence 1- to several-flowered5. *Habenaria pauciflora*
- 4A. Inflorescence densely many-flowered.....6. *Habenaria repens*
- 3A. Leaves bristle-like
5. Inflorescence lax, 2- to 6-flowered.....2. *Habenaria Leprieurii*
- 5A. Inflorescence dense, usually many-flowered.....3. *Habenaria Leprieurii*
 var. *heptadactyla*

1. *Habenaria alata* Hook. *Exot. Fl.* 3 (1827) t. 169.

Erect or ascending, 20-70 cm. Leaves lanceolate, acute to acuminate, up to 15 cm long, 1-2.2 cm wide, becoming bract-like above and below. Inflorescence a densely many-flowered spike or raceme, up to 20 cm long. Flowers greenish; ovaries winged, 1.5 cm long. Bracts oblong-lanceolate, longer than ovary. Sepals marginally minutely papillose; dorsal sepal broadly ovate, keeled, 6-10 mm long, 5-7 mm wide; laterals lanceolate, acute, sometimes apiculate, 7-10 mm long, 3.3-4.5 mm wide. Petals lanceolate, acute or rather obtuse, basally slightly lobed in anterior margin, 5.5-10.5 mm long, about 2.2 mm wide. Lip linear-lanceolate, basally with tooth or minute lobe on each side; spur pendulous, recurved, clavate, up to 13 mm long. Capsule ellipsoid, prominently winged, 14 mm long.

Flowers: October-November.

From Mexico, Middle America, South America, West Indies

TOBAGO: Montpelier, near Scarborough, October 3, 1909, Broadway 3051 (*Herb. Ames* 11726, 11727, 26456; *Herb. Gray* 88); November 1914, Sworder s.n. (*Herb. Trin.* s.n.); near Mason Hall, Courland River Valley, October 19, 1937, Sandwith 1858 (*Herb. Ames* 64123).

2. *Habenaria Leprieurii* Rehb. f. in *Linnaea* 19 (1846) 376.

Habenaria mesodactyla Griseb. *Fl. Brit. W. Ind. Isl.* (1864) 644.

Habenaria Cruegeri Cogn. in *Urban Symb. Ant.* 6 (1910) 303.

Erect, up to 45 cm. Stem sparsely leafy. Leaves rigid-membranaceous, strongly appressed, ensheathing stem, linear-subulate, acute, keeled, free part 1-6 cm long, 0.5-1.5 mm wide, sheathing part 2-4 cm long. Inflorescence laxly 2- to 6-flowered, up to 8 cm long. Flowers small, yellowish green, secund; ovary 8-10 mm long. Bracts rigid, lanceolate, acuminate, keeled, 10-15 mm long, 3-4 mm wide. Dorsal sepal concave, ovate, obtuse, 3-3.5 mm long, 2-3 mm wide; laterals deltoid- or ovate-oblong, acute, reflexed, 3.5-4 mm long, 1.5-2 mm wide. Petals fleshy, usually deeply 2-lobed; posterior lobe oblong or narrowly falcate, obtuse, 2.5-3 mm long, 0.9 mm wide; anterior lobe either tooth-like and small (0.5-1.5 mm long) or almost as large as anterior lobe. Lip fleshy, deeply 3-lobed, as long as lateral sepals; mid-lobe pendulous, narrowly triangular-linear, obtuse, 3.5-4 mm long, 0.9 mm wide; lateral lobes linear to obliquely narrow-cuneate, 2-2.5 mm long; spur pendulous, arcuate, slender-clavate, 8-10 mm long.

Flowers: February-August.

French Guiana, Brazil, Trinidad.

TRINIDAD: O'Meara Savannah, July 8, 1848 (*Herb. Trin.* 883); Piarco, May 12, 1858, Crueger 66 (Drawing of specimen in *Herb. Kew*; *Herb. Ames* 19181); Aripo, May 26, 1861, Crueger s.n. (*Herb. Trin.* 1827); Piarco, 1905, Dan-nouse s.n. (*Herb. Trin.* s.n.); Aripo Savannah, February 13, 1915, Freeman s.n. (*Herb. Trin.* 7961); Aripo Savannah, August 7, 1925, Williams & Freeman (*Herb. Trin.* 11317); (*Herb. Trin.* 1629); (*Herb. Trin.* 3299); Purdie s.n. (ex Cogniaux).

3. *Habenaria Leprieurii* Rehb. f. var. *heptadactyla* (Rehb. f.) R. E. Schult. in *Bot. Mus. Leaflet. Harvard Univ.* 17 (1956) 193. *Habenaria heptadactyla* Rehb. f. in Schomburgk *Fauna and Fl. Guian.* (1848) 1123, *nomen*; in *Linnaea* 22 (1849) 812.

Similar to *Habenaria Leprieurii*, but usually smaller, inflorescence usually densely many-flowered, and flowers pinkish purple.

Flowers: February-August.

Panama, Colombia, Venezuela, British Guiana, Amazonian Brazil, Trinidad.

TRINIDAD: Aripo and O'Meara Savannahs, July 7-8, 1848 (*Herb. Trin.* 884); Aripo Savannah, April 16, 1908, Broadway 2337 (*Herb. Ames* 10679); Aripo Savannah, February 13, 1915, Freeman s.n. (*Herb. Trin.* 8775); Aripo Savannah, August 16, 1922, Broadway s.n. (*Herb. Trin.* 10181); Aripo Savannah, August 7, 1925, Williams & Freeman s.n. (*Herb. Trin.* 11320; *Herb. Gray* 7745); Aripo Savannah, August 1934, Wright s.n. (*Herb. Trin.* s.n.); Aripo Savannah, July 27, 1943, Beard 142 (*Herb. Ames* 62755); Broadway 2903 (*Herb. Ames* 14579); Aripo Savannah, May 22, 1956 (flowered), Downs & Aitken 97 (*Herb. Ames* 69911).

4. *Habenaria monorrhiza* (Sw.) Rehb. f. in *Ber. Deut. Bot. Ges.* 3 (1885) 274.

Orchis monorrhiza Sw. *Prodr.* (1788) 118.

Erect, stout, 25-115 cm. Leaves lanceolate to ovate-lanceolate, acute or acuminate, undulate-scarious, bract-like above. Inflorescence a densely many-flowered raceme up to 20 cm long. Flowers white; ovaries winged, about 1.7 mm long. Bracts lanceolate-ovate, usually somewhat shorter than ovary. Dorsal sepal concave, ovate or suborbicular, obtuse, keeled, 6-7.5 mm long, 4.5-5.5 mm wide; laterals oblique, elliptic-ovate, rather obtuse, 5-8 mm long, 3-4 mm wide. Petals 2-lobed, 5.5-8 mm long; posterior lobe narrowly elliptic, anterior lobe filiform. Lip deeply 3-lobed; mid-lobe linear-ligulate, 8-9 mm long, 1 mm wide; lateral lobes filiform, 8.5-11 mm long; spur pendulous, filiform, 15-22 mm long.

Flowers: December-January.

West Indies, Middle and northern South America.

TOBAGO: Concordia, December 23, 1908, Broadway 2426 (*Herb. Ames* 11732, 11733); Indian Walk, January 5, 1910, Broadway s.n. (*Herb. Ames* 26464; *Herb. Gray* 100); Concordia, January 24, 1910, Broadway s.n. (*Herb. Ames* 16548); Adelphi, January 24, 1913, Broadway s.n. (*Herb. Gray* 99).

TRINIDAD: June 8, 1865 (*Herb. Trin.* 1966); Oropuche, 1888, Murray s.n. (*Herb. Trin.* 3551); Santa Cruz, January 1890, Broadway s.n. (*Herb. Trin.* s.n.; *Herb. Ames* 68175); Belmont, St. Francis Valley Road, December 22, 1906, Broadway s.n. (*Herb. Ames* 10097, 10098, 10099, 62717, 68639, 67871); Chancellor Road, December 24, 1924, Freeman s.n. (*Herb. Trin.* s.n.); North Coast Road to Maracas Bay, January 27, 1952, Baker s.n. (*Herb. Trin.* 14725); (*Herb. Trin.* 1965); Maracas Bay Road, January 19, 1956, Downs & Aitken 84 (*Herb. Ames* 67860); Maracas Bay, 2¼ mile post, January 14, 1956, Aitken s.n. (*Herb. Trin.* 144-150).

5. *Habenaria pauciflora* (Lindl.) Rehb. f. in *Bonplandia* 2 (1854) 10.

Bonatea pauciflora Lindl. *Gen. and Sp. Orch. Pl.* (1835) 329.

Erect, rigid, from a tuber, up to about 55 cm. Stem bearing usually 3 to 6 sheathing leaves, basally with several brown, papery sheaths. Leaves lanceolate-linear to elliptic-lanceolate, acuminate, 6-15 cm long, 0.5-1.5 cm wide, bract-like above. Inflorescence of 1 to 3 (rarely 5) flowers. Flowers white to yellowish green; ovaries about 7 cm long. Bracts leaf-like. Dorsal sepal concave, ovate-lanceolate, obtuse, apiculate, 9-12 mm long, 6-8 mm wide; laterals broadly ovate-lanceolate, apiculate, 10-12 mm long, 4-5 mm wide. Petals erect, lobed; posterior lobe lanceolate, acute, 9-11 mm long, 3.5 mm wide; anterior lobe linear, acute, 8-10 mm long, 1 mm wide. Lip very deeply 3-lobed; lobes subequal, linear, obtuse or acute, 10-13 mm long, 2 mm wide; spur pendulous, arcuate, clavate, up to 7.5 cm long.

Flowers: August.

Mexico, Middle America, South America, Trinidad.

TRINIDAD: St. Joseph Savannah, August 31, 1925, Withycombe s.n. (*Herb. Trin.* 11336).

6. *Habenaria repens* Nutt. *Gen. N. Am. Pl.* 2 (1818) 190.
Orchis repens (Nutt.) Raf. in *Neogenyton* 4 (1825) sub.
Mesicera, nomen.

Erect or ascending, often with a decumbent rhizome, up to about 90 cm, usually in shallow water. Leaves linear-elliptic to elliptic-lanceolate, acuminate, 7-20 cm long, 5-20 mm wide, bract-like above. Inflorescence racemose, usually densely many-flowered, up to 15 cm long. Flowers greenish; ovary 12 mm long. Bracts lanceolate, acute, as long as ovary. Dorsal sepal concave, suborbicular-ovate, apiculate, 4-6.5 mm long, 3-4 mm wide; laterals lanceolate-ovate, apiculate, 4-7 mm long, 3 mm wide. Petals thin, deeply 2-lobed, 4-8.5 mm long; posterior lobe lanceolate, acute, about 7 mm long; anterior lobe filiform, 7.5 mm long. Lip rather fleshy, 3-lobed; mid-lobe lanceolate, 5-6.5 mm long; lateral lobes filiform, 6-10 mm long; spur pendulous, incurved, filiform, up to 14 mm long.

Flowers: June.

North Carolina to Florida, Gulf Coast to Texas, Guatemala Middle America, South America, West Indies.

TRINIDAD: Los Bajos, June 6, 1925, Williams s.n. (*Herb. Trin.* 11180; *Herb. Ames* 67786); Cedros, Broadway s.n. (*Herb. Trin.* 9770).

Habenaria setacea Lindl. *Gen. and Sp. Orch. Pl.* (1835) 312.

Known from Brazil. Cited, probably erroneously, from Trinidad (BROADWAY in *Orch. Rev.* 34 (1926) 204). No specimens seen to authenticate record.

3. *TRIPHORA* Nutt.

Small, terrestrial and leafy (or saprophytic and leafless) herbs, stoloniferous, with tuberosids. Leaves 2 to 4, alternate, sheathing. Inflorescence a usually several-flowered raceme or corymb. Flowers small, nodding, pedicellate. Sepals and petals similar, free or connivent. Lip sessile or clawed, almost entire to deeply 3-lobed, 3-crested. Column apically entire or lobed. Anthre rigidly attached to top of column. Capsule ellipsoid.

Triphora: Greek, 'three-bearing', in allusion either to the number of crests on the lip or to the usual number of flowers in some species.

About 10 species, temperate and tropical New World.

Triphora surinamensis (Lindl.) Britt. in Britton and Wilson *Sci. Surv. Porto Rico and Virgin Islands* 5 (1924) 184.

Pogonia surinamensis Lindl. in Hooker *London Journ. Bot.* 2 (1843) 674.

Erect, 5-25 cm, with several fleshy, densely puberulent tuberoids. Stem few-leaved. Leaves membranaceous, with sheathing petiole about 5 mm long, ovate, acute or acuminate, basally rounded or cordate, 15-25 mm long, 8-17 mm wide. Flowers rose-pink, usually solitary, rather long-pedicellate. Sepals linear-lanceolate or ligulate, acute, 11-12 mm long, 2 mm wide. Petals linear or oblanceolate-linear, acute, about as long as sepals. Lip erect, concave, obovate, basally cuneate, deeply 3-lobed at apex; lateral lobes triangular, acute, porrect; mid-lobe triangular-ovate, obtuse or retuse, crispate, shorter than lateral lobes. Column 7 mm long.

Flowers: June-October.

Puerto Rico, Guadeloupe, Dominica, Trinidad, Dutch and British Guiana, Venezuela, Amazonian Brazil.

TRINIDAD: Maraval, July 4, 1847, Crueger s.n. (*Herb. Trin.* 414); O'Meara Savannah, July 7, 1848, Purdie (?) s.n. (*Herb. Trin.* 1625); Mora Forest, June 26, 1925, Broadway s.n. (*Herb. Ames* 30415); Bamboo Plantation, St. Joseph, October 1949, Baker s.n. (*Herb. Trin.* 14437); *Herb. Ames* 67927.

4. *POGONIA* Juss.

Small to medium-sized, leafy or leafless terrestrial herbs with long, fibrous, tuberous roots. Leaves solitary or few, often almost squamiform. Inflorescences axillary, 1- to several-flowered. Flowers more or less showy, usually nodding. Sepals subequal. Petals similar to sepals. Lip erect, parallel to column, sessile or clawed, without a spur, entire or 3-lobed, commonly 2- to 4-lamellate. Column somewhat clavate, wingless, footless, apically entire or toothed. Anther incumbent, usually stalked. Pollen-masses 2, granular. Capsule elongate-ovoid, erect or pendent.

Pogonia: Greek, 'beard', in allusion to the lip of some species which is adorned with a bearded or fringed crest.

Some 35 species of temperate and tropical parts of both the Old and New World.

1. Leaves large, spreading

2. Lip entire. Flowers rose or rose-purple.....2. *Pogonia rosea*

2A. Lip 3-lobed. Flowers yellow....1. *Pogonia grandiflora*

1A. Leaves small, reduced to erect

sheaths.....3. *Pogonia tenuis*

1. *Pogonia grandiflora* (Aubl.) Rehb. f. *Xen. Orch.* 2 (1865) 91.

Limodorum grandiflorum Aubl. *Pl. Guian. Fr.* 2 (1775) 818, t. 321.

Erect, up to 100 cm. Stems robust, fistulose, below long-naked, above bearing from 4 to 6 distant leaves. Leaves membranaceous, oblong-lanceolate, acute or short-acuminate, basally slightly amplexicaul, short-decurrent, 12-16 cm long, 2-3 cm wide. Flowers axillary, solitary, yellow. Sepals erect, elongate-lanceolate, acuminate, 5.5-6 cm long, 6-7 mm wide. Petals rhombic-ligulate, acuminate, shorter than sepals. Lip 3-lobed, oblong-ligulate, shorter than sepals; lateral lobes semi-oblong, obtuse; mid-lobe transversely ovate, retuse, crispate-lobulate. Column 3 cm long.

Flowers: July.

British and French Guiana, Amazonian Brazil.

TRINIDAD: O'Meara Savannah, Purdie s.n. (ex Cogniaux);

Crueger s.n. (ex Cogniaux).

2. *Pogonia rosea* (Lindl.) Rehb. f. in *Xen. Orch.* 2 (1865) 89.

Cleistes rosea Lindl. *Gen. and Sp. Orch. Pl.* (1840) 410.

Erect, from 50 to 150 cm. Stems robust, fistulose, basally slightly pilose. Leaves few, coriaceous, oblong-lanceolate, obtuse or acute, basally not dilated or hardly so, sessile or amplexicaul, usually much shorter than internodes, up to 12 cm long, 3 cm wide. Flowers large, showy, axillary, rose-coloured. Sepals narrowly lanceolate, 55-65 mm long, 9 mm wide. Petals as long as sepals or shorter, very acute. Lip entire, oblong-lanceolate, acute, as long as sepals, basally with 2 small calluses; median line thickened

from base to tip, with 5 to 7 serrulated plates above middle. Column 25 mm long.

Flowers: Apparently throughout the year, but most profusely in August.

Panama, Colombia, Venezuela, Peru, British Guiana, Amazonian Brazil, Trinidad.

TRINIDAD: Aripo, May 26, 1861 (*Herb. Trin.* 1830); Cedros, August 15, 1918, Sankeralli s.n. (*Herb. Trin.* 8844); Valencia-Sangre Grande, 24th mile, August 2, 1924, Freeman s.n. (*Herb. Trin.* 10782; *Herb. Ames* 68181); Aripo Savannah, August 7, 1925, Williams & Freeman s.n. (*Herb. Trin.* 11319); Aripo Savannah, January 23, 1928, Williams s.n. (*Herb. Trin.* 11915); Cedros, June 1939, Sankeralli s.n. (*Herb. Trin.* 13393); Long Stretch-Valencia, twenty-third mile, July 4, 1940, Baker s.n. (*Herb. Trin.* 13524); O'Meara Savannah, August 19, 1940, Chessman & Baker s.n. (*Herb. Trin.* 13684); Aripo Savannah, March 12, 1960, Aitken s.n. (*Trin. Reg. Virus Lab. Herb.* 328); Aripo Savannah, Purdie s.n. (ex Cogniaux); O'Meara Savannah, Crueger s.n. (ex Cogniaux).

3. *Pogonia tenuis* Rchb. f. *Xen. Orch.* 2 (1863) 91.

Cleistes tenuis (Rchb. f.) Schltr. in *Arch. Bot. Est. S. Paulo* 1 (1926) 180.

Erect, up to 20 cm. Stems fistulose, basally velvet-puberulent. Leaves 2 to 5, coetaneous, lanceolate-linear, 6-20 mm long, about 3 mm wide, lowermost usually obtuse, uppermost acuminate, basally sheathing, much shorter than internodes. Flowers small, solitary or in pairs, subsessile, whitish yellow with purple lip. Bracts similar to leaves but smaller. Sepals linear-lanceolate, acuminate, 15-16 mm long, 2 mm wide. Petals oblong-lanceolate, rather obtuse, slightly shorter than sepals. Lip 3-lobed, broadly oblong, broadly rounded, sinuous, 15 mm long, 7 mm wide; lateral lobes (free part) semi-ovate, very small above middle; mid-lobe linguiform to obovate, lobulate, more or less retuse; disk basally 2-crested. Column 7-8 mm long.

Flowers: May-August.

Venezuela, British Guiana, Amazonian Brazil, Trinidad.

TRINIDAD: Aripo, July, 1848, Crueger 44 (Type, *Herb. Reichb.*; *Herb. Trin.* 1624); Aripo, May 26, 1861 (*Herb. Trin.* 1828); Aripo Savannah, Purdie s.n. (ex Cogniaux); O'Meara Savannah, Crueger s.n. (ex Cogniaux).

5. *PSILOCHILUS* Barb.-Rodr.

Terrestrial herbs with a creeping rhizome. Roots fleshy. Stems leafy. Leaves petiolate; petioles laxly sheathing. Inflorescence a terminal few-flowered raceme. Flowers on slender pedicels. Bracts sessile, amplexicaul. Sepals free, keeled. Petals free, not keeled. Lip free, lobed above middle, without spur. Column marginate, apically lobed.

Psilochilus: Greek, 'glabrous lip'.

Two species of Guatemala, Venezuela, the Guianas, Brazil, West Indies.

Psilochilus macrophyllus (Lindl.) Ames *Orch.* 7 (1922) 45.

Pogonia macrophylla Lindl. in *Ann. and Mag. Nat. Hist.* ser. 3, 1 (1858) 335.

Up to 40 cm, purplish. Leaves fleshy-membranaceous, ovate to ovate-oblong, acuminate, basally rounded or slightly cordate, abruptly narrowed into a pseudo-petiole, mostly 5-10 cm long, 2-4 cm wide. Inflorescence up to 7 cm long. Flowers greenish purple, with lip a greenish yellow tipped with purple. Bracts ovate, obtuse or acute, about 20 mm long, 13 mm wide. Pedicels 4-6 mm long. Sepals linear to linear-oblong, obtuse or acute, keeled along mid-nerve; laterals somewhat falcate, 15-17 mm long, about 3-3.5 mm wide. Petals linear, obtuse or acute, about 15 mm long, 2-3 mm wide. Lip clawed, 3-lobed, narrowly obovate, ovate or spatulate, 12-14 mm long, mid-lobe rounded-rhomboid, recurved, obtuse, crispate; lateral lobes obtuse, free portion very short, 2 mm long; disk with 3 inconspicuous longitudinal calluses. Column 12 mm long, slightly winged.

Flowers: March-December.

Guatemala, northern South America, West Indies.

TRINIDAD: Sieber 381 (ex Cogniaux).

6. VANILLA Sw.

Stout, scandent, terrestrial or epiphytic herbs. Stems leafy or leafless, sometimes branched, with adventitious roots. Leaves fleshy, rigid-coriaceous, sometimes papery, sessile, sometimes short-petiolate. Inflorescence a short, axillary or subterminal raceme, usually several- to many-flowered. Bracts short, ovate. Flowers large, fugacious. Sepals free, spreading. Petals similar to sepals. Lip clawed, adnate to column, sometimes enfolding base of column, broad, concave, entire or 3-lobed. Column long, footless, wingless. Pollinia powdery-granular. Capsule long, fleshy, 1-celled, not dehiscing or only slightly, often fragrant.

Vanilla: Spanish, 'little pod', in allusion to the legume-like capsule.

Up to 50 species of the tropics of both hemispheres.

1. Lip undivided. Leaves small.
 2. Disk of lip appendiculate.....1. *Vanilla Hartii*
 - 2A. Disk of lip inappendiculate5. *Vanilla Wrightii*
- 1A. Lip 3-lobed. Leaves large.
 3. Lip adnate only at base of column2. *Vanilla inodora*
 - 3A. Lip adnate half length of column or longer.
 4. Lip adnate almost entire length of column. Inflorescence up to 5 cm long. Bracts about 12 mm long.....3. *Vanilla phaeantha*
 - 4A. Lip adnate half length of column. Inflorescence up to 15 cm long. Bracts up to 20 mm long.....4. *Vanilla Pompona*

1. *Vanilla Hartii* Rolfe in *Kew Bull.* (1899) 133.

Stems slender; internodes 8-11 cm long. Leaves short-petiolate, fleshy, ovate-elliptic, acuminate, 5-6 cm long, 18-22 mm wide; petiole up to 6 mm long. Inflorescence axillary, few-flowered, up to 1.6 cm long. Flowers white. Pedicels 18-20 mm long. Bracts broadly ovate, acute, up to 4 mm long. Sepals oblong-

lanceolate, obtuse, 3.8 cm long. Petals similar to sepals but slightly narrower. Lip adnate almost entire length of column, subentire, broadly cuneate, obtuse, crenulate, tube narrow towards middle, swollen towards base; disk with veins slightly thickened, especially near tip, apically with few retrorse tubercles; crest of retrorse, denticulate appendages. Column slender, 3.2 cm long. Capsule 15 cm long.

Flowers: April-June.

Endemic to Trinidad and Tobago.

TOBAGO: Widow Woods, March 6, 1911, Broadway s.n. (*Herb. Gray* 1419); Easterfield (ex Broadway, 1918).

TRINIDAD: Cabasterre, Arima, April 1898, Hart s.n. (*Herb. Trin.* s.n.); (*Herb. Ames* 67784); Agua Santa, Arima, May 4, 1915, Broadway s.n. (*Herb. Trin.* 8762); Mora Forest, east of Sangre Grande, April 10, 1921, Britton 2841 (*Herb. Gray* 1420); Cunupia, Hart s.n. (*Herb. Trin.* 6356); (*Herb. Trin.* s.n.); Melajo Forest, Sangre Grande, June 6, 1955, Downs & Aitken s.n. (*Herb. Ames* Alc. Coll. 3220).

2. *Vanilla inodora* Schiede in *Linnaea* 4 (1829) 574.

Vanilla anaromatica Grisebach *Flor. Br. W. Ind. Isl.* (1864) 638.

Stem thickly fleshy, flexuose, internodes 4-8 cm long. Leaves subsessile, thickly membranaceous, ovate-elliptic, ovate-lanceolate or suborbicular, often obliquely so, acuminate, many-nerved, up to 23 cm long, 12 cm wide. Inflorescence axillary, up to 7-flowered, 6-15 cm long. Flowers sessile, greenish; lip white with deep yellow crest. Bracts ovate-lanceolate, acute, 1.5-3 cm long. Sepals and petals oblong-lanceolate, usually somewhat obtuse, 4-6.5 cm long, about 1.5 cm wide. Lip shortly adnate to column, lightly 3-lobed, 4-4.5 cm long, 3 cm broad; lateral lobes oblong, obtuse; mid-lobe ovate-oblong, rather acute; disk with 3 keels and with 5-7 calluses at base, without tuft of hairs. Column clavate, 2.5-3 cm long. Capsule linear-elongate, up to 25 cm long, not fragrant.

Flowers: April-May

Mexico, West Indies, northern South America.

TOBAGO: Widow Woods, near Caledonia (ex Broadway, 1918).

TRINIDAD: Aranguez Farm, January 1898, Hart s.n. (*Herb. Trin.* 8801); Sangre Grande near Coral Road Junction, February 16, 1915, Broadway s.n. (*Herb. Trin.* 7810); Aripo Savannah, April 10, 1921, Britton & Nowell 2847 (*Herb. Trin.* 11478; *Herb. Ames* 68188); Aripo Savannah, April 14, 1921, Britton & Britton 2945 (*Herb. Gray* 1416); Mora Forest, May 3, 1923, Freeman s.n. (*Herb. Trin.* s.n.; *Herb. Ames* 68185); Long Stretch, Sangre Grande, September 1, 1925, Williams, Freeman & Cheesman s.n. (*Herb. Trin.* 11332; *Herb. Ames* 68184); Cap-de-Ville, May 20, 1931, Hood s.n. (*Herb. Trin.* 12537, 12538); Mt. Harris, March 13, 1949, Simmonds 334 (*Herb. Trin.* 14283; *Herb. Ames* 68186); Long Stretch Forest, March 18, 1952, Baker s.n. (*Herb. Trin.* 14732); Matura, July 25, 1955, Downs & Aitken s.n. (*Herb. Ames* Alc. Coll. 3203); Matura (9 mile post), July 29, 1957, Aitken s.n. (*Herb. Trin.* 97); Creuger s.n. (ex Cogniaux); Purdie s.n. (ex Cogniaux).

3. *Vanilla phaeantha* Rehb. f. in *Flora* 48 (1865) 274.

Vanilla planifolia Andrews var. *macrantha* Griseb. *Cat. Pl. Cub.* (1866) 267.

Stems extensively climbing, fleshy, branched, up to 1 cm in diameter; internodes 6–14 cm long. Leaves short-petiolate (petioles fleshy), fleshy-coriaceous, elliptic-oblong, acute, basally rounded, 8–22 cm long, 3–7 cm wide. Inflorescence axillary, several- to many-flowered, up to 5 cm long. Flowers large, fleshy, greenish; lip white with greenish yellow crests. Bracts fleshy, rigid, ovate, obtuse, about 12 mm long. Sepals and petals erect, oblanceolate, acute, 7–8 cm long, 1.5–1.8 cm wide. Lip adnate to column for almost entire length, obscurely 3-lobed, broadly ovate, retuse, crenulate towards apex, with prominent nerves, 8–8.5 cm long, 4.5 cm wide; disk with tuft of retrorse, denticulate crests. Column 6 cm long, centrally pilose. Capsule slender, 7–9 cm long.

Flowers: March–April.

West Indies.

TOBAGO: Menna, June 16, 1913, Broadway 4565 (*Herb. Gray* 1414); near Easterfield (ex Broadway, 1918).

TRINIDAD: Botanic Gardens, April 1892, Hart s.n. (*Herb. Trin.* 2); Long Stretch, Eastern Main Road, November 1, 1914, Rorer s.n. (*Herb. Trin.* 7078; *Herb. Ames* 68179); Between Valencia and Guaico, March 22, 1915, Rorer s.n. (*Herb. Trin.* 8761; *Herb. Ames* 67782); Cedros, at St. Ann's, May 25, 1915, Broadway s.n. (*Herb. Trin.* 8763); Cedros, along the Austin Road, June 9, 1915, Broadway s.n. (*Herb. Trin.* 8764); Gasparee Island, March 13, 1920, Freeman s.n. (*Herb. Trin.* 9251) ?; Gasparee Island, March 13, 1920, Britton & Coker 555 (*Herb. Gray* 1415) ?; Aripo Savannah, March 12, 1952, Baker s.n. (*Herb. Trin.* 14733); Charuma Forest, June 22, 1955, Downs & Aitken 58 (*Herb. Ames* 67795).

4. *Vanilla Pompona* Schiede in *Linnaea* 4 (1829) 573.

Stems fleshy, stout, branched, up to 1.5 cm in diameter; internodes 5–13 cm long. Leaves short-petiolate (petioles fleshy), thickly coriaceous, ovate-oblong to elliptic-lanceolate, acute or obtuse, subcordate, 10–30 cm long, 4–10 cm wide. Inflorescence axillary, several- to 8-flowered, up to 15 cm long. Flowers large, greenish yellow; lip often orange-yellow or white. Bracts lanceolate to ovate, obtuse, up to about 20 mm long. Sepals and petals spreading, narrowly oblanceolate, usually obtuse, up to 8.5 cm long, 1.5–1.8 cm wide. Lip adnate about half length of column, obscurely 3-lobed, elongate-obovate, retuse, crenulate towards apex, 8.5–9 cm long, 3–4.5 cm wide; disk with thickened veins, centrally with tuft of retrorse, fimbriate scales. Column arcuate, ventrally pilose, 6–7 cm long. Capsule fleshy, fusiform, aromatic, 15–17 cm long.

Flowers: June–July.

Mexico, Middle America, tropical South America, Lesser Antilles.

TRINIDAD: Bradford 5285 (ex Cogniaux); Hart s.n. (ex Cogniaux).

5. *Vanilla Wrightii* Rehb. f. in *Flora* 48 (1865) 273.

Stems slender, angled in section, flexuous; internodes 3–10 cm long. Leaves short-petiolate, coriaceous, usually ovate-lanceolate, short-acuminate, rounded or sometimes subcordate, 4–9 cm long, 2–4 cm wide. Inflorescence axillary, up to 7 cm long, up to 5- or

6-flowered. Flowers greenish yellow, yellow or reddish within. Bracts coriaceous, triangular, obtuse, up to 7 mm long. Sepals elliptic-lanceolate, obtuse, about 5 cm long, 9 mm wide. Petals similar to sepals, slightly keeled. Lip adnate to column for about 2 cm above base, entire, obovate, acute, crenulate, as long as sepals; disk with ramentaceous hairs. Column slender, 3.5 cm long. Capsule narrowly linear-cylindric, up to 15 cm long.

Flowers: April-June.

West Indies, British and Dutch Guiana.

TRINIDAD: Fendler 1007 (ex Cogniaux); Melajo Forest, May 1955, Downs & Aitken 56 (*Herb. Ames* 67793).

7. *EPISTEPHIUM* Kunth

Terrestrial herbs. Stem tall, simple or branched. Leaves usually sessile or cordate-enclaspings, strongly veined. Inflorescence terminal or rarely axillary, racemose, many-flowered. Flowers large. Bracts short. Apex of ovary with an urceolate cup. Sepals free. Petals similar to sepals, sometimes larger. Lip adnate to column, obovate, simple or slightly 3-lobed, enclaspings base of column. Column long, dilated above, broadly 3-lobed at apex. Capsule oblong-cylindric.

Epistephium: Greek, 'above' and 'crown', referring to the crown-like growth that remains at the apex of the ovary.

About 20 species from British Honduras, Trinidad, northern half of South America.

1. Racemes crowded, shorter than leaves.

Leaves broadly elliptic or oblong-elliptic.

Lip ciliate 1. *Epistephium ellipticum*

1A. Racemes not crowded, elongate, longer than leaves. Leaves narrowly ovate-lanceolate. Lip not ciliate.....

..... 2. *Epistephium parviflorum*

1. *Epistephium ellipticum* Williams & Summerh. in *Kew Bull.* (1928) 145.

Erect, up to 30 cm, with fleshy roots and simple stems 3 mm in diameter. Leaves thinly coriaceous, glabrous, veins prominent on both sides, short-petiolate, elliptic or oblong-elliptic, abruptly

acute or acuminate, basally narrowed, 4-6.5 cm long, 2.5-3 cm wide. Inflorescence terminal or axillary, shorter than leaves, up to 12-flowered. Flowers green. Ovary arcuate, slightly trigonous, up to 4 cm long. Bracts triangular, acuminate, persisting in fruit. Sepals spatulate, acute, 2 cm long, 3 mm wide. Petals spatulate, 2 cm long, 4 mm wide, white. Lip with lower 2/3 encircling and adnate to column, upper 1/3 dilated, rotundate, entire, expanded portion 8 mm long, ciliate, upper half fleshy-pilose. Column 17 mm long, 1.5 mm in diameter. Capsule linear-cylindric, about 3.5 cm long, 1.5-2 mm in diameter, at apex with a calyx-like, short-dentate crown 1 mm long.

Flowers: September.

Venezuela, northern Brazil, Trinidad.

TRINIDAD: Valencia Road, Mora Forest end, September 1, 1925, Williams et al. s.n. (*Herb. Trin.* 11324); Aripo Pool, December 26, 1927, Williams & Cheesman s.n. (*Herb. Trin.* 11903); near Aripo Pool, June 13, 1928, Williams & Freeman s.n. (*Herb. N.Y.*); Long Stretch, February 11, 1953, Simmonds s.n. (*Herb. Trin.* 14870); Long Stretch, near the Gravel Pit, October 27, 1955, Simmonds s.n. (*Herb. Trin.* 15364).

2. *Epistephium parviflorum* Lindl. in *Gen. and Sp. Orch.*

Pl. (1840) 433.

Epistephium Cruegeri Rehb. f. ex Grisebach *Fl. Brit. W.*

Ind. Isl. (1864) 637.

Strict or suberect, often shrubby. Stem branching, usually 1-2 m, frequently much taller, up to 2 cm in diameter. Leaves thickly coriaceous, narrowly ovate-lanceolate or lanceolate-elliptic, acute-acuminate, attenuate into a short petiole 5-6 mm long, more or less 7-nerved, glossy dark green on both sides, 7-12 cm long, 2-4 cm wide, those above narrower. Inflorescence loosely 2- to 20-flowered, up to 25-30 cm long. Flowers erect-spreading, deep red or purple-red, sometimes white. Ovary sessile, slightly trigonous, 2.5 cm long. Bracts coriaceous, triangular-ovate, 3-4 mm long, 2-3 mm wide. Sepals equal, oblong-lanceolate, obtuse, 5- to 7-nerved, 15-18 mm long, 3-4 mm wide. Petals as long as sepals but approximately twice as wide, somewhat obtuse. Lip shortly clawed, as long as sepals, quadrate-orbicular, apically emarginate and minutely apiculate, crisped-undulate; disk cristate,

basally retrorsely bearded. Column 1 mm long. Capsule oblong, 2.5 cm long.

Flowers: December-May.

Trinidad, South America south to Bolivia and Matto Grosso of Brazil.

TRINIDAD: Aripo Savannah (*Herb. Trin.* 881); Aripo, May 26, 1861 (*Herb. Trin.* 1826); Aripo Savannah, March 1865 (*Herb. Trin.* 1970); Aripo Savannah, January 1893, Alexander s.n. (*Herb. Trin.* 5688); Aripo, April 1896, Hart s.n. (*Herb. Trin.* s.n.); Aripo Savannah, April 16, 1908, Broadway 2324 (*Herb. Ames* 10721, 10722, 10723); Aripo Savannah, February 13, 1915, Freeman s.n. (*Herb. Trin.* 8047); Aripo Savannah, February 17, 1921 (*Herb. Trin.* s.n.); Aripo Savannah, December 1, 1922, Williams et al. s.n. (*Herb. Trin.* 10673); Aripo Savannah, January 8, 1934, Wright s.n. (*Herb. Trin.* s.n.); Aripo Savannah, July 27, 1943, Beard 143 (*Herb. Ames* 62754); Aripo Savannah, February 20-23, 1950, Howard 10508 (*Herb. Ames* 66747); Aripo Savannah, May 24, 1956, Downs & Aitken 100 (*Herb. Ames* 69797).

8. ELLEANTHUS Presl

Terrestrial or epiphytic herbs, simple or more rarely branched. Leaves sessile, plicate, articulated to sheath. Flowers in dense terminal heads or spicate racemes. Sepals free, erect. Petals as long as sepals, sometimes narrower. Lip erect, affixed to base of column, as long as sepals or longer, sometimes clasping column, basally saccate with 2 calluses, contracted above cavity. Column erect, semiterete, slenderly winged, footless. Capsules oblong-cylindric, erect or spreading.

Elleanthus: Greek, 'flower of Helle', in reference to Helle, a Greek mythological figure.

About 50 species from Mexico, Middle America, West Indies, northern South America.

Elleanthus capitatus (Poepp. & Endl.) Rehb. f. in Walpers *Ann. Bot.* 6 (1862) 475.

Evelyna capitata Poepp. & Endl. *Nov. Gen. ac Sp.* 1 (1835) 32, t. 56.

Bletia capitata R. Br. in Aiton *Hort. Kew.*, ed. 2, 5 (1813) 206.

Stout, up to 110 cm. Stem slender, 3-5 mm in diameter, erect, covered with leaf-sheaths. Leaves subcoriaceous, lanceolate, long-acuminate, 5-25 cm long, 2-8 cm wide, gradually reduced upwards, becoming bract-like, 7- to 9-nerved. Inflorescence many-flowered, capitate, 3-8 cm wide. Flowers rose-purple, imbedded in mucilage. Bracts imbricated, ovate to lanceolate, acuminate, 2.5-6 cm long, 10 mm wide. Sepals lanceolate to elliptic, 8-12 mm long, 2.5-3.5 mm wide; dorsal sepal obtuse to subacute; lateral sepals acute-apiculate. Petals linear, 10-12 mm long, 1-2 mm wide, usually subacute. Lip widely triangular-obovate, basally saccate with 2 calluses, anterior margins lacerate-denticulate, 10-14 mm long, equally as wide. Column 5-6 mm long. Capsule ellipsoid, 1.2 cm long, 5 mm in diameter.

Flowers: July.

Almost throughout range of genus.

TRINIDAD: Arima, July 30, 1860 [Collector unknown] (*Herb. Trin.* s.n.).

9. PALMORCHIS Barb.-Rodr.

Terrestrial herbs, growing in clumps. Leaves few, elliptic or elliptic-oblong, plicate-veined, long-petiolate. Sepals connivent or spreading, oblong-oblanceolate or oblong-oblong-oblanceolate. Petals usually similar to sepals but somewhat smaller. Lip 3-lobed above middle or near apex, erect to base of column; much broader than sepals or petals; disk glabrous or pilose, with callus. Column long, arcuate towards apex, footless. Capsule slender, with column persisting.

Palmorchis: Latin, 'palm-like orchid', undoubtedly in reference to the resemblance of the leaves to palm seedlings.

Six species of northern South America, Panama, Trinidad.

Palmorchis pubescens Barb.-Rodr. *Gen. et Sp. Orch. Nov.* 1 (1877) 170.

Sobralia pubescens (Barb.-Rodr.) Cogn. in Martius *Fl. Bras.* 3, pt. 5 (1901) 347, t. 73, fig. 2.

Robust, up to 50 cm. Leaves lanceolate or elliptic-lanceolate, acuminate, 30-56 cm long, 4-10 cm wide, with strong petiole up to 37 cm long. Inflorescence racemose, laxly few-flowered, up to 20 cm long, with imbricating sheaths. Flowers small; lip (ex Lunt) yellow with white throat, other floral parts bright red. Bracts ovate or ovate-oblong, acute or mucronate, conduplicate-concave, scaberulous, 15-22 mm long. Flowers yellow, medium-sized. Pedicel somewhat narrower than sepals or subequal to them. Lip obscurely 3-lobed, 25 mm long, 10-12 mm wide, narrowed towards base. Column 14 mm long. Capsule oblong, 35-45 mm long.

Flowers: August.

Trinidad, British Guiana, Brazil.

TRINIDAD: Aripo, August 1898, Lunt s.n. (*Herb. Trin.* 6377); Prestoe s.n. (ex Hooker).

10. *WULLSCHLAEGELIA* Rehb. f.

Terrestrial, leafless herb with densely fasciculate, thickly fibrous roots and erect stems with scale-like bracts. Flowers small, short-pedicellate, numerous, subsessile in a long, loose spike. Bracts minute, membranaceous. Sepals thin, connivent; dorsal sepal free; laterals somewhat broader, basally a spur-shaped chin. Petals similar to dorsal sepal but smaller. Lip sessile at base of column on upper side of flower, erect, entire, concave, basally with spur or sack within chin of sepals. Column very short, fleshy; stigma entire, beneath rostellum. Capsule small, ovoid, erect.

Wulschlaegelia: in honour of Herr Wulschlaegel, Bishop of Herrnhut, a 19th Century missionary in Antigua and Jamaica, from which colonies he amassed important collections of plants.

About 3 species of West Indies, northern South America.

Wulschlaegelia calcarata Benth. in *Journ. Linn. Soc. Bot.* 18 (1881) 342.

Greyish white in all parts. Roots 15-40 mm long. Stem sinuous-erect, densely puberulent, especially near tip, 15-25 cm tall, with 3-6 distant scale-like bracts. Inflorescence a densely many-flowered raceme, terminal, 1-3 cm long, with acute, linear

bracts up to 2 mm long. Ovary 3 mm long, with sparse, grey, bifurcate, eglandulose hairs. Sepals membranaceous, subequal, triangular-lanceolate, acute, 15-18 mm long, 0.5-0.6 mm wide; chin long and narrowly spur-shaped. Lip ovate-oblong, basally attenuate, rather contracted towards middle, acuminate but obtuse at tip; slightly undulate, up to 25 mm long, 0.7-1.0 mm wide; sack pendent, about 1.5 mm long, up to 0.5 mm wide.

Flowers: April-May.

Trinidad, British Guiana, Amazonian Brazil.

TRINIDAD: Arima, May 7, 1847 (*Herb. Trin.* 896); May 8-9, 1847 (*Herb. Trin.* 898); Arima Woods, April 9, 1848 (*Herb. Trin.* s.n.); Maracas, May 20, 1861 (*Herb. Trin.* 1833); Arima, April 11, 1866 (*Herb. Trin.* 1968); Aripo, April 1896, Alexander s.n. (*Herb. Trin.* s.n.; *Herb. Ames* 67047); Arima, March 7, 1905, Dannouse s.n. (*Herb. Trin.* s.n.; *Herb. Ames* 66991); Santa Cruz, April 23, 1908, Broadway 2248 (*Herb. Ames* 10724, 10725, 10726); Mora Forest, May 3, 1923, Freeman s.n. (*Herb. Trin.* s.n.); Rineon, Las Cuevas, April 16, 1956, Downs & Aitken s.n. (*Herb. Ames* Alc. Coll. 3222); Fendler 756 (ex Cogniaux); Hart s.n. (ex Cogniaux).

11. *PRESCOTTIA* Lindl.

Prescottia stachyodes (Sw.) Lindl. in *Bot. Reg.* 22 (1836) t. 1916.

Cranichis stachyodes Sw. *Prodr.* (1788) 120.

West Indies. Cited from Tobago (BROADWAY in *Bull. Dept. Agric. Trin. Tob.* 17, pt. 2 (1918) 99), but no material seen to authenticate record.

12. *CRANICHIS* Sw.

Terrestrial herbs. Leaves basal or cauline, sessile or petiolate, membranaceous. Inflorescence spicate, slender, with several sheaths below. Sepals free, laterals sometimes broader than dorsal. Petals narrow, spreading, free or very shortly adnate to base of column. Lip uppermost, sessile or rarely short-unguiculate, usually erect, entire, concave or subsaccate, adnate to base of column. Column short. Anthers sessile or stipitate, erect. Capsule ovoid or cylindric.

Cranichis: Greek, 'having a helmet', in reference to the concave or subsaccate lip which, being uppermost and covering the column, has the appearance of a helmet.

About 30 species of the tropical and subtropical New World.

Cranichis muscosa Sw. *Prodr.* (1788) 120.

10-40 cm. Roots fasciculate, fleshy-fibrous. Leaves 4 to 6, petiolate, basal, sessile, subcordate to elliptic-ovate, acute to subobtusate, 3-8 cm long, 1-4 cm wide, above becoming sheathing leaf-bracts. Petiole 1-6 cm long. Inflorescence densely many-flowered, up to 13 cm long. Flowers white. Sepals ovate to oblong-elliptic, acute, 2 mm long, 1-2 mm wide, 1-nerved. Petals linear-oblong to linear-spathulate, obtuse, 2-3 mm long, 0.3-0.5 mm wide. Lip white, green-spotted, cucullate, ovate-rotund, 2.5-3 mm long, 1.5-2 mm wide, undulate, within verruculose, with 3 thickened, prominent median nerves on disk. Column 1-1.5 mm long, slightly winged. Capsule 7-10 mm long.

Flowers: January-March.

Florida, West Indies, Mexico, Middle America, northern South America.

TOBAGO: Mount St. George, Castara Road at 6th mile (*Herb. Trin.* 13520).

TRINIDAD: (*Herb. Trin.* 1822); Tucuche, January 29, 1893, Broadway s.n. (*Herb. Trin.* 5205); Maracas, March 1897 (*Herb. Trin.* 6481); Tucuche, Williams s.n., January 17, 1924 (*Herb. Trin.* 10707); Tucuche, at approx. 1700 ft., March 14, 1943, Thorold s.n. (*Herb. Trin.* 13547); Tucuche, south side of Maracas Falls, February 1, 1947, Simmonds 53 (*Herb. Trin.* 13817; *Herb. Ames* 66932); Tucuche, alt. 2500 feet, January 25, 1953, Baker s.n. (*Herb. Trin.* 14805); Sieber 257 (ex Cogniaux); Crueger 55 (ex Cogniaux).

13. SPIRANTHES L. C. Rich.

Small to large, usually terrestrial herbs with fasciculate, fleshy, usually pubescent tuberoïds. Stems covered with leaf-sheaths or bracts. Leaves basal and rosulate or cauline or both, appearing

either before, with or after flowering. Inflorescence a terminal, few- to many-flowered spike or raceme. Flowers small to medium-sized, often pubescent. Sepals free; dorsal sepal usually erect, narrow, forming a galea with petals; laterals spreading, more or less decurrent on ovary to form basally a sac or spur-like mentum. Petals narrow and usually connate with lateral sepals. Lip sessile or clawed, usually adnate to and embracing column, simple or 3-lobed. Column with or without foot; clinandrium often membranaceous and conspicuous; rostellum inconspicuous or elongate, truncate, lobed or aristate. Anthers ovoid or oblong-ovoid, sessile or stipitate.

Spiranthes: Greek, 'coiled flower', in reference to the spiralled disposition of the flowers along the inflorescence in the species of the section *Euspiranthes*.

At least 200 species of the temperate and tropical regions of both hemispheres (except Africa).

1. Lateral sepals not conspicuously decurrent on ovary. Column foot short or obscure(Section *Euspiranthes*)
 2. Leaves well developed, basal, rosulate, not hysteranthous
 3. Plant with 1 leaf. Leaf orbicular, basally deeply cordate7. *Spiranthes Scopulariae*
 - 3A. Plant with more or less numerous leaves. Leaves not orbicular nor basally cordate
 4. Apical part of lip transverse, broader than long3. *Spiranthes elata*
 - 4A. Apical part of lip oblong-ovate to suborbicular.....2. *Spiranthes costaricensis*
 - 2A. Leaves absent or reduced to cauline sheaths or hysteranthous
 5. Flowers spirally arranged
 6. Inflorescence densely many-flowered9. *Spiranthes tortilis*

- 6A. Inflorescence laxly
few-flowered.....4. *Spiranthes*
Grisebachii
- 5A. Flowers not spirally
arranged.....5. *Spiranthes*
guayanensis
- 1A. Lateral sepals more or less conspicuously
decurent on ovary. Column-foot
prominent
7. Rostellum elongate, pro-
duced into linear-trian-
gular or subulate,
usually rigid, acuminate
process.....(Section
Stenorrhynchus)
6. *Spiranthes*
orchioides
- 7A. Rostellum short or, at
most, produced into
membranaceous,
ligulate, usually trun-
cate process.....(Section
Sarcoglottis)
8. Leaves linear, up to
5 cm long. Inflores-
cence short, 1- to 2-
flowered. Column 6
mm long.....8. *Spiranthes simplex*
- 8A. Leaves elliptic or
obovate-oblong,
25 cm long or longer.
Inflorescence usually
many-flowered.
Column 12-13 mm
long.....1. *Spiranthes acaulis*
1. *Spiranthes acaulis* (J.E. Sm.) Cogn. in Martius *Fl. Bras.*
3, pt. 4 (1895) 221.
Neottia acaulis J. E. Sm. *Exot. Fl.* 2 (1806) t. 105.

Usually terrestrial, often up to 80 cm (usually 20-30 cm), glabrous below, pubescent above. Leaves basal (or withered at flowering), numerous, membranaceous, with or without petiole, elliptic to obovate-oblong, acute, 6-35 cm long, 3-6 cm wide, usually white-mottled; petiole winged. Inflorescence a loosely few-to many-flowered spike, up to about 25 cm. Bracts lanceolate, acuminate, 2-4 cm long. Flowers white within, green-striped without. Sepals conspicuously pubescent without; dorsal sepal ligulate-lanceolate, obtuse or acute, 15-25 mm long, 3.5-4.5 mm wide; laterals up to 50 mm long, 6-7 mm wide; free portion narrowly lanceolate, obtuse or acute, 20-27 mm long, 7 mm wide, long-decurrent on ovary. Petals narrowly lanceolate or oblanceolate, obtuse or acute, connate with dorsal sepal, 20-25 mm long, 3-4 mm wide. Lip oblanceolate, obtuse, 25-30 mm long, 8-10 mm wide, basally villose with 2 fleshy, retrorse callosities 3-4 mm long, constricted below apex into ovate, suborbicular or cordate, obtuse, often retuse terminal lobule. Column up to 14 mm long.

Flowers: December-April.

Middle America, South America south to northern Argentina, West Indies.

TOBAGO: Indian Walk, March 4, 1909, Broadway s.n. (*Herb. Ames* 11709); Caledonia, February 1, 1911, Broadway s.n. (*Herb. Ames* 25562; *Herb. Gray* 1727); Signal Hill Road, April 6, 1912, Broadway 4203 (*Herb. Gray* 2014, 2015); Mason Hall, March 3, 1913, Broadway s.n. (*Herb. Trin.* 4857; *Herb. Gray* 1726, 1728; *Herb. Ames* 48292); Easterfield Road, February 25, 1926, Freeman s.n. (*Herb. Trin.* 11527); Mt. St. George-Castara Road, March 31, 1940, Cheesman 270 (*Herb. Trin.* 13507); Easterfield Road, March 31, 1940, Cheesman 285 (*Herb. Trin.* s.n.); Between Mason Hall and Caledonia on Easterfield Road, February 9-23, 1950, Howard 10475 (*Herb. Ames* 66729); Easterfield Road, January 1953, Hunnewell 19930 (*Herb. Hunnewell*).

TRINIDAD: St. Ann's, 1846 (*Herb. Trin.* 404); Botanic Gardens, April 2, 1890, Broadway s.n. (*Herb. Trin.* 3750); St. Clair Experiment Station, December 19, 1906, Broadway s.n. (*Herb. Ames* 10066); St. Clair Experiment Station, January 3, 1908, Broadway s.n. (*Herb.*

Ames 10720); St. Clair Experiment Station, August 26, 1908, Broadway s.n. (*Herb. Ames* 11681); Maraval, February 13, 1911, Broadway 4122 (*Herb. Ames* 16549); Manzanilla, April 12, 1918, Rogers s.n. (*Herb. Trin.* 8767); Gasparee Island, March 13, 1920, Britton & Coker 553 (*Herb. Gray* 1729); Heights of Aripo, January 10-26, 1922, Broadway s.n. (*Herb. Trin.* 9879); St. John's Valley, Tumpuna, February 1, 1922, Farmer s.n. (*Herb. Trin.* 10561); Quarry Reserve, Siparia, April 23, 1922, Rogers s.n. (*Herb. Trin.* 10124); El Tucuche, January 25, 1953, Baker s.n. (*Herb. Trin.* 14815); Tumpuna Forest, April 1954, Ayliffe s.n. (*Herb. Trin.* 15124); Paria Road through Blanchisseuse Forest Reserve, January 15, 1955, Herklots s.n. (*Herb. Trin.* 15358); Five Islands, January 25, 1957 (flowered), Downs & Aitken 109 (*Herb. Ames* Ale. Coll. 3223); Morne Jean, Diego Martin, January 24, 1960, Aitken (TRVL) 32F (*Herb. Ames* Ale. Coll.)

2. *Spiranthes costaricensis* Rehb. f. in *Bonpl.* 3 (1855) 214.
Gyrostachys costaricensis (Rehb. f.) O. Kuntze *Rev. Gen. Pl.* 2 (1891) 664.

Terrestrial or epiphytic, up to about 45 cm (usually shorter). Leaves basal (often absent at flowering), membranaceous, petiolate (petioles winged, up to 8 cm long), elliptic to obovate, acute or acuminate, 3.5-19 cm long, 1.5-6 cm wide. Inflorescence a lax or compact, few- to many-flowered raceme, up to more or less 20 cm. Flowers tubular, fragrant, green and greenish white. Bracts narrowly lanceolate, acute, about 15 mm long. Sepals glandular-pubescent without; dorsal sepal lanceolate, acute, 4.5-6.5 mm long, 1-1.5 mm wide; laterals narrowly lanceolate, obtuse or acute, basally short-connate, forming sack, about 6.5 mm long, 0.8-1.2 mm wide. Petals lanceolate, obtuse or acutish, 4-6 mm long, about 1 mm wide. Lip shortly clawed, lanceolate-pandurate (above constriction oblong-ovate to suborbicular), obtuse to acute, retrorsely 2-callose at base, apically papillose, 5-6.5 mm long, 1.5-2 mm wide.

Flowers: January-March.

Mexico, Middle America, West Indies.

TRINIDAD: February 16, 1849 (*Herb. Trin.* 1513); El Tueche, January 10, 1922, Freeman & Williams s.n. (*Herb. Trin.* 10084); Aripo Flats, March 25, 1934, Bruins-Lich s.n. (*Herb. Trin.* 12990); El Tueche, January 25, 1953, Baker s.n. (*Herb. Trin.* 14814); Between Brasso Seco and Madamus, January 9, 1955, Herklots s.n. (*Herb. Trin.* 15357; *Herb. Ames* 67051); Spring Hill Estate, Arima Valley, January 19, 1956, Downs & Aitken 83 (*Herb. Ames* 67861).

3. *Spiranthes elata* (Sw.) L. C. Rich. in *Mem. Mus. Paris* 4 (1818) 59.

Satyrion elatum Sw. *Prodr.* (1788) 119.

Terrestrial, up to 60 cm. Tuberoids fleshy, clustered, up to 7-8 cm long. Stems glabrous below, pubescent above, with appressed, acuminate sheaths. Leaves basal, long-petiolate, elliptic or oblong-elliptic (sometimes lanceolate), acute, basally usually rounded, 5-15 cm long, 2-6 cm wide. Inflorescence a loosely many-flowered, spirally twisted or distinctly secund spike up to about 20 cm long. Flowers brownish green, greenish or greenish white, with white lip, nodding. Bracts lanceolate, spotted, 10-18 mm long. Sepals basally rather gibbous, slightly puberulent without; dorsal sepal oblong-lanceolate, usually obtuse, 5-6.5 mm long, about 1.4 mm wide; laterals lanceolate, acute or obtuse, 6-7.5 mm long, about 1.5 mm wide. Petals oblanceolate, obtuse, 4.5-6 mm long, 0.7 mm wide. Lip oblong-ligulate, 5-8.5 mm long, contracted above middle, expanded above contraction into sub-orbicular or transversely reniform, crispate apical lobe which is 4-5 mm wide; base of lip subsaccate, with basal callosities inconspicuous, often mamillate, erect. Column 2-3 mm long. Capsule 8-12 mm long.

Flowers: February-May (in Trinidad)?

Florida, Mexico, Middle America, South America, West Indies.

TRINIDAD: Purdie s.n. (ex Cogniaux); Crueger s.n. (ex Cogniaux).

4. *Spiranthes Grisebachii* Cogn. in *Martius Fl. Bras.* 3, pt. 4 (1895) 207.

Terrestrial, with clustered, linear-clavate, puberulent tuberoids, 2-5 cm long. Stem apparently aphyllous, densely tomentose, 12-22 cm long, provided with distant, densely villose, oblong-lanceolate sheaths 1.5-2 cm long. Inflorescence a rather laxly few-flowered spike with white lip. Bracts ovate-lanceolate,

acuminate, tomentose, 7-10 mm long, 3-4 mm wide. Sepals fleshy, densely pilose without, about 6 mm long; dorsal sepal ovate-oblong, obtuse; lateral sepals triangular-lanceolate, acute. Petals membranaceous, linear-oblong, falcate, rather obtuse, 6 mm long, 1.5 mm wide. Lip erect, membranaceous, puberulent without, obovate-panduriform in outline, strongly constricted slightly below middle, 6 mm long, 4 mm wide; mid-lobe orbicular-reniform, retuse, crispate; disk absent. Column 2-2.5 mm long; rostellum long-aristate.

Flowers: July, November.

Brazil, British Guiana, Trinidad.

TRINIDAD: O'Meara Savannah, Crueger s.n. (ex Cogniaux).

5. *Spiranthes guayanensis* (Lindl.) Cogn. in Martius *Fl. Bras.* 3, pt. 4 (1895) 209, t. 47, fig. 2 (*quoad guyanensis*).

Goodyera guayanensis Lindl. *Gen. and Sp. Orch. Pl.* (1840) 494.

Terrestrial, with from 1 to 3 tuberiods, up to 22 cm. Stem slender, apparently aphyllous, covered with several lanceolate, bract-like sheaths, glabrous below, densely puberulent above. Inflorescence a densely many-flowered spike, up to 6 cm long. Flowers whitish, small, not secund. Bracts lanceolate, acuminate, glabrous, 5-7 mm long. Sepals triangular-lanceolate, acute or obtuse, lightly puberulent without, 2-3 mm long, 0.8-1.5 mm wide. Petals linear-oblong, clawed, rounded, about 2.5 mm long, 0.8-1 mm wide. Lip oblong-pandurate or suborbicular-pandurate, strongly dilated below apex, 2-3 mm long, 1.7-2.4 mm wide; terminal portion small, suborbicular, basally provided with 2 retrorse callosities. Column erect up to 1 mm long; rostellum very short, apically rounded.

Flowers: May-June.

Middle America, British Guiana, Colombia, Bolivia, West Indies.

TRINIDAD: Queen's Park, June 2, 1850 (*Herb. Trin.* 870); Queen's Park, May 1889, Broadway s.n. (*Herb. Trin.* 3792); Botanic Gardens, June 5, 1889, Broadway s.n. (*Herb. Trin.* 3806); Government House Grounds, June 4, 1907, Broadway s.n. (*Herb. Ames* 10171, 10172, 10173, 10174); St. Ann's, June 13, 1922, Broadway s.n. (*Herb. Ames* 39727); Broadway s.n. (*Herb. Trin.* 3913).

6. *Spiranthes orchioides* (Sw.) L. C. Rich. in *Sagra Fl. Cub.*, ed. 2, 11 (1850) 252.

Stenorrhynchus orchioides (Sw.) L. C. Rich. in *Mem. Mus. Paris* 4 (1818) 59.

Terrestrial, leafless at flowering, scurfy with white scales, 49-60 cm (often taller). Tuberoles fleshy, elongate-clavate, up to 15 cm. Stem glabrous below, sparsely glandular-pubescent above. Leaves basal, numerous, membranaceous, sessile or short-petiolate, elliptic-lanceolate, 15-30 cm long, 2-5 cm wide (rarely longer). Inflorescence a laxly or densely many-flowered spike, up to 18 cm long. Flowers variable in colour, usually rose to crimson, sometimes greenish white, showy. Bracts narrowly lanceolate, long-acuminate, about 2 cm long, often red-punctate. Sepals unequal, densely glandular-papillose without; dorsal sepal lanceolate to elliptic-lanceolate, usually acute, 15-22 mm long, 4-7 mm wide; laterals lanceolate, basally decurrent on ovary and forming short chin, 20-30 mm long, 4-5 mm wide. Petals elliptic or lanceolate-elliptic, acute or obtuse, adnate to dorsal sepal, 15-20 mm long, 4-6 mm wide. Lip sessile, or with a short, broad claw, broadly lanceolate or oblanceolate, acuminate, 15-26 mm long, 6-10 mm wide; disk pubescent below. Column glabrous, 10 mm long; rostellum bristle-like, 5 mm long. Capsule ellipsoidal, 1.5 cm long.

Flowers: January-May.

Florida, Mexico, Middle America, South America, West Indies.

TOBAGO: Signal Hill, April 6, 1912, Broadway 4203 (*Herb. Ames* 16550); (Received) August 25, 1919, Sworder s.n. (*Herb. Trin.* 8815); Easterfield Road, February 25, 1926, Freeman s.n. (*Herb. Trin.* 11526).

TRINIDAD: Botanic Gardens, March 25, 1896, Broadway s.n. (*Herb. Trin.* 3664); Botanic Gardens, March 1892, Broadway s.n. (*Herb. Trin.* 5724); Carenage, April 13, 1908, Broadway 2329 (*Herb. Ames* 10670); Government House Grounds, May 11, 1908, Broadway s.n. (*Herb. Ames* 10681, 10701); Mary's Hill, April 28, 1909, Broadway 2924 (*Herb. Ames* 11718); St. Ann's, May 2, 1920, Broadway s.n. (*Herb. Ames* 22041); St. Ann's, February 27, 1922, Broadway s.n. (*Herb. Ames* 10048); Aripo Valley Road, March 21, 1926, Hombersley s.n.

(*Herb. Trin.* 11530); Curupa, March 30, 1929, Hunter s.n. (*Herb. Trin.* 12124); Aripo Road, April 11, 1933, Broadway s.n. (*Herb. Gray* 2021); Santa Cruz Valley, March 21, 1938, Baker 125 (*Herb. Trin.* 13299); Lopinot Road, April 16, 1938, Cheesman 156 (*Herb. Trin.* 13462); Maracas Valley, Evans (*Cheesman* 161) (*Herb. Trin.* 13461); O'Meara Road, March 3, 1941, Duruty s.n. (*Herb. Trin.* 13730); St. Augustine, April 29, 1950, Baker s.n. (*Herb. Trin.* 14548); North Coast Road to Maracas Bay, January 27, 1952, Hirst s.n. (*Herb. Trin.* 14726); Churchill-Roosevelt Road south of Arima, March 25, 1953, Baker s.n. (*Herb. Trin.* 14914); Lopinot Valley, April 6, 1953, Baker s.n. (*Herb. Trin.* 14935; *Herb. Ames* 68191); Melajo Forest, April 22, 1954, Ayliffe s.n. (*Herb. Ames* 15125); (*Herb. Trin.* 1518).

7. *Spiranthes Scopulariae* Rehb. f. in Grisebach *Fl. Brit. W. Ind. Isl.* (1864) 641.

Terrestrial, with several slender tuberoids. Stem slender, with 1 or 2 sheaths, densely clothed with rather short, curled hair, 10–15 cm. Leaf single, basal, spreading broadly orbicular, short-acuminate, basally cordate, 3.5–5 cm long; petiole short, vaginate. Inflorescence a strict, laxly few-to many-flowered spike. Flowers yellow-white, secund. Bracts lanceolate, acuminate, rather densely pubescent, 6–10 mm long. Sepals subequal, rather densely pubescent without, 4–4.5 mm long; dorsal sepal ovate, obtuse; laterals triangular, acute. Petals linear, acute, slightly shorter than dorsal sepal. Lip fleshy, entire, oblong, obtuse, involute, shorter than or as long as sepals. Column 1–1.5 mm long.

Flowers: August–September (in Venezuela).

Venezuela, Trinidad.

TRINIDAD: Near St. Joseph, Crueger s.n. (ex Cogniaux).

8. *Spiranthes simplex* Griseb. *Fl. Brit. W. Ind. Isl.* (1864) 641; *non* Gray.

Terrestrial, with 2 or 3 short tuberoids. Stem slender, aphyllous, densely pilose, 10–15 cm, provided with a few foliaceous sheaths which are acuminate and glabrate. Leaves basal, 2 or 3,

sessile, linear, long-acuminate, 2-5 cm long, 1-2 mm wide. Inflorescence a short, often a 1- to 2-flowered scape. Flowers green below, white above. Bracts lanceolate, long-acuminate, puberulent, 1 cm long. Ovary 10-12 mm long. Sepals 1-nerved, puberulent below, glabrous above; dorsal sepal oblong, long-attenuate above, obtuse, 10-11 mm long; laterals longer, linear-spathulate, acute, long-decurrent in front. Petals linear-spathulate, obtuse, 1-nerved, 8-9 mm long. Lip slightly shorter than lateral sepals, 7-nerved, externally very lightly papillose below, deeply sagittate, oblong-spathulate below, strongly constricted, then dilated above; mid-lobe broadly suborbicular-rhombic, apically rounded. Column glabrous, 6 mm long, with short rostellum.

Flowers: May.

Endemic to Trinidad.

TRINIDAD: Aripo, Crueger 50 (ex Grisebach; ex Cogniaux).

9. *Spiranthes tortilis* (Sw.) L. C. Rich. in *Mem. Mus. Paris* 4 (1818) 59.

Neottia tortilis Swartz *Fl. Ind. Occ.* (1806) 1406, t. 28, fig. e.

Terrestrial, leafless at flowering, 25-45 cm (sometimes much taller). Tuberooids numerous, elongated. Stem with up to 7 sheaths, tubular below, free part lanceolate. Leaves basal, membranaceous, lanceolate to linear-lanceolate, 15-26 cm long, 2.5-4.5 mm wide. Inflorescence an erect, slender, spirally twisted, puberulent, densely many-flowered spike up to about 20 cm. Flowers white, sometimes with green markings, arranged in 1 row on spike. Bracts more or less ovate, acuminate, puberulous, becoming glabrous, 5-10 mm long. Sepals somewhat puberulent, subequal, 4-6 mm long, about 1.5-2 mm wide; dorsal sepal oblong-lanceolate, rather obtuse; laterals more or less broadly lanceolate, acute or obtuse. Petals adnate to dorsal sepal, narrowly oblong, obtuse or acutish, 4-5.5 mm long, about 1 mm wide. Lip shortly clawed, ovate or orbicular-quadrate, sometimes constricted at middle, rounded, crenulate, 4-6 mm long, about 3 mm wide; basal callosities remote, minute, mamillate. Column slender, glabrous, 3 mm long. Capsule ovoid, 5-6 mm long, 3-4 mm wide.

Flowers: February-May, August (in Trinidad?).

Florida, Louisiana, Middle America, West Indies.

TRINIDAD: Sieber s.n. (ex Cogniaux).

14. ERYTHRODES Bl.

Terrestrial herbs. Roots arising from base of stem or from internodes of creeping rhizome. Stems erect or ascending, leafy. Leaves short-petiolate, ovate or lanceolate, usually reticulate-veined. Inflorescence a loosely or densely several- to many-flowered spike. Flowers usually small, subsessile. Bracts small. Sepals free, erect or spreading. Petals adnate to dorsal sepal to form a galea. Lip slightly adnate to column, entire or lobed, produced at base into saccate spur; spur usually with 2 to 4 basal calluses within. Column short or very short, wingless. Pollinia sectile or granular. Capsule ellipsoid or ovoid, erect.

Erythroides: Greek, 'appearing red', in reference to the flower-colour of some species.

About 100 species of the tropics and subtropics of both hemispheres.

1. Terminal lobe of lip not transverse, not broader than long, often somewhat acute or mucronate or 3-lobulate.
 2. Plants up to about 10 cm tall. Stem leafy nearly to raceme4. *Erythroides trinitatis*
 - 2A. Plants 30-60 cm tall (sometimes much taller). Stems with upper part leafless
 3. Sepals 6-8 mm long. Lip terminally 3-lobulate2. *Erythroides plantaginea*
 - 3A. Sepals 3-5 mm long. Lip terminally 2-lobulate3. *Erythroides Schultesiana*
 - 1A. Terminal lobe of lip transverse, broader than long, lunate1. *Erythroides hirtella*
 1. *Erythroides hirtella* (Sw.) Fawe. & Rendle *Fl. Jam.* 1 (1910) 29, t. 3, figs. 16-19.
Satyrium hirtellum Sw. *Prodr.* (1788) 118.
- Erect, 11-30 cm (rarely taller). Stem above slender, sparsely pilose, below rather densely 5-8-leaved. Leaves ovate to ovate-lanceolate, sometimes lanceolate, 4-8 cm long, 1.5-3 cm wide, acute, basally with a long, sheathing petiole. Inflorescence hairy,

many-flowered, 3-6 cm long, elongating in fruit. Flowers white, greenish white without. Bracts lanceolate, acuminate, sparsely pilose, up to 6.5 mm long. Ovary glandular-pilose. Sepals variable, usually ovate-lanceolate, obtuse, pilose, 3.5 mm long; lateral sepals oblique, 1 mm wide; dorsal sepal somewhat wider. Petals oblanceolate, obtuse, about as long as sepals but narrower. Lip 3-lobed, oblong, constricted above, 3.5 mm long; terminal lobe clawed, transverse, broader than long, lunate, papillose, spur 2 mm long, much shorter than ovary. Capsule elongate ovoid, 6-angled, pilose, 8 mm long, 3 mm in diameter.

Flowers: December-April.

West Indies.

TRINIDAD: St. Ann's, April 30, 1848 (*Herb. Trin.* 409); December 23, 1892, Alexander s.n. (*Herb. Trin.* 5075); El Tueuche, February 27, 1893, Broadway s.n. (*Herb. Trin.* 5248).

2. *Erythroides plantaginea* (L.) Fawc. & Rendle *Fl. Jam.* 1 (1910) 28, t. 3, fig. 15.

Satyrium plantagineum L. *Syst.* ed. 10, 2 (1759) 1244.

Erect, up to 60 cm. Rhizome decumbent, succulent, sometimes up to 180 cm, glabrous; stem densely 3-6-leaved below, slender, hairy, bearing sheaths above. Leaves ovate-elliptic or ovate-lanceolate, acute, 6-15 cm long, 2.5-5.5 cm wide (uppermost usually much smaller), basally with a sheathing petiole. Inflorescence hairy, rather densely many-flowered, up to 15 cm long. Flowers white, sometimes greenish without. Bracts ovate-lanceolate, acuminate, somewhat pilose, lowermost up to 1 cm long, uppermost smaller. Ovary very pilose. Sepals oblong-lanceolate oblique, obtuse, slightly pilose, 6-7 mm long, 1.5-1.8 mm wide. Petals narrowly oblanceolate, obtuse, slightly shorter than sepals. Lip 3-lobed, ovate-oblong, strongly constricted above, 5.5-6 mm long, 2 mm wide; terminal lobe ovate-triangular, 3-lobulate, apically acute, sometimes crenulate; spur 3.5-5 mm long, more than half as long as ovary. Capsule ellipsoidal, 6-angled, 8 mm long, about 3 mm in diameter.

Flowers: March-June.

West Indies.

TOBAGO: Caledonia, June 16, 1913, Broadway 4639 (*Herb. Gray* 1923).

TRINIDAD: Entrance to Aripo Caves, March 25, 1934, Bruins-Lich s.n. (*Herb. Trin.* 12991; *Herb. Ames* 68182); Mt. Aripo, March 24, 1937, Dean & Swabey s.n. (*Herb. Trin.* 13136); Mt. Aripo by River Crossing, June 18, 1947, Simmonds 110 (*Herb. Trin.* 13804); Sieber 323 (ex Cogniaux); Crueger s.n. (ex Cogniaux).

3. *Erythrodies Schultesia* Garay ex R.E. Schult. in *Rhodora* 59 (1957) 287, t. p. 286.

Erect, terrestrial, about 30 cm. Rhizome decumbent, cauliform. Roots fleshy, villose. Stem suberect, 3-foliate. Leaves broadly ovate or elliptic, apically acute or subacuminate, 5-6 cm wide, basally contracted into a sheathing petiole, 9-10 cm. Inflorescence slender, arcuate, glandular-puberulent, many-flowered above, up to 19 cm long, with 4 remote sheaths. Bracts ovate-lanceolate, acute or subacuminate, 8-10 mm long. Sepals ovate-oblong, 1-nerved, finely ciliate, 5 mm long; dorsal sepal confluent with petals, concave, apically acute or obtuse, 1.75 mm wide; laterals oblique, obtuse, 1.5 mm wide. Petals falcate-oblong, 1-nerved, obtuse, ciliate, 4.5 mm long, 1 mm wide. Lip oblong-ligulate, 2-lobed; lobules divergent, obtuse, with apicule in middle; disk 3-nerved, glabrous, 5 mm long; spur oblong-cylindric, obtuse, 3.5 mm long. Ovary short-pedicellate, clavate, 7 mm long (with pedicel).

Endemic to Trinidad.

TRINIDAD: Crueger 47 (Type, *Herb. Reichenbach* 43895; *Herb. Ames* 68591).

4. *Erythrodies trinitatis* Ames *Orch.* 7 (1922) 76.

About 9 cm, glabrous. Rhizome decumbent, cauliform. Leaves variegated, ovate-lanceolate, acuminate, 1-2 cm long, up to 11 mm wide; petiole 1 cm long, below middle loosely sheathing, above middle contracted. Inflorescence 2 cm long, glabrous, densely flowered. Flowers white, small, 4 mm long. Bracts scarious, ovate-lanceolate, acuminate, up to 6 mm long. Dorsal sepal slightly keeled without, minutely papillose near apex, 4 mm long. Lateral sepals elliptic-oblong, slightly cucullate near apex, subobtuse, 4 mm long, 1.75 mm wide. Petals unequally spatulate, obtuse, 3.5 mm long, 1 mm wide. Lip saccate, 3-lobed, 3.5 mm long; mid-lobe 3-lobulate, 2 mm long, 2 mm wide at base, with

mid-lobule triangular; disk of terminal lobe with transverse keel. Spur glabrous within, 2 mm long.

Endemic to Trinidad.

TRINIDAD: St. Ann's, 1888, Broadway s.n. (*Herb. Ames* 68183, drawings of type).

15. STELIS Sw.

Small to medium epiphytic herbs, often with a creeping rhizome or primary stem. Secondary stems commonly caespitose, non-pseudobulbose, monophyllous. Leaf leathery or fleshy, often petiolate. Inflorescence a more or less elongate, usually many-flowered raceme. Flowers small or minute. Sepals usually subequal, more or less connate at base, usually broadly ovate or triangular; lateral sepals shortly or deeply connate. Petals much shorter than sepals, broad, often with thickened or fleshy margins. Lip subequal and more or less similar to petals, sessile, usually fleshy, simple or 3-lobed. Column short, footless. Capsule small, ovoid to cylindric, angulate.

Stelis: an ancient name applied by Theophrastus to a parasitic plant, the identity of which is not known.

Some 300 species of tropical America.

1. Leaf petiolate (petiole up to 2 cm long).

Sepals rather obtuse. Lateral nerves of sepals confluent above with central vein.....

2. *Stelis
ophioglossoides*

1A. Leaf without a petiole. Sepals acute.

Lateral nerves of sepals not confluent above with central vein

1. *Stelis muscifera*

1. *Stelis muscifera* Lindl. *Fol. Orch.* (1858) *Stelis* 2, no. 6.

Stelis trinitatis Ames *Sched. Orch.* 2 (1923) 15.

Stelis trinitensis Ames apud Broadway in *Orch. Rev.* 34 (1926) 134.

Small, caespitose. Secondary stems 4-5 cm, concealed by 3 sheaths. Leaf fleshy, coriaceous, narrowly oblong-elliptic, obtuse or acute, attenuate and conduplicate, epetiolate, 7-12 cm long, 1-2.5 cm wide. Inflorescence solitary, with 15 or more flowers, usually longer than leaves, up to 15 cm long. Flowers small, pink.

Sepals subequal, fleshy, connate, broadly ovate, acute, nerves free; dorsal sepal 3 mm long, 4 mm wide; laterals 2 mm long, 4 mm wide, 3-nerved. Petals very fleshy, cuneate-flabellate below, triangular-thickened above, 1 mm long, 1 mm wide. Lip fleshy, undivided, rounded, 1 mm long, 1 mm wide; disk excavated, lobulate, lateral margin erect. Column dilated upwards, 3-lobulate.

Flowers: October-January.

Trinidad, Venezuela, Bolivia, British Guiana.

TRINIDAD: Heights of Aripo, January 10-16, 1922, Broadway s.n. (*Herb. Ames* 22671, 68170; *Herb. Trin.* 9886; *Herb. Gray* 2304); Mt. Aripo, by the Caves Trail, alt. about 2000 ft, December 24, 1947, Simmonds 230 (*Herb. Trin.* 14023); Mt. Aripo, alt. 1200 ft, October 22, 1949, Simmonds 410 (*Herb. Trin.* 14444; *Herb. Ames* 67804); Aripo Cave region, March 20, 1955, Downs & Aitken 34 (*Herb. Ames* 67843).

2. *Stelis ophioglossoides* (Jacq.) Sw. in Schrader *Journ. Bot.* 2 (1799) 239.

Epidendrum ophioglossoides Jacq. *Enum. Pl. Carib.* (1760) 29.

Small, caespitose. Secondary stems erect or ascending, 1-articulated, up to 7 cm. Leaf thinly coriaceous, elongate-oblong or elliptic-oblong, obtuse and often 3-denticulate, attenuate, petiolate (petiole up to 2 cm), 4-10 cm long, 6-16 mm wide. Inflo (petiole up to 2 cm), racemose usually solitary, densely many-flowered, much longer than leaves, up to 16 cm long, basally enclosed in spathe 5-7 mm long. Flowers very small, yellowish green, often purple-spotted. Sepals concave, deltoid-ovate, connate for half their length, 3-nerved, lateral nerves confluent above with central vein; dorsal sepal about 3 mm long, 3-3.3 mm wide; lateral sepals smaller. Petals triangular-obovate, truncate, 0.6 mm long, 1 mm wide. Lip fleshy, triangular, broadly rounded or subtruncate, transversely callose near middle, 0.6 mm long, 0.6 mm wide. Capsule ovoid, 5 mm long, 2 mm wide.

Flowers: November-July.

West Indies.

TOBAGO: Menna, near Caledonia, June 16, 1913, Broadway 4537 (*Herb. Gray* 2311).

TRINIDAD: November 30, 1845 (*Herb. Trin.* 169); Cunupia, March 23, 1892, Alexander s.n. (*Herb. Ames* 7453); St. Clair Experiment Station, April 12, 1908, Broadway s.n. (*Herb. Ames* 10676); Agua Santa, Arima, April 16, 1908, Broadway s.n. (*Herb. Ames* 10638, 11698); Caparo, April 28, 1908, Broadway 2318 (*Herb. Ames* 10639); Santa Cruz, February 27, 1911, Broadway s.n. (*Herb. Ames* 16567); Turure River District, June 16, 1917, Williams s.n. (*Herb. Trin.* 8779; *Herb. Ames* 67806); Manzanilla, May 4, 1918, Rogers s.n. (*Herb. Trin.* 8789; *Herb. Ames* 67805); August 12, 1919, Broadway s.n. (*Herb. Ames* 39723); May 17, 1920, Broadway s.n. (*Herb. Ames* 22020; *Herb. Gray* 2310); Matchepoorie, March 11, 1921, Britton & Britton 2226 (*Herb. Ames* 21464); Heights of Aripo, October 26, 1922, Broadway s.n. (*Herb. Trin.* 9885); Road to Maracas Bay, July 10, 1925, Williams, Freeman et al. s.n. (*Herb. Trin.* 11248); Ortinola Trail to El Tucuche, alt. 1700 ft. May 12, 1949, Simmonds 366 (*Herb. Trin.* 14339; *Herb. Ames* 68170); Aripo Valley, May 30, 1949, Baker s.n. (*Herb. Trin.* 14355); (*Herb. Trin.* 1967); (*Herb. Trin.* 1517); Cumaca, December, 1954, Downs & Aitken 10 (*Herb. Ames* 67847); Bradford s.n. (ex Cogniaux); Kuntze s.n. (ex Cogniaux); Fendler 775 (ex Cogniaux).

16. PLEUROTHALLIS R. Br.

Small to relatively large epiphytic, non-pseudobulbose herbs with caespitose or approximate to remote secondary stems arising from rhizome. Leaves usually solitary at apex of stems, often coriaceous, sessile or short-petiolate. Inflorescence terminal or rarely lateral, solitary or fasciculate, 1- to many-flowered and racemose. Flowers usually small, subtended by very small bracts. Sepals erect or spreading; dorsal sepal free or rarely shortly connate with lateral sepals at base; laterals free or more or less connate (sometimes to apex), sometimes basally gibbous. Petals usually shorter and narrower than sepals, often apically clavellate. Lip simple or 3-lobed, shorter or rarely somewhat longer than petals, often narrowed or cordate and articulated with column, usually

clawed; claw short or long; lateral lobes, if present, usually distinct, erect. Column equal to or shorter than lip, with foot at base, winged or wingless; foot (when present) very short or as long as column. Capsule subglobose or elongate-ovoid.

Pleurothallis: Greek, 'many branches', in reference, probably, to the commonly fasciculate inflorescence.

More than 500 species of the New World tropics and subtropics, especially in highland areas.

1. Leaves cordate2. *Pleurothallis archidiaconi*
- 1A. Leaves not cordate
 2. Spathes conspicuous, about 1 cm long or longer
 3. Petals ciliate. Leaves up to 12 cm long4. *Pleurothallis ciliata*
 - 3A. Petals eciliate. Leaves 15-20 cm long
 4. Lip deeply 3-lobed14. *Pleurothallis velaticaulis*
 - 4A. Lip undivided or, at most, only very obscurely 3-lobed...6. *Pleurothallis diffusa*
 - 2A. Spathes inconspicuous, minute
 5. Rhizomes more or less elongate. Stems not caespitose
 6. Lip undivided
 7. Lip sessile. Leaves oblong-ovate or oblong-spathulate ...9. *Pleurothallis ovalifolia*
 - 7A. Lip clawed. Leaves elliptic-oblong10. *Pleurothallis polygonoides*
 - 6A. Lip 3-lobed
 8. Leaves linear-lanceolate, up to 4 mm long1. *Pleurothallis acutissima*

- 8A. Leaves oblong-elliptic,
over 25 mm long..... 5. *Pleurothallis*
consimilis
- 5A. Rhizomes abbreviated.
Stems caespitose
9. Lip with a basal
disk..... 7. *Pleurothallis*
discoidea
- 9A. Lip without a basal
disk
10. Stems flattened and winged above.
Blade decurrent..... 13. *Pleurothallis*
sicaria
- 10A. Stems terete or subterete. Blade not
decurrent
11. Sepals pruinose or puberulent
without
12. Sepals pruinose without.
Sepals and petals eciliate..... 11. *Pleurothallis*
pruinosa
- 12A. Sepals puberulent without.
Sepals and petals ciliate 3. *Pleurothallis*
ciliaris
- 11A. Sepals glabrous
13. Sheaths dilated at apex,
mouth emarginate,
ciliate. Petals serrulate.. 8. *Pleurothallis*
orbicularis
- 13A. Sheaths not dilated at
apex, mouth not margi-
nate, eciliate. Petals not
serrulate..... 12. *Pleurothallis*
ruscifolia
1. *Pleurothallis acutissima* Lindl. *Fol. Orch.* (1859)
Pleuroth. No. 277, 43.
Humboldtia acutissima (Lindl.) O. Kuntze *Rev. Gen. Pl.* 2.
(1891) 667.
Pleurothallis sertularioides (Sw.) Sprengl. var. *trinitensis*
Griseb. *Fl. Brit. W. Ind. Isl.* (1864) 609.

Minute. Rhizome long, branching, almost thread-like, articulated. Secondary stems filiform, up to 4 mm, bearing 1 leaf. Leaves coriaceous, linear-lanceolate, acute or subobtusate, narrowed into short slender petiole, up to 15 mm long, 2 mm wide. Inflorescence solitary, 1-flowered (rarely 2- or 3-flowered), thread-like, 2-bracteolate above middle, up to 20 mm long. Flowers pale purple. Sepals membranaceous, erect, lanceolate or elongate-deltoid, long-acuminate, entire, 4 mm long, 1 mm wide; laterals free to base. Petals erect, similar to sepals, 3.8 mm long, 0.8 mm wide. Lip sessile, up to 3 mm long, 3-lobate; lobes acute, entire; lateral lobes much shorter than mid-lobe, obliquely triangular; mid-lobe 1 mm wide. Column clavate, 1.5 mm long, apically slightly toothed.

Brazil, British and Dutch Guianas, Trinidad.

TOBAGO: (ex Broadway, 1918).

TRINIDAD: Aripo, April 16, 1908, Broadway 2333 (*Herb. Ames* 10663); Aripo Savannah, February 13, 1915, Freeman s.n. (*Herb. Trin.* 8025; *Herb. Ames* 67922); Matura, September 1, 1925, Williams, Freeman & Cheesman s.n. (*Herb. N. Y.*; *Herb. Trin.* 11326); Aripo Savannah, Bradford s.n. (ex Cogniaux); Othmer 129, 232 (ex Cogniaux).

2. *Pleurothallis archidiaconi* Ames *Sched. Orch.* 9 (1925) 29.

Medium-sized. Secondary stems elongate, caespitose, 5-17 cm, few-sheathed, bearing 1 leaf. Sheaths tubular, appressed, smooth. Leaf coriaceous, ovate-lanceolate, cordate, acuminate, up to 8.5 cm long, 1.7-2.5 cm wide. Inflorescences 1-flowered, fasciculate, about 1 cm long, subtended by a short, complanate spathe. Dorsal sepal cucullate, narrowly elliptic; laterals connate, forming concave, orbicular lamina 4 mm long and 3 mm wide. Petals fleshy, deflexed, oblong, acute, glandular along margin, 5 mm long, about 1 mm wide. Lip fleshy, shortly clawed, entire, ovate from broad base, obtuse, 4 mm long, 3 mm wide, concave below middle with an inconspicuous conical thickening in front of claw, densely glandulose on outer surface. Column short, fleshy, about 1 mm long, apically entire.

Flowers: December-February.

Endemic to Trinidad.

TRINIDAD: Blanchisseuse, Verdant Valley, December 11, 1924, Hombersley s.n. (type *Herb. Ames* 29107; *Herb. Trin.* 10910); Cumaca, December 1954 (flowered, February 6, 1955), Downs & Aitken 11 (*Herb. Ames* 67846).

3. *Pleurothallis ciliaris* (Lindl.) L. O. Wms. in *Caldasia*, No. 5 (1942) 14.

Small. Stems 4- to 6-articulate, up to 6 cm. Leaves coriaceous lanceolate, obtuse, 4-6 cm long, 1.2-1.5 cm wide; petiole up to 6 mm. Inflorescences usually fasciculate, 1- to several-flowered above, about half as long as leaf. Flowers minute, purple or purple-spotted. Sepals membranaceous, subequal, elliptic, obtuse, puberulent without, ciliate, about 3.1 mm long, 1 mm wide; dorsal sepal keeled; lateral sepals connate nearly to apex. Petals minute, linear-elliptic, obtuse, ciliate, 2 mm long, 0.8 mm wide. Lip undivided, oblong-obovate, obtuse, ciliate, 1.8 mm long; disk sulcate. Column apically ciliate.

Mexico, Guatemala, Venezuela, Peru, Dutch Guiana, Trinidad.

TRINIDAD: January 8, 1861, Crueger 45 (*Herb. Trin.* 1824); Heights of Aripo, January 1922, Broadway s.n. (*Herb. Trin.* 9907; *N. Y. Bot. Gard.*; *Herb. Ames* 67822).

4. *Pleurothallis ciliata* Knowl. & Westc. *Flor. Cab.* 1 (1837) 39, t. 19.

Humboldtia ciliata (Knowl. & Westc.) O. Kuntze *Rev. Gen. Pl.* 2 (1891) 677.

Small to medium-sized, 12-18 cm. Secondary stem ascending, terete, sulcate, enveloped in conspicuous tubular sheaths, monophyllous. Leaf coriaceous, elliptic-lanceolate to oblong, cuneate, emarginate, 6-11 cm long, 1.5-5 cm wide. Inflorescence racemose, usually solitary, nodding, shorter than leaf, several-flowered. Sepals minutely ciliate; dorsal sepal erect, lanceolate, acute, 7 mm long, 2 mm wide; laterals connate almost to apex, forming an elliptic-ovate, 2-dentate lamina 6.5 mm long, 4 mm wide. Petals linear-lanceolate, coarsely ciliate, longer than column, 4 mm long, 1 mm wide. Lip undivided, short-clawed, linguiform, obtuse, concave, ciliate, two-keeled in central part, 3.5 mm long, 2 mm wide. Column clavate, about 3.5 mm long, 3-toothed.

Colombia, Peru, Venezuela, Dutch Guiana, Trinidad.

TRINIDAD: Agua Santa, Arima, April 16, 1908, Broadway 2341 (*Herb. Ames* 10643); Caparo, January 1, 1915, Broadway s.n. (*Herb. Trin.* 7840); Cedros, April 5, 1918, Sankeralli s.n. (*Herb. Trin.* 8791); Cuare River, January 25, 1930, Broadway 7449 (*Herb. Ames* 37545, 66919); Rapsey Estate, Aripo Valley, January 26, 1957, Downs & Aitken 53 (*Herb. Ames* 67800, 68570); Loddiges 13 (ex Cogniaux).

5. *Pleurothallis consimilis* Ames *Orch.* 7 (1922) 116.

Small. Rhizome repent with flexuous, glabrous roots. Secondary stems 1-1.5 cm apart, about 2 cm, strongly flattened, shorter than leaves, basal half enveloped in fibrous sheath. Leaf coriaceous, elliptic or oblong-elliptic, cuneate, emarginate, 2.5-3.5 cm long, 8-13 mm wide. Inflorescences 1 or 2, 1-flowered pedicels, basally covered with a fibrous sheath. Flowers membranaceous, 1.3 cm long. Dorsal sepal linear-oblong, acute, 8 mm long, 1.45 mm wide, 3-nerved. Lateral sepals obliquely semiovate, obtuse, 5 mm long, 2.5 mm wide, 3-nerved. Petals thin, narrowly rhomboid-lanceolate, acute or obtuse, in upper part serrulate, 3.8 mm long, 0.8 mm wide, 1-nerved. Lip 3-lobate, clawed, hastate, 3.8 mm long, 2.5 mm wide (across lateral lobes), with a callus; lateral lobes basal, spreading, very small, ovate-triangular; mid-lobe deltoid, 2.9 mm long, 1.8 mm wide, obtuse, ciliate, with 2 remote calluses in basal half. Column slender, 3.2 mm long, with 3 tooth-like wings.

Flowers: March-April.

British Guiana, Trinidad.

TRINIDAD: Valencia, March 25, 1920, Britton & Hazen 1026 (type *Herb. Ames* 20372; *Herb. Trin.* 10040); Arima, O'Meara Savannah, April 8, 1920, Broadway s.n. (*Herb. Trin.* 9329).

6. *Pleurothallis diffusa* Poepp. & Endl. *Nov. Gen. ac Sp.* 1 (1835) 49, t. 86.

Medium-sized, with secondary stems erect or ascending, straight or arching, glabrous, longer than leaves, up to 30 cm. Leaves coriaceous, sessile or subsessile, ovate-oblong, often oblique, bluntly acuminate, rounded, many-nerved, up to 23 cm long, 7 cm wide (usually 19×5 cm). Inflorescence racemose, fasciculate, very slender, ascending or nodding, longer than leaves, up to

25 cm long, many-flowered, basally enclosed in large spathe up to 3.5 cm long. Bracts membranaceous, minute, 2-3 mm long. Flowers small, short-pedicellate, secund, white or pale yellowish. Sepals membranaceous, erect, 3.5-4 mm long; dorsal sepal concave, elliptic-lanceolate, 3-4 mm long; laterals connate, forming elliptic-ovate, naviculate lamina up to 2.5 mm wide. Petals erect, subulate or club-shaped with a tendency towards a fleshy thickening at apex, 3-3.4 mm long, 0.3 mm wide. Lip fleshy, ovate, shorter than petals, wider than long, very shortly clawed, entire and minutely apiculate, sometimes very obscurely 3-lobate with broadly rounded sides strongly erect, about 1.5 mm long. Column stout, truncate, 1 mm long.

Flowers: March-November.

Bolivia and Peru northward to Trinidad.

TRINIDAD: (*Herb. Trin.* 6432); Aripo, November 11, 1863, (*Herb. Trin.* 1818); Heights of Aripo, April 11, 1922, Broadway s.n. (*Herb. Trin.* 10567); 1924 (*Herb. Ames* 30485); January 6, 1925, Hombersley s.n. (*Herb. Trin.* s.n.; *Herb. Ames* 68178); Blanchisseuse, October 27, 1927, Stone s.n. (*Herb. Trin.* 11866); Mount Aripo, 1200 ft., October 24, 1949, Simmonds 409 (*Herb. Trin.* 14443); Aripo Cave region, March 20, 1955, Downs & Aitken 33 (*Herb. Ames* 67311, 67845).

7. *Pleurothallis discoidea* Lindl. in *Bot. Reg.* 31 (1835) sub. t. 1797.

Up to 25 cm. Stems slender, ascending, arcuate, 3.5-10 cm long, with 1 appressed sheath 2 cm long. Leaves coriaceous, sessile, ovate-lanceolate to linear-oblong, rounded, obtusely acuminate and minutely 3-denticulate. Inflorescence 1-flowered, 7-10 mm long. Flowers yellowish. Sepals membranaceous, subequal, ovate, obtuse or acute, 4.5-5 mm long, 2.3-2.6 mm wide; laterals connate to apex. Petals erect, linear-subulate, acute, 3.5 mm long, 0.3-0.4 mm wide. Lip fleshy, narrowly short-clawed, lightly granulose, cordate-ovate to triangular-sagittate, acutish or obtuse, with a basal disk, 3 mm long, 2.3 mm wide at base, basal lobes slightly retrorse. Column fleshy.

Flowers: February-April.

Endemic to Trinidad.

TRINIDAD: Arima, February 1846 (*Herb. Trin.* 1623)?; Arima, Woods, October 26, 1865 (*Herb. Trin.* 1963)?; Cunupia, March 23, 1892, Alexander s.n. (*Herb. Ames* 7455); Tucuche, January 29, 1893, Hart s.n. (*Herb. Trin.* 5206)?; Arima, July 1, 1908, Broadway s.n. (*Herb. Ames* 12722); Turure River District, June 16, 1917, Williams s.n. (*Herb. Trin.* 8780)?; Mount Tamana, April 18, 1920, Freeman s.n. (*Herb. Trin.* 9031)?; base of Mount Tamana, April 8, 1920, Britton, Britton & Hazen 1965 (*Herb. Gray* 2873); Heights of Aripo, January 10-26, 1922, Broadway 9882 (*Herb. Ames* 22679); Morne Bleu, February 7, 1922, Broadway s.n. (*Herb. Trin.* 10689)?; Heights of Aripo, April 11, 1922, Broadway s.n. (*Herb. Trin.* 10564); Aripo, September 25, 1924, Freeman s.n. (*Herb. Trin.* 10796)?; Saut d'Eau, December 14, 1930, Broadway 7439 (*Herb. Ames* 37343); Caparo, Broadway 2338 (*Herb. Ames* 10734); Cumaca Road, third mile, December 27, 1948, Simmonds 316 (*Herb. Trin.* 14239)?; Cumaca, Aripo Heights, Downs & Aitken 13 (*Herb. Ames* 67328); Arima Valley, January 1, 1956 (flowered), Downs & Aitken 13A (*Herb. Ames* 67903); Arima Valley, January 1, 1956 (flowered), Downs & Aitken 13B (*Herb. Ames* 67902).

8. *Pleurothallis orbicularis* (Lindl.) Lindl. in *Bot. Reg.* 28 (1842) Misc. p. 79.

Specklinia orbicularis Lindl. *loc. cit.* 24 (1838) p. 31.

Small, densely caespitose, up to 8 cm. Stems 3- to 6-articulated, hirtellous sheaths dilated at mouth, with thickened, ciliate margin, up to 5 cm long, usually shorter. Leaf coriaceous, short-petiolate, elliptic-ovate or almost rounded, marginate, acute and minutely 3-denticulate, 3-4 cm long, about 12-15 [22 fide Cogniaux] mm wide. Inflorescence geminate or fasciculate, 2- (rarely 4-) flowered, 1.5 cm long or shorter. Flowers open, secund, yellow-green or somewhat purplish, with deep purple lip. Sepals membranaceous, lanceolate, acute, glabrous, 2.8-3 mm long, 0.7 mm wide; laterals connate for half their length. Petals oblong-lanceolate, acuminate, lacinate-serrulate, 1-1.3 mm long, 0.3-0.5 mm wide. Lip fleshy, shortly clawed, linguiform, aristate, ciliate along upper margin, 2 mm long, 0.5 mm wide. Column clavate, 1 mm long, apically lacerate, dentate on each side of apex.

Flowers: May-June (?)

Colombia, British Guiana, Grenada, Trinidad.

TRINIDAD: December 7, 1845 (*Herb. Trin. s.n.*)?; Arima, February 15, 1846 (*Herb. Trin.* 893)?; Botanic Gardens, September 19, 1889, Broadway s.n. (*Herb. Trin.* 3905)?; Turure River District, June 16, 1917, Williams s.n. (*Herb. Trin.* 8778); Mora Forest, June 26, 1925, Broadway s.n. (*Herb. Ames* 30414); Matura, February 1955, Downs & Aitken 63 (*Herb. Ames* 67810); Arima, Aripo Savannah, Crueger s.n. (ex Cogniaux); Bradford s.n. (ex Cogniaux); Othmer 322 (ex Cogniaux).

9. *Pleurothallis ovalifolia* (Focke) Rehb. f. in Walpers *Ann. Bot.* 6 (1861) 188.

Stelis ovalifolia Focke in *Tijdschr. Natuur. Wetensch.* 2 (1249) 202.

Minute, up to 1 cm. Rhizome slender with short roots. Stem 1-3 mm long, thread-like, covered with hyaline, tubular, lepanthiform sheaths. Leaves chartaceous, sessile or short-petiolate, oblong-ovate, obtuse or rounded, often minutely apiculate, 6-10 mm long, 2.5-3.5 mm wide. Inflorescence solitary, 1- or 2-flowered, usually longer than leaves. Flowers nodding, green-yellow. Sepals ovate, acutish or rather obtuse, 1.5-1.8 mm long, about 0.8 mm wide; laterals free. Petals elliptic-lanceolate, acute, 1.2 mm long. Lip sessile, rhombic-ovate, concave, acute, 1 mm long, 0.6 mm wide. Column very short. Capsule obovoid, up to 2 mm long.

Brazil, Venezuela, Dutch Guiana, Cuba, Trinidad and Tobago.

TOBAGO: Great Dog River Valley, October 12, 1937, Sandwith 1750 (*Herb. Ames* 64122).

TRINIDAD: January 13, 1846 (*Herb. Trin.* 412); Valencia, April 16, 1920, Britton s.n. (*Herb. Trin.* 9245); Base of Mount Tamana, April 18, 1920, Britton, Britton & Hazen 1969 (*Herb. Ames* 20356); Matchepoorie, March 11, 1921, Britton & Britton 2221 (*Herb. Ames* 21172); Arena forests, near Cumuto, December 3, 1926, Broadway 6433 (*Herb. Ames* 38347); Cumuto-Tumpuna

Road, October 1, 1953, Ayliffe 145 (*Herb. Ames* 67011); Diego Martin, May 1956, Downs & Aitken (*Herb. Ames* 67011A, 69798).

10. *Pleurothallis polygonoides* Griseb. *Fl. Br. W. Ind. Isl.* (1864) 609.

Minute. Rhizome long, branched, thread-like, many-jointed. Secondary stems slender, up to about 4 mm long. Leaves coriaceous, elliptic-oblong, obtuse, short-petiolate (petiole usually less than 1 mm long, slender) 8-18 mm long, about 4 mm wide. Inflorescence solitary, 1-flowered, thread-like, up to 5 mm long. Flowers pale purple. Sepals thinly membranaceous, ovate, acute, entire, 1.5 mm long, 0.8 mm wide; laterals free to base. Petals membranaceous, oblong, acute, 1.6 mm long, 0.6 mm wide. Lip shortly clawed, ovate-deltoid, acute, 1.4 mm long, 0.7 mm wide, slightly constricted or with short lateral lobes near middle. Column fleshy, 0.5 mm long, slightly toothed.

Endemic to Trinidad.

TRINIDAD: Cunupia, March 22, 1892, Alexander s.n. (*Herb. Ames* 7447); Toco Road, Valencia, April 16, 1920, Britton, Hazen & Mendelson 1794 (*Herb. Ames* 20371)?; Base of Mount Tamana, April 18, 1920, Britton, Britton & Hazen 1790 (*Herb. Ames* 20370); Broadway s.n. (*Herb. Ames* 12723); Near Arima, Crueger s.n. (ex Cogniaux); Arima, Bradford s.n. (ex Cogniaux).

11. *Pleurothallis pruinosa* Lindl. in *Bot. Reg.* 28 (1842) Misc. p. 75.

Up to 8 cm tall. Stems densely caespitose, ascending, thread-like, 1- or 2-articulated, sheathed at base and below middle, 2-8 cm long. Leaf fleshy, sessile, lanceolate or lanceolate-oblong, 2-denticulate, about 3.5 cm long, 6-8 mm wide. Inflorescence solitary or in pairs, apically several-flowered, up to 4 cm long. Flowers yellow or green-white, 2-labiate, small. Sepals thinly membranaceous, equal, ovate, acute, pruinose without, 2.6-3 mm long, 1.7 mm wide; dorsal sepal somewhat keeled; laterals connate nearly to apex. Petals linear-lanceolate, acute, 2.5 mm long, 0.8 mm wide. Lip membranaceous, undivided, shortly clawed, ovate to ovate-deltoid, 1.6 mm long, 1 mm wide; disk 3-keeled. Column thick, 1 mm or less in length. Capsule elliptic, 4 mm long.

Flowers: November-January.

West Indies, Venezuela, British Guiana.

TRINIDAD: January 8, 1861 (*Herb. Trin.* 1825); Marabella, October 26, 1865 (*Herb. Trin.* 1964);? Cunupia, March 22, 1892, Alexander s.n. (*Herb. Ames* 7452); Tamana, February 19, 1915, Broadway s.n. (*Herb. Trin.* 8832)?; Base of Mount Tamana, April 18, 1920, Britton, Britton & Hazen 1963 (*Herb. Gray* 2657);? Matchepoorie, March 11, 1921, Britton & Britton 2230 (*Herb. Ames* 21173);? Heights of Aripo, January 10-26, 1922, Broadway s.n. (*Herb. Trin.* 9881; *Herb. Ames* 22681); Maracas, November 7, 1924, Broadway 5460 (*Herb. Ames* 39696A); Maraval, February 25, 1926, Broadway 5975 (*Herb. Ames* 32171, 39696); ? Morne Bleu, November 15, 1927, Williams s.n. (*Herb. Trin.* 11875); Maracas Falls, December 5, 1955, Downs & Aitken 57 (*Herb. Ames* 67792).

12. *Pleurothallis ruscifolia* (Jacq.) R. Br. in Aiton *Hort. Kew.*, ed. 2, 5 (1813) 211.

Epidendrum ruscifolium Jacq. *Enum. Pl. Carib.* (1760) 29.

Small to medium-sized, densely caespitose, up to about 30 cm. Secondary stem slender, 1-articulated near middle, up to about 20-25 cm. Leaves coriaceous, oblong-lanceolate to lanceolate-ovate, acutish or acuminate, 8-20 cm long, 2-4.5 cm wide, contracted into a petiole 1-2 cm long. Inflorescences numerous, from 1- to many-flowered, 10 cm long. Flowers yellowish green or pale green. Sepals membranaceous, linear-lanceolate, long-acuminate, cucullate; dorsal sepal 6-9 mm long, 1.5-3 mm wide; laterals 6-9 mm long, 2-3 mm wide, connate their entire length. Petals subulate to linear-lanceolate, acute, 3.5-5 mm long, 0.3 mm wide. Lip fleshy, undivided, ovate or oblong-cordate, acutish or obtuse, 1.5-1.8 mm long, 1.4 mm wide. Column 0.8 mm long.

Flowers: January.

Middle America, West Indies, tropical South America.

TRINIDAD: Las Cuevas, January 4, 1861 (*Herb. Trin.* 1835); Heights of Aripo, January 10-26, 1922, Broadway s.n. (*Herb. Trin.* 9883; *Herb. Ames* 22680); Aripo Cave, March 20, 1955, Downs & Aitken 32 (*Herb. Ames* 67312); Parker s.n. (ex Cogniaux); Crueger s.n. (ex Cogniaux).

13. *Pleurothallis sicaria* Lindl. in *Bot. Reg.* 27 (1841) Misc. p. 91.

Medium-sized. Stems robust, above broadly 3-ulate, basally 1-articulated, 12-21 cm; lateral wings expanded above. Leaf coriaceous, sessile and decurrent, elliptic-oblong, obtuse and 3-denticulate, 9-12 cm long, 2-2.5 cm wide. Inflorescences fasciculate, 2- or 3-flowered. Flowers short-pedicellate, green with purple stripes. Sepals submembranaceous, oblong-lanceolate, acute, slightly puberulent without, 7 mm long, 2 mm wide; laterals connate near base, free above. Petals lanceolate, short-acuminate, 4 mm long, 1 mm wide. Lip fleshy, oblong, lanceolate, acute with small tooth on each side, 4 mm long, 1.5 mm wide; disk 2-cristate. Column slender, 3.5 mm long, 3-dentate.

Colombia, Venezuela, British Guiana, Trinidad.

TRINIDAD: Hort. Loddiges (ex Cogniaux).

14. *Pleurothallis velaticaulis* Rehb. f. in *Linnaea* 22 (1849) 824.

Small to large, caespitose, up to 30 cm. Secondary stems to about 40 cm, usually slender, partly enveloped in tubular sheaths. Leaves 8-20 cm long, 1.5-9 cm wide, narrowly oblanceolate to ovate, tapering into a long petiole (up to 3 cm long). Inflorescence racemose, densely many-flowered, shorter than leaf. Sepals 3-5 mm long, 1-1.8 mm wide; dorsal sepal usually oblong-lanceolate, acutish; laterals variously connate (when young, connate nearly their entire length). Petals oblong or oblanceolate, rather obtuse or abruptly acutish, 1.8 mm long, 0.5-0.9 mm wide. Lip membranaceous, 3-lobate, subrhombic or suborbicular, obtuse, 1.2-2 mm long, 1-1.5 mm wide; lateral lobes fleshy, small, auriculate, usually erect. Column 1.6 mm long.

Flowers: August-February.

Middle America, West Indies, Venezuela, Peru, Trinidad.

TRINIDAD: August 28, 1892, Hart s.n. (*Herb. Trin.* 4782; *Herb. Ames* 67818); Morne Bleu, February 7, 1922, Freeman s.n. (*Herb. Trin.* 10688); Between El Tucuche and Naranjo, January 2, 1948, Simmonds 235 (*Herb. Trin.* 14072; *Herb. Ames* 68182).

17. OCTOMERIA R. Br.

Epiphytic herbs, often with long-creeping rhizomes (primary stems) and secondary stems apically 1-leaved, basally 1- to many-sheathed. Leaves sessile or short-petiolate, leathery. Flowers small, inconspicuous, usually in dense fascicles at tip of stem at base of leaves, rarely singly or in pairs. Sepals spreading, free or basally very shortly connate. Petals similar to sepals or slightly shorter. Lip very short but exceeding column, articulated to tip of column-foot, entire or 3-lobed, apically spreading or reflexed; disk usually shortly 2-lamellate. Column shorter than petals, erect, slightly incurved, wingless, footless. Pollinia 8, oblong-clavate. Capsule small, shortly oblong-cylindric, beakless.

Octomeria: Latin, 'eight', in reference to the eight pollen-masses, a character which distinguishes the genus from *Pleurothallis*.

Fifty or more species from West Indies, Middle and South America.

1. Flowers solitary (rarely geminate)1. *Octomeria graminifolia*
- 1A. Flowers several to many, fasciculate
2. Terminal lobe of lip undulate-dentate near front, apically deeply emarginate2. *Octomeria grandiflora*
- 2A. Terminal lobe of lip 3-dentate.....3. *Octomeria tridentata*
1. *Octomeria graminifolia* (L.) R. Br. in Aiton *Hort. Kew.*, ed. 2, 5 (1813) 211.
Epidendrum graminifolium L. *Sp. Pl.* ed. 2 (1763) 1363.

With long-creeping primary stems. Secondary stems slender, 3- or 4-articulate, 3-7 cm. Leaves short-petiolate, linear or linear-lanceolate, acute, basally attenuate, 4-7 cm long, 5-9 mm wide.

Inflorescence 1- (very rarely 2-) flowered. Flowers pale yellow or yellow-green. Sepals ovate-lanceolate, acute, 5-8 mm long, 2-3 mm wide. Petals lanceolate, acute, 6-8 mm long, 2-2.5 mm wide. Lip rather fleshy, shortly and narrowly unguiculate, ovate-oblong in outline, 4-6 mm long, 2-3 mm wide, 3-lobed, margin of lobes entire; median disk fleshy, remotely 2-keeled. Column 2-2.5 mm long.

Flowers: April-June.

West Indies.

TOBAGO: Menna, June 16, 1913, Broadway s.n. (*Herb. Gray* 2902); Caledonia, Broadway 3121 (ex Cogniaux).

TRINIDAD: Tucuche, April 4, 1920, Britton & Freeman 9096 (*Herb. Trin.*); Mount Tucuche, April 3-5, 1920, Britton, Hagen & Mendelson 1270 (*Herb. Ames* 20369; *Herb. Trin.* 9485); Morne Bleu, November 15, 1927, Williams s.n. (*Herb. Trin.* 11877); Morne Bleu, April 9, 1955, Downs & Aitken 47 (*Herb. Ames* 67836).

2. *Octomeria grandiflora* Lindl. in *Bot. Reg.* 28 (1842) Misc. p. 64.

Robust, with a creeping rhizome or primary stem. Secondary stems 3- to 5-articulated, 6-20 cm. Leaves long-petiolate, 10-20 cm long; lamina linear-lanceolate, acuminate, basally long-attenuate, 7-15 mm wide. Inflorescence with 2 to 4 flowers at a time. Flowers spreading or nodding, yellowish or white-yellow, white-green or white. Sepals equal or subequal, ovate-lanceolate, acute, 10-12 mm long, 3.5-5 mm wide. Petals oblong, acute, 9-11 mm long, 2.5-3.5 mm wide. Lip rather fleshy, shortly and narrowly unguiculate, obovate-subrotund, 5-6 mm long, 4-5 mm wide, 3-lobed; lateral lobes small, erect, ovate-oblong, margin entire; mid-lobe broadly obovate-cuneate, undulate-denticulate towards front, deeply emarginate; median disk fleshy, 2-keeled. Column 3-4 mm long.

Brazil, Bolivia, Trinidad.

TRINIDAD: (*Herb. Trin.* 5986) ?; Cumuto, April 12, 1918, Rogers s.n. (*Herb. Trin.* 8792) ?; January 6, 1927, Broadway 6515 (*Herb. Ames* 66920); Las Cuevas Bay, November 1958, Downs & Aitken s.n. (*Trin. Reg. Virus Lab. Herb.* 286).

3. *Octomeria tridentata* Lindl. in *Bot. Reg.* 25 (1839) Misc. p. 35.

Rhizome creeping. Secondary stems slender, somewhat swollen above, 3- or 4-articulated, up to 10 cm. Leaves coriaceous, short-petiolate, linear-lanceolate, acute, basally attenuate, about 8-8.5 cm long, 8 mm wide. Inflorescence densely many-flowered. Flowers fasciculate, greenish white with base of lip reddish or brownish. Sepals lanceolate, long-acuminate, about 6 mm long, 1.5 mm wide. Petals linear-lanceolate, long-acuminate, 6 mm long, 1.3 mm wide. Lip fleshy, shortly and narrowly clawed, triangular-ovate in outline, basally rather truncate, 3 mm long, about 3 mm wide, 3-lobed, margin of lobes entire; lateral lobes small, erect, rounded; mid-lobe triangular-ovate, truncate, apiculate or 3-dentate; disk in middle fleshy, remotely 2-keeled. Column 1.5-2 mm long.

West Indies, tropical South America.

TRINIDAD: Between Arima-Blanchisseuse Road and Morne Bleu. Alt. 600-750 m, March 8, 1956, Smith 10028 (*Herb. Gray* 6064).

18. *MALAXIS Soland. ex Sw.*

Herbs small, terrestrial or epiphytic, erect, often with creeping rhizome. Stem slender, swollen or pseudobulbose below. Leaves membranaceous, usually 1 to 3, basally forming a sheathing petiole. Inflorescence a terminal, few- to many-flowered, spicate or sub-umbellate raceme. Flowers small, inconspicuous. Bracts small, narrow. Sepals free or (laterals) connate, subequal, spreading. Petals as long as or shorter than sepals, narrow, sometimes filiform. Lip erect or spreading, sessile, often concave, entire or variously lobed, often auriculate below. Column short, terete, sometimes toothed. Capsule small, usually ellipsoidal or ovoid, without a beak.

Malaxis: Greek, 'softening', referring probably to the thin, membranaceous and tender texture of the plant.

Approximately 150 species of tropical and temperate parts of the Old and New World.

1. Leaves remote. Raceme more or less elongate. Lip narrowly hastate1. *Malaxis Massonii*

- 1A. Leaves subopposite. Raceme very short, corymbiform. Lip broadly ovate-hastate, almost as wide as long 2. *Malaxis umbelliflora*

1. *Malaxis Massonii* (Ridl.) O. Kuntze *Rev. Gen. Pl.* 2 (1891) 673.

Microstylis Massonii Ridl. in *Journ. Linn. Soc. Lond., Bot.* 24 (1887) 323.

Rhizome stout, long-repent. Stem slender, 10 cm, basally swollen. Leaves 2, remote, lowermost larger, broadly ovate, obtuse, petiolate, 7-8 cm long, 5.5-6 cm wide; petiole spreading, 2.5 cm long, forming a sheath 2.5 cm long. Scape stoutish, erect, subterete, 22 cm long, basally long-naked. Raceme compact, many-flowered, 5 cm long. Flowers small; pedicels almost erect, 12 mm long. Bracts lanceolate, acuminate, short. Dorsal sepal broadly lanceolate, rather obtuse; laterals narrower, lanceolate-ligulate, deflexed. Petals narrowly linear. Lip narrow, hastate, acute; auricles large, round-obtuse. Column large; rostellum large.

St. Kitts, Dominica, Trinidad.

TRINIDAD: Cruieger s.n. (ex Cogniaux).

2. *Malaxis umbelliflora* Sw. *Prodr.* (1788) 119.

Microstylis umbelliflora (Sw.) Hitchc. in *Mo. Bot. Gard. Rept.* 4 (1893) 132.

Up to 35 cm. Stem pseudobulbose at base. Leaves 2, subopposite, unequal (lower leaf larger), ovate, acute, rounded, 5-12 cm long, 3-7 cm wide; petiole long-sheathing. Inflorescence short (1-1.5 cm), umbellate-corymbose, densely many-flowered. Flowers small, pale green; pedicels filiform, lowermost up to 13 mm long. Bracts 2-4 mm long. Sepals about 3 mm long, 1.2-1.5 mm wide, obtuse to rounded; dorsal sepal deflexed, ovate-elliptic; laterals ovate-oblong. Petals flexuous, linear to subfiliform, 1.5-2.5 mm long. Lip fleshy, concave, ovate-hastate, 4 mm long, 2.5-3 mm wide; basal auricles rounded. Column 0.8 mm long. Capsule ellipsoidal, angled, 9 mm long.

Flowers: August.

West Indies

TOBAGO: Forest reserve above Caledonia (ex Broadway, 1918).

TRINIDAD: Heights of Aripo, January 10-26, 1922, Broadway s.n. (*Herb. Trin.* 9896); El Tucuche, August 14, 1934, Nicholas s.n. (*Herb. Trin.* 13061); Mt. Chaguaramal, Northern Range, December 14, 1958, Downs & Aitken s.n. (*Trin. Reg. Virus Lab. Herb.* 295); St. Ann's, Cruieger s.n. (ex Cogniaux).

19. LIPARIS L. C. Rich.

Herbs small, terrestrial or epiphytic. Stem leafy, pseudobulbose. Leaves from 1 to few, basal, petiolate. Inflorescence a laxly few- to several-flowered terminal raceme. Flowers usually small and inconspicuous. Sepals free, spreading. Petals usually much narrower than sepals. Lip erect or spreading, adnate to base of column, usually shortly clawed, entire or obscurely 3-lobed, often emarginate. Column long, incurved, footless, above with narrow wings laterally. Capsule small, ellipsoidal to obovoid.

Liparis: Greek, 'fat', in reference to the usually somewhat fleshy leaves.

About 200 species of tropical and temperate parts of the Old and New World.

1. Leaf solitary. Lip not broadest above middle.....2. *Liparis vexillifera*
- 1A. Leaves two or more. Lip broadest above middle.....1. *Liparis elata*
1. *Liparis elata* Lindl. in *Bot. Reg.* 14 (1828) t. 1175.

Terrestrial, 10-50 cm. Pseudobulbs conical, up to 5 cm, sheathed with bases of petioles. Leaves membranaceous, usually 3 to 5, rosulate, ovate to elliptic-ovate, acute, 6-30 cm long, 4-11 cm wide, bract-like above. Inflorescence (usually 10- to 20-flowered, up to 25 cm long. Flowers purplish or greenish with purple streaks; lip purple; ovaries about 10 mm long. Bracts lanceolate, 8 mm long. Sepals usually ovate-elliptic, obtuse; dorsal sepal 5-7 mm long, 2-3 mm wide; laterals slightly falcate, revolute, 4-6 mm long, 2-2.5 mm wide. Petals linear-oblancoate, obtuse, 5-6 mm long, 1-1.8 mm wide. Lip fleshy, obovate or obcordate, broadly cuneate below, truncate or emarginate, basally very obscurely lobulate, 4-5.5 mm long, 4-5 mm wide. Column stout, 4-5 mm long. Capsule obovoid, 15 mm long, 6 mm in diameter.

Florida, West Indies, Mexico, Middle America, northern South America.

TRINIDAD: Crueger s.n. (ex Cogniaux).

2. *Liparis vexillifera* (Llave & Lex.) Cogn. in Martius *Fl. Bras.* 3, pt. 4 (1895) 289.

Cymbidium vexilliferum Llave & Lex. *Nov. Veget. Descr.* 2 (1825) 11.

Liparis vexillifera (Llave & Lex.) Cogn. var. *Galeottiana* Ames & Corr. in *Bot. Mus. Leaflet. Harv.* 10 (1942) 79.

Terrestrial, up to 25 cm. Pseudobulbs spherical or ovoid-conical, up to 2 cm long, sheathed with bases of petiole. Leaf thickly membranaceous, usually solitary, lanceolate to oblong-elliptic, acute, 6–12 cm long, 1.5–3.5 cm wide. Inflorescence often up to 30-flowered, up to 14 cm long. Flowers yellowish green, sometimes purple-streaked; lip green with purple marks; pedicellate ovaries up to 10 mm long. Bracts lanceolate, basally about 14 mm wide. Sepals oblong-lanceolate, obtuse; dorsal sepal 6–9 mm long, 1.7–2.3 mm wide, marginally revolute; laterals 6–8 mm long, 2–3 mm wide. Petals linear, obtuse, about 8 mm long, 1 mm wide. Lip thin, ovate-oblong, usually obtuse, undulate, obscurely 3-lobed, about 8 mm long, 6 mm wide. Column about 4 mm long. Capsule ellipsoid, 3-keeled, about 1 cm long.

West Indies, Mexico, Middle America, most of tropical South America.

TRINIDAD: Savannah above St. Joseph, July 30, 1848 (*Herb. Trin.* s.n.); Crueger s.n. (ex Cogniaux).

20. *HEXISEA* Lindl.

Epiphytic herbs. Stems simple or branched, segmented; thickened alternating with constricted segments. Sheaths numerous, scarious, mostly arising from constricted sections. Leaves 1 or 2, arising from apex of swollen segments. Inflorescences terminal, racemose, abbreviated, few-flowered. Flowers small, commonly brightly coloured, on short peduncles hidden by leathery, imbricating sheaths. Sepals erect or spreading; dorsal sepal free; laterals basally somewhat united. Petals similar to sepals. Lip simple or lobulate, erect, connate with base of column, forming

a fleshy, pouch-like swelling; lamina flattened above. Column short, adnate to lip below middle, apically broad, 3-lobed.

Hexisea: Greek, 'six like parts', in reference to the similarity of the petals and sepals.

Five or 6 species of Middle America, northern South America, Grenada, Trinidad.

Hexisea reflexa (Lindl.) Rehb. f. in Grisebach *Fl. Br. W. Ind. Isl.* (1864) 623.

Scaphyglottis reflexa Lindl. in *Bot. Reg.* 25 (1839) Misc. p. 20.

Stems proliferous, hanging, 30-50 cm long, loosely segmented; segments slender, terete, not grooved or, at most, only slightly so, 6-10 cm long, bearing 1 leaf at apex. Leaves subterete, thickish, grooved above, sessile, linear-subulate, acute, 8-12 cm long. Pedicels 3-8 mm long. Inflorescences abbreviated, subsessile, contracted. Sepals narrowly lanceolate, acute, about 5 mm long. Petals linear-lanceolate, short-acuminate, 4-5 mm long. Lip recurved, 2-lobed, triangularly fan-shaped or broadly obovate; callus ternate, rounded towards base.

Flowers: September-May.

Hispaniola, Grenada, Trinidad, Tobago, Venezuela, Surinam, northern Brazil.

TOBAGO: 'Central part of the island' (ex Broadway, 1918).

TRINIDAD: Caparo, April 28, 1908, Broadway s.n. (*Herb. Ames* 10694, 10695); Turure River District, June 16, 1917, Williams s.n. (*Herb. Trin.* 8776); Heights of Aripo, January 10-26, 1922, Broadway s.n. (*Herb. Ames* 22685; *Herb. Trin.* 9891); Maraval, September 30, 1924, Freeman s.n. (*Herb. Trin.* 11204; *Herb. Ames* 66944); Cumaca, November 1954, Downs & Aitken 4 (*Herb. Ames* 67853); Arima-Blanchisseuse Road 10th mile, March 23, 1956, Simmonds s.n. (*Herb. Trin.* 15387; *Herb. Ames* 68203); Crueger 42 (ex Cogniaux); Fendler 814 (ex Cogniaux); Caparo, Bradford s.n., (ex Cogniaux); Broadway 2328 (ex Cogniaux).

21. EPIDENDRUM L.

Epiphytic herbs or sub-shrubs with or without pseudobulbs. Stems erect, creeping or pendent, simple or branched, leafy or sheathed. Leaves 1 to numerous, distichous along stem, clustered at end of stem or branches or borne at or near apex of pseudobulb, terete or flat, membranaceous to thickly carnose. Inflorescence usually terminal, seldom lateral from leafy shoot, simple to compound, 1- to many-flowered, erect or nodding. Flowers minute to large, variable in colour. Sepals free, subequal, spreading or reflexed. Petals similar, usually much narrower than sepals. Lip simple to 3-lobed, smooth or callose, nearly free from column or variously adnate to it. Column short or elongated, with or without lateral wings or auricles. Capsule various, usually ellipsoid.

Epidendrum: Greek, 'upon trees', in reference to the epiphytic habit of most species of the genus.

Eight hundred or more species of the New World tropics, north to North Carolina, south into the Argentine.

1. Stems with true pseudobulbs(Section *Encyclium*)
 2. Pseudobulbs bearing 1 (very rarely 2) leaves
 3. Lip deeply 3-lobed2. *Epidendrum Bradfordii*
 - 3A. Lip undivided
 4. Leaves linear, 7-13 cm $\times$ 5-7 mm. Column free.....21. *Epidendrum Ottonis*
 - 4A. Leaves elliptic to elliptic-oblong, 10-30 cm $\times$ 15-45 mm. Column connate with lip for more than half its length.....8. *Epidendrum fragrans*
 - 2A. Pseudobulbs bearing 2 or more (very rarely single) leaves
 5. Lip conspicuously fimbriate-ciliate on sides.....3. *Epidendrum ciliare*

5A. Lip not fimbriate-ciliate

6. Lip undivided or obscurely 3-lobed

7. Flowers solitary 9. *Epidendrum fusiforme*

7A. Flowers several to numerous..... 5. *Epidendrum crassilabium*

6A. Lip deeply 3-lobed

8. Mid-lobe of lip minute, much smaller than lateral lobes22. *Epidendrum pygmaeum*

8A. Mid-lobe of lip conspicuously larger than lateral lobes.

9. Column sharply reflexed in middle.....19. *Epidendrum oncioides*

9A. Column almost straight...20. *Epidendrum oncioides* var. *gravidum*

1A. Stems without true pseudobulbs or, rarely, with fusiform stems[Section **Euepidendrum** (incl. *Barkeria*)]

10. Leaves not articulated to sheaths.....25. *Epidendrum Schlechterianum*

10A. Leaves articulated to sheaths

11. Inflorescence abbreviated or sub-umbellate

12. Lip entire or obscurely 3-lobed

- 13. Leaves elliptic to oblong-lanceolate. Lip subquadrate to reniform or transversely oval in outline 7. *Epidendrum difforme*
- 13A. Leaves linear to linear-lanceolate. Lip ovate to ovate-lanceolate in outline
 - 14. Petals linear. Lip adnate to column..23. *Epidendrum ramosum*
 - 14A. Petals ovate-rhomboid to elliptic-ovate. Lip free from column.....27. *Epidendrum stenopetalum*
- 12A. Lip deeply 3-lobed
 - 15. Leaves elliptic to oval, obtuse17. *Epidendrum nocturnum*
 - 15A. Leaves linear, rather acute.....18. *Epidendrum nocturnum* var. *minus*
- 11A. Inflorescence not abbreviated nor subumbellate (at least with distinct rhachis)
- 16. Lip undivided
 - 17. Leaves very membranaceous. Lip markedly broader than long ...31. *Epidendrum vincentinum*
 - 17A. Leaves coriaceous or fleshy. Lip longer than broad (rarely subequally long and broad)
 - 18. Stems much-branched (at least, when mature)
 - 19. Bracts distinctly narrow, coriaceous, laxly distichous.....23. *Epidendrum ramosum*

- 19A. Bracts broad, very scarious,
commonly densely imbricate 28. *Epidendrum*
strobiliferum
- 18A. Stems simple, from creeping rhi-
zome
20. Leaves elliptic-oblong. Ped-
uncle with 2 wings.....24. *Epidendrum*
rigidum
- 20A. Leaves linear or linear-
oblong. Penduncle wingless...11. *Epidendrum*
Hombersleyi
- 16A. Lip divided (usually into 3 lobes)
21. Mid-lobe of lip very thick-fleshy..... 4. *Epidendrum*
*compressum**
- 21A. Mid-lobe of lip not fleshy-thickened
22. Peduncles below surrounded by
several imbricated spathes
23. Lateral lobes of lip trian-
gular-ligulate, entire.....15. *Epidendrum*
lanceolatum
- 23A. Lateral lobes of lip not
triangular-ligulate, irre-
gularly lacerate 6. *Epidendrum*
cristatum
- 22A. Peduncle without several imbrica-
ted spathes below
24. Stems mainly leafless (con-
cealed near base by tubular
sheaths); leaves borne near
apex29. *Epidendrum*
tipuloides
- 24A. Stems leafy
25. Peduncle concealed by an elongate,
ancipitous spathe. Mid-lobe of lip
narrowly lanceolate, acuminate30. *Epidendrum*
trinitatis

*See also *Epidendrum yatapuense*, treated in the Addendum on page 199

- 25A. Peduncle not concealed by an elongate, ancipitous spathe. Mid-lobe of lip not lanceolate nor acuminate
26. Peduncle short, not concealed by close, scarious sheaths
27. Flowers small; lip 5 mm long.
Leaves grass-like.....10. *Epidendrum Hartii*
- 27A. Flowers large; lip 18-20 mm long. Leaves not grass-like, elliptic to ovate16. *Epidendrum moyobambae*
- 26A. Peduncle elongate, concealed by several to many close sheaths
28. Lateral lobes of lip (if present) entire. Lip without callus..... 1. *Epidendrum anceps*
- 28A. Lateral lobes of lip dentate to lacerate. Lip with basal calluses
29. Leaves linear or ligulate14. *Epidendrum imatophyllum*
- 29A. Leaves elliptic or oblong
30. Lip without central keel. Calluses at base large, fleshy26. *Epidendrum secundum*
- 30A. Lip with single, erect keel extending from base nearly to apex. Calluses at base flap-like
31. Mid-lobe of lip subsessile, truncate or slightly notched at tip12. *Epidendrum ibaguense* var. *confluens*
- 31A. Mid-lobe of lip more or less clawed with acute or apiculate tip.....13. *Epidendrum ibaguense* var. *Schomburgkii*

1. *Epidendrum anceps* Jacq. *Sel. Stirp. Amer.* (1763) 224, t. 138.

Erect, usually rather stout, up to 1 m. Stems slender or coarse, strongly compressed, ancipitous, covered by tubular, amplexicaul sheaths. Leaves coriaceous, distichous, linear-elliptic to oblong-lanceolate, acute or obtuse, sometimes tinged with purple, those above middle of stem usually larger than those below, 5-25 cm long, about 4.5 cm wide. Inflorescence long-pedunculate (penduncle up to 50 cm long), flower clusters racemose or paniculate, densely subcapitate, several- to many-flowered, basally with scarious, obtuse, keeled, tubular sheaths. Bracts ovate to lanceolate, acute, 4-6 mm long. Flowers fleshy, light brown to greenish brown or yellow or reddish; filiform pedicellate ovaries up to 15 mm long. Sepals submembranaceous, obovate-elliptical, acute or subobtuse, 4.5-10 mm long, 2-4 mm wide; laterals semicochleate. Petals very narrowly spatulate, acute or truncate, 6-8 mm long, 0.5-1.5 mm wide. Lip fleshy, adnate to column nearly to its tip, shallowly 3-lobed, reniform-cordate in outline, 4-6 mm long, 4-7.5 mm wide or wider; lateral lobes rounded; mid-lobe short-subquadrate, retuse or emarginate; disk fleshy with low ridge along entire length of lip. Column up to 5 mm long. Capsule ovoid, up to 1.5 cm long, 1 cm in diameter.

Flowers: January-March.

Southern Florida, West Indies, Mexico, Middle America, northern South America.

TOBAGO: Roxborough, July 31, 1957, Aitken s.n. (*Trin. Reg. Virus Lab. Herb.* 325); Widow (ex Broadway, 1918).

TRINIDAD: Heights of Aripo, January 10-26, 1922, Broadway s.n. (*Herb. Trin.* 9902); Saut d'Eau, March 8, 1931, Broadway 7501 (*Herb. Ames* 37540; *Herb. Gray* s.n.); El Tucuche, March 27, 1955, Downs & Aitken 43 (*Herb. Ames* 67840).

2. *Epidendrum Bradfordii* Griseb. *Fl. Brit. W. Ind. Isl.* (1864) 613.

Pseudobulbs subglobose, 16-20 mm in diameter, apically 1-foliate. Leaves linear-oblong, rather obtuse, 12-15 cm long, 12 mm wide. Inflorescence simple, basally clothed with short, distant, membranaceous, ovate sheaths, from 5- to 6-flowered above,

30-40 cm long. Flowers greenish with reddish brown lines and white lip; pedicels with ovary 2 cm long. Bracts 2-4 mm long. Sepals and petals similar, oblong-lanceolate, acute, 8-12 mm long, 3-4 mm wide. Lip 3-lobed, 10 mm long; lateral lobes oblong, obtuse, 6 mm long, 2 mm wide; mid-lobe longer, obovate, acute, with thickened mid-veins 10 mm long, 5 mm wide. Column free, apically auriculate, 8 mm long.

Flowers: September.

Endemic to Trinidad and Tobago.

TOBAGO: Menna (ex Broadway, 1918).

TRINIDAD: Aripo, April 16, 1908, Broadway 2334 (*Herb. Ames* 10662), Arena forests, December 3, 1926, Broadway 6492 (*Herb. Ames* 66921); Quare Dam, January 29, 1956, Downs & Aitken 86 (*Herb. Ames* 69913); Arima, Bradford s.n. (ex Cogniaux).

3. *Epidendrum ciliare* L. *Syst. Nat.*, ed. 10 (1759) 1246.

Common name: Spider Orchid.

Coarse, caespitose, up to about 50 cm. Pseudobulbs stipitate, from a creeping rhizome, cylindric or fusiform, 8-20 cm long, 2 cm in diameter, bearing 1 or 2 (very rarely 3) leaves. Leaves fleshy-coriaceous, glossy, oblong-lanceolate, obtuse, about 10-28 cm long, 2.5-8 cm wide. Inflorescence racemose, few- to many-flowered, up to 25-30 cm long; pedicel about 2.5-5 cm long, with spotted, imbricating, cucullate, keeled sheaths. Bracts oblanceolate, 3.5-6.5 cm long. Flowers yellowish green with whitish lip, ovaries slender and arcuate, 4-8 cm long. Sepals membranaceous, pale green, yellowish or violet, linear-lanceolate, acute or long-acuminate, 40-90 mm long, 4-6 mm wide. Petals similar to dorsal sepal but smaller, falcate, linear-lanceolate, long-acuminate, 35-80 mm long, 3-5 mm wide. Lip adnate to basal half of column, 3-lobed with claw 5-8 mm long, lateral lobes narrowly semi-ovate, deeply and irregularly pectinate-fimbriate on outer margins, entire on inner margins, 15-35 mm long, 3-4 mm wide; mid-lobe linear-subulate, rigid, entire or rarely long-acuminate with serrulate margins, up to 60 mm long, 0.5-1 mm wide; disk with 2 erect wing-like keels extending to base of mid-lobe and linear keel continuing most of length of mid-lobe. Column clavate, arcuate,

connate with lip for most of its length, 13-18 mm long; clinandrium denticulate. Capsule fusiform, 4-6 cm long.

Flowers: October-February.

Mexico, Middle America, northern South America, West Indies.

TRINIDAD: Port-of-Spain, October 26, 1865, Sorzano s.n. (*Herb. Trin.* 1974); Government House Grounds, February 25, 1907, Broadway s.n. (*Herb. Ames* 10070); Government House Grounds, November 5, 1907, Broadway 2353 (*Herb. Ames* 11729, 11730); Maraval, 1911, Baptiste s.n. (*Herb. Ames* 22307); Montserrat, September 1956, Downs & Aitken 37 (*Herb. Ames* 67827); Bradford s.n. (ex Cogniaux).

4. *Epidendrum compressum* Griseb. *Fl. Brit. W. Ind. Isl.* (1864) 617.

Epidendrum laxum Poepp. & Endl. *Nov. Gen. ac. Sp.* 2 (1838) 2, non Sw.

Epidendrum yatapuense Barb.-Rodr. in *Vellozia* (1891) 123.

Epidendrum macrothyrsis Lehm. & Kranzl. in *Engler Bot. Jahrb.* 26 (1899) 472.

Small to medium-sized, up to 62 cm. Stems slender, from creeping rhizome, leafy, concealed by evanescent, imbricating sheaths. Leaves 2 to several, subcoriaceous, lanceolate, elliptic-lanceolate or oblong-lanceolate, acute, sometimes mucronate, amplexicaul, 5-10 cm long, 1-2.5 cm wide; sheaths laterally flattened. Inflorescence much exceeding leaves, laxly or densely many-flowered, rhachis flattened with several closely tubular, papery sheaths. Flowers yellowish or greenish yellow, red-spotted. Bracts triangular, 3-4 mm long. Sepals spreading, elliptic or oblong-elliptic, apically thickened, acute, 6-9 mm long, 2-2.5 mm wide. Petals fleshy, linear, acute, shorter than sepals. Lip fleshy, adnate to entire length of column, above 3-lobed, 7 mm long, 4-5 mm wide, lobes entire, mid-lobe more or less terete, elongate-triangular, subacute, strongly recurved, 2-3 mm long; lateral lobes erect, irregularly ovate-subrhombiform, cordate, acute, 4-5 mm long, 2.2 mm wide. Column stout, dilated above, with 2 auricles, 2 mm long.

Flowers: November.

Colombia, Ecuador, Peru, Bolivia, Venezuela, British Guiana, Amazonian Brazil, Trinidad.

TRINIDAD: November 1, 1865, Prestoe s.n. (*Herb. Trin.* 1971; *Herb. Ames* 67929); Maraval, November 17, 1934, Sylvester s.n. (*Herb. Trin.* 13073); December 13, 1955, (flowered) Downs & Aitken 76 (*Herb. Ames* Alc. coll. 3225); Bradford s.n. (ex Grisebach).

5. *Epidendrum crassilabium* Poepp. & Endl. *Nov. Gen. ac Sp.* 2 (1838) 1, t. 102.

Erect, 60–70 cm, from a short rhizome. Pseudobulbs oblong-fusiform, flattened, about 15–30 cm long, up to 2 cm in diameter, 2-or 3-foliate above. Leaves coriaceous, oblong-lanceolate or narrowly elliptic, acute to rounded, 10–35 cm long, 2.5–4 cm wide. Inflorescence simple, racemose, many-flowered above; peduncle up to 40 cm long, basally with an acute, coriaceous spathe 2–3.5 cm long. Pedicel slender, with ovary 13–20 mm long. Bracts triangular, 5–6 mm long. Sepals fleshy-coriaceous, oblong to obovate, obtuse, 10–14 mm long, 4–5 mm wide. Petals oblong-subspathulate, obtuse or acute, oblique, as long as sepals but usually narrower. Lip thick-fleshy, shortly clawed (claw adnate to column), broadly ovate to orbicular, acute or obtuse, 7–8 mm long, up to 6 mm wide, with longitudinal callus divided into 2 fleshy lamellae towards apex. Column fleshy, clavate, 7 mm long. Capsule elliptic-obovoid, 3 cm long, with 3 wings.

Flowers: May.

Costa Rica, Panama, West Indies, South America south to Brazil.

TRINIDAD: St. Ann's, May 13, 1890, Hart s.n. (*Herb. Trin.* 4540).

6. *Epidendrum cristatum* R. & P. *Syst. Veg.* (1798) 243.

Erect, in clumps. Stems coarse, 0.5–2 m, densely leafy, with subcoriaceous sheaths, up to 5 cm long. Leaves distichous, erect-spreading, coriaceous, elliptic-lanceolate to ligulate-oblong, acutish or obtuse, 10–24 cm long, 1.5–5 cm wide. Inflorescences terminal (often several together) on stem, racemose, loosely many-flowered above, usually long-pedunculate, nodding, up to 50–60 cm long; peduncles with several imbricated, leafy, dorsally keeled spathes. Flowers fleshy, from whitish or yellowish to pale green, usually

with purplish spots or bands, with ovaries up to 7 cm long, segments reflexed-spreading. Bracts cucullate, elongate-ovate or elliptic, 5-9 mm long. Sepals oblong-elliptic, obtuse, 18-28 mm long, 3-7 mm wide. Petals linear-subspathulate or elongate-oblongate, obtuse, apiculate, 15-25 mm long, 1.5-5 mm wide. Lip adnate to column up to apex, irregularly 3-lobate, subquadrate-rotundate, 10-15 mm long, wider than long; lateral lobes toothed to lacerate; mid-lobe 2-lobulate with divaricate lobules and apicule in sinus; disk with 2 calluses and a central ridge. Column clavate, apically thick and truncate, up to 15 mm long.

Flowers: February-July; December.

Mexico, Guatemala, Honduras, northern South America, Trinidad.

TRINIDAD: (*Herb. Trin.* 1630; *Herb. Ames* 67928); July 29, 1865 (*Herb. Trin.* 1975); Botanic Gardens, 1888, Broadway s.n. (*Herb. Trin.* 3669); Cedros, December 1889, Alexander s.n. (*Herb. Trin.* 4992); Maraval, 1894, Baptiste s.n. (*Herb. Trin.* 5490); Maraval, 1911, Broadway 3970 (*Herb. Ames* 16557); March 5, 1921, Broadway s.n. (*Herb. Trin.* 10500); Botanic Gardens, February 15, 1932, Bruins-Lich s.n. (*Herb. Trin.* 12752); Hart 3669 (ex Cogniaux).

7. *Epidendrum difforme* Jacq. *Enum. Pl. Carib.* (1760) 29.
Epidendrum umbellatum Swartz *βlatilabre* (Lindl.) Grisebach
Fl. Brit. W. Ind. Isl. (1864) 618.

Erect, sometimes repent, caespitose, up to 50 cm. Stems numerous, leaf-bearing, flexuous, covered with amplexicaul sheaths. Leaves fleshy to leathery, oblong to elliptic-lanceolate, obtuse, often retuse, 2.5-11 cm long, up to 3.5 cm wide. Inflorescence terminal, subumbellate to umbellate, 1- to many-flowered. Bracts hyaline, lanceolate, up to 15 mm long. Flowers greenish, yellowish or white. Pedicel and ovary up to 4.5 mm long. Sepals membranaceous, unequal; dorsal sepal lanceolate to oblong-obovate, acute or obtuse, 12-30 mm long, 3.5-8 mm wide; laterals obliquely elongate-oblong to broadly ovate, obtuse to short-acuminate, 12-30 mm long, 4.5-9 mm wide. Petals filiform to oblanceolate-ligulate, acute, 10-30 mm long, 0.8-7 mm wide. Lip clawed, adnate to whole length of column, transverse, subrotundate-reniform, entire,

undivided to 3-lobulate, 7-20 mm long, 10-30 mm wide; mid-lobe usually obscure, entire or 2-lobed, retuse, truncate, often wanting; disk minutely 2-callosed. Column 7-12 mm long, thicker above; clinandrium denticulate. Capsule ellipsoid, up to 4.5 cm long.

Southern Florida, Mexico, Middle America, West Indies, northern South America.

TRINIDAD: Sieber 379 (ex Cogniaux).

8. *Epidendrum fragrans* Sw. *Prodr. Veg. Ind. Occ.* (1788) 123.

Stout, with a creeping rhizome, up to 40 cm. Pseudobulbs narrowly ellipsoid or fusiform, flattened, 1-foliate, subtended by membranaceous sheaths, 5-11 cm long, up to 3 cm in diameter. Leaves coriaceous, overtopping inflorescences, ligulate-oblong to elliptic-lanceolate, usually obtuse, 10-30 cm long, 1.5-4.5 cm wide. Inflorescence a loosely few- to several-flowered raceme up to 17 cm long, subtended by several submembranaceous, dorsally keeled, conduplicate sheaths up to 6 cm long. Flowers yellowish white to green; lip with numerous purplish lines along veins; sepals and petals sometimes with small purplish spots. Bracts narrowly triangular, acute, up to 7 mm long. Sepals elliptic-lanceolate, long-acuminate, spreading, 15-35 mm long, 4-5 mm wide. Petals clawed, ovate-lanceolate, acute or acuminate, 20-30 mm long, 5-10 mm wide. Lip fleshy, erect, cochleate, shortly adnate to column at base; disk nervose, with 2 small parallel calluses. Column clavate, adnate to column for half its length, winged on both sides, dorsally keeled, apically 3-dentate, up to 18 mm long. Capsule elliptic-ovoid, trigonous, up to 30 mm long.

Flowers: More or less throughout the year.

Mexico, Middle America, West Indies, northern South America.

TOBAGO: Near Campbellton, Seitz 73 (ex Cogniaux); Pigeon Hill, ca. 100 ft., October 16, 1937, Sandwith 1806 (ex Sandwith); Mt. St. George-Castara Road (above dam), alt. 1000 ft., July 12, 1954, Baker s.n. (*Herb. Trin.* 15331).

TRINIDAD: San Fernando, 1873, Guppy s.n. (*Herb. Trin.* 820; *Herb. Ames* 66938); Maracas, May 18, 1875 (*Herb. Trin.* 1512); Botanic Gardens, April 22, 1890 (*Herb. Trin.* 4024); Caparo, March 27, 1908, Broadway s.n.

(*Herb. Ames* 11721); St. Clair Experiment Station, April 12, 1908, Broadway s.n. (*Herb. Ames* 10713); Agua Santa, Arima, April 14, 1908, Broadway s.n. (*Herb. Ames* 11720); Caparo, April 28, 1908, Broadway s.n. (*Herb. Ames* 10735); Maraval, February, 1911, Broadway s.n. (*Herb. Trin.* s.n.); Santa Cruz, March 20, 1911, Broadway s.n. (*Herb. Trin.* s.n.); Maraval, April 22, 1911, Broadway 4099 (*Herb. Ames* 16558); St. Clair Experiment Station, November 16, 1912 (*Herb. Trin.* 8757); North Trace via Princes Town, August 19, 1918, Broadway s.n. (*Herb. Trin.* 8821); Matchepoorie, March 11, 1921, Britton & Britton 2222 (*Herb. Ames* 21462); Heights of Aripo, January 10-26, 1922, Broadway s.n. (*Herb. Trin.* 9901); Botanic Gardens, April 18, 1939, Elmore R 27 (*Herb. Ames* 62887); El Tucuche, May 12, 1949, Wilson s.n. (*Herb. Trin.* 14327; *Herb. Ames* 66930); Guaico-Tamana Road, May 7, 1953, Baker & Simmonds s.n. (*Herb. Trin.* 15008); Cumaca, Melajo Forest, Downs & Aitken 19 (*Herb. Ames* 67833); Bradford s.n. (ex Cogniaux); Fendler 779 (ex Cogniaux); Kuntze s.n. (ex Cogniaux).

9. *Epidendrum fusiforme* (Lindl.) Rehb. f. in Walpers *Ann. Bot.* 6 (1862) 322.

Isochilus fusiforme Lindl. *Gen. and Sp. Orch. Pl.* (1831) 113.

Plant with stipitate, fusiform, terete, fleshy pseudobulbs. Leaves linear, apically emarginate and mucronate. Flowers white, solitary, nodding, without bracts. Sepals and petals ligulate, acute. Lip membranaceous, flabellate, apically triangularly dilated, retuse.

Apparently an endemic of Trinidad.

TRINIDAD: Lockhart s.n. (ex Cogniaux).

10. *Epidendrum Hartii* Rolfe in *Kew Bull.* (1894) 157.

Stems erect, above bearing loosely many leaves, 15-38 cm. Leaves linear, obtuse to acute, 10-20 cm long, 5-13 mm wide. Inflorescence irregularly branched; branches spreading, densely many-flowered, mostly 10-20 cm long. Pedicels filiform (with ovary) 5-7 mm long. Bracts subulate-lanceolate or narrowly triangular,

acute, 2 mm long. Flowers pale yellow or whitish yellow. Sepals membranaceous, lanceolate-subspathulate, acute, 7-8 mm long, 2-3 mm wide; laterals sickle-shaped. Petals narrowly linear, almost filiform below, obtuse, 7-8 mm long, basally 0.5-0.6 mm wide, above 0.8-1 mm wide. Lip 3-lobed, about 5-6 mm long, 6-7 mm wide; lateral lobes broadly dolabriform, slightly undulate; mid-lobe quadrate-spathulate; disk with median thickening, with 2 contiguous calluses. Column clavate, 5 mm long; clinandrium 2-lobate.

Flowers: January-April.

Venezuela, Trinidad and Tobago.

TOBAGO: Mt. Dillon, Broadway 3398 (ex Cogniaux).

TRINIDAD: Hart s.n. (*Herb. Trin.* 1528); Heights of Maraval, Broadway s.n. (*Herb. Ames* 16555); Maracas, February 1846 (*Herb. Trin.* 891); February 25, 1889, Broadway s.n. (*Herb. Trin.* 3552); April 22, 1890, Broadway s.n. (*Herb. Trin.* 4023); Maraval, April 1894, Alexander s.n. (*Herb. Trin.* 5460; *Herb. Ames* 66940); Government House Grounds, February 25, 1907, Broadway s.n. (*Herb. Ames* 10067, 10068, 10069); St. Clair Experiment Station, January 6, 1908, Broadway s.n. (*Herb. Ames* 10717, 10718, 10719); March 22, 1920, Broadway s.n. (*Herb. Ames* 22019); Maracas Falls, March 27, 1924, Hombersley s.n. (*Herb. Trin.* 11202); Arena Forest Reserve, 1948, Ayliffe s.n. (*Herb. Trin.* 14261); Mount Tucuche, alt. 1500 ft, February 28, 1954, Baker s.n. (*Herb. Trin.* 15112; *Herb. Ames* 66943); St. Patrick's, Arima, March 8, 1955, Downs & Aitken 30 (*Herb. Ames* 67832); Thompson s.n. (ex Cogniaux).

11. *Epidendrum Hombersleyi* Summerh. in *Kew Bull.* (1934) 105.

Stems erect from a creeping rhizome, leafy almost to tip, about 30 cm long, 2-3 mm in diameter, covered with few membranaceous sheaths. Leaves lanceolate or elliptic-lanceolate, acute, 2.5-8 cm long, 6-16 mm wide. Inflorescence simple, racemose, up to 7-flowered above, 2-8 cm long, lower half provided with acute or acuminate, imbricating sheaths. Bracts lanceolate, acuminate. Flowers green, spotted with purple; pedicel (with ovary) 1-2 cm long. Dorsal sepal elliptic-oblongate, subacute, 7 mm long, 2.2 mm

wide; laterals obliquely oblanceolate, short-acuminate, 7.5 mm long, 3 mm wide. Petals lanceolate-ligulate, acute, 7.5 mm long, about 1 mm wide. Lip adnate to lower half of column, free part obovate, obtuse, 9 mm long, 4.5 mm wide, with 3 calluses in front of column (middle callus low, linear, extending almost to apex of lip, lateral calluses erect, laterally flattened, suborbicular, much shorter than middle callus). Column 5 mm long, apically dilated; clinandrium narrowly winged along margin.

Flowers: August-September; February-March.

Endemic to Trinidad.

TRINIDAD: Arima, February 15, 1846 (*Herb. Trin.* 889); St. Clair Experiment Station, September 1918, Williams s.n. (*Herb. Trin.* 8702); Arena Forest via San Rafael, August 1927, Hombersley in *Herb. Broadway* 6659 (ex Summerhayes); Arena Road, March 10, 1928, Hombersley s.n. (*Herb. Trin.* 11949).

12. *Epidendrum ibaguense* H.B.K. var. *confluens* (Lindl.)

C. Schweinf. in *Bot. Mus. Leaf. Harv.* 11 (1944) 232.

Terrestrial or epiphytic, usually up to 1 m. Stem simple or branched, basally naked, above leafy, covered with brownish sheaths about 2 cm long, usually with many whitish roots arising from nodes. Leaves fleshy-coriaceous, articulated, distichous, oblong to ovate- or lanceolate-elliptic, rounded or obtuse, 3.5-15 cm long, 0.8-3.5 cm wide. Inflorescence sometimes branched, individual fascicles racemose, laxly or densely many-flowered, long-pedunculate; raceme up to 12 cm long; peduncle up to 50 cm long (rarely longer), covered with appressed tubular, scarious sheaths. Flowers showy, variable in colour (usually brick-orange, but also yellow, red to reddish purple), with pedicellate ovaries 3-4 cm long. Bracts triangular to triangular-lanceolate, acuminate. Sepals membranaceous, oblong-elliptic to narrowly obovate, apically recurved and acute or sometimes obtuse, 13-22 mm long, 4-7.5 mm wide. Petals elliptic-obovate, acute, 13-18 mm long, 6-8 mm wide. Lip adnate to column up to apex, suborbicular to cordate or reniform, 3-lobed, 7-16 mm long, 8-17 mm wide; lateral lobes orbicular, larger than mid-lobe, usually lacerate; mid-lobe subsessile, cuneate to oblong, truncate or slightly notched, usually lacerate, about 8 mm long; disk provided with 2 flap-like calluses and with central keel

extending from base to middle of mid-lobe or more. Column arcuate, clavate, 10–15 mm long. Capsule ellipsoid, 3–4 cm long.

Flowers: October.

West Indies, tropical South America.

TOBAGO: (ex Broadway, 1918).

TRINIDAD: Bradford s.n. (ex Cogniaux).

13. *Epidendrum ibaguense* H.B.K. var. *Schomburgkii* (Lindl.) C. Schweinf. *Bot. Mus. Leaflet. Harvard Univ.* 11 (1944) 235.

Epidendrum Schomburgkii Lindl. in *Bot. Reg.* 24 (1838) t. 53; Misc. p. 15, no. 16.

Similar to *Epidendrum ibaguense* var. *confluens* but differing in having larger flowers, in the clawed mid-lobe of the lip, which is apically acute or apiculate, and in the acuminate sepals and petals.

Flowers: December-January; July.

Colombia, Peru, Venezuela, British Guiana, northern Brazil, Trinidad.

TRINIDAD: Maraval, Bradford s.n. (ex Cogniaux); January 20, 1846, Martin s.n. (*Herb. Trin.* s.n.); January 27, 1866, Sorzano s.n. (*Herb. Trin.* 1976); Waller Field, Aripo Savannah, December 4, 1955, Downs & Aitken 74 (*Herb. Ames* 67908); St. Patrick's Estate, Arima Valley, July 1, 1956, Downs & Aitken s.n. (*Herb. Ames* Alc. coll. 3224); Rapsey Estate, Aripo Valley, Downs & Aitken s.n. (*Herb. Ames* 67908); Waller Field, January 16, 1957, Herklots s.n. (*Herb. Ames* 69921).

14. *Epidendrum imatophyllum* Lindl. *Gen. and Sp. Orch. Pl.* (1831) 106.

In clumps, usually large, up to 1 m, with matted roots often inhabited by ants. Stems usually slender, when young covered with chartaceous sheaths which are yellowish green with purple spots. Leaves distichous, linear-lanceolate to oblong-ligulate, obtuse or rarely sub-acute, up to 20 cm long and 3 cm wide. Inflorescence racemose, simple or branched, densely many-flowered, up to 20 cm long. Bracts triangular-lanceolate, up to 1 cm long. Flowers rose-red to purple, with pedicellate ovary up to 3 cm long. Sepals elliptic to elliptic-oblongate, acute or acuminate, 12–20 mm long, 3.5–5 mm wide; laterals oblique, elliptic, acute, narrowed

below; sometimes undulate, 13–20 mm long, 6–8 mm wide. Lip adnate to column up to apex; lamina oblong to elongate-obovate, simple or obscurely 3-lobed, apiculate, 6–10 mm long, 5–8 mm wide; margins of lateral lobes varying from almost entire to dentate or lacerate; disk with 2 submamillate calluses at base and a short central keel from base to middle. Column clavate, recurved, 1 cm long, apically denticulate-lobed. Capsule ovoid, 3 cm long.

Flowers: March–April.

Mexico, Middle America, northern South America, Trinidad.

TRINIDAD: Tacarigua, March 31, 1890, Mitchell s.n. (*Herb. Trin.* 4175; *Herb. Ames* 68184); Cunupia, March 23, 1892, Alexander s.n. (*Herb. Ames* 7451); St. Ann's (Cascade), March 6, 1894, Hart s.n. (*Herb. Trin.* 5481); St. Clair Experiment Station, April 16, 1907, Broadway s.n. (*Herb. Ames* 10205, 10206, 10207); Tabaquite, September 1, 1956, Downs & Aitken 107 (*Herb. Ames* 68426).

15. *Epidendrum lanceolatum* Bradf. ex Griseb. *Fl. Br. W. Ind. Isl.* (1864) 616.

Epiphytic, 30–45 cm tall. Stems leafy. Leaves subcoriaceous, lanceolate-ligulate, obtuse and obliquely and minutely emarginate, 10–15 cm long, 12–18 mm wide. Inflorescence basally included in a few distichous, dorsally keeled, oblong-linear, acute sheaths which are 8–12 mm long, above few-flowered. Pedicel slender (with ovary) 4.5–5 cm long. Bracts minute, ovate. Sepals linear-lanceolate, acuminate, many nerved, 31–32 mm long, 5 mm wide. Petals linear, long-acuminate, from 7- to 9-nerved, 30–31 mm long, 1.5–1.75 mm wide. Lip as long as petals, deeply 3-lobed; lateral lobes narrowly triangular-ligulate, 12 mm long, basally 2.5 mm long, 1 mm wide; disk basally with shortly 2-lamellate calluses. Column clavate, 12 mm long.

Endemic to Trinidad.

TRINIDAD: Pitch Lake, Bradford s.n. (ex Grisebach).

16. *Epidendrum moyobambae* Kranzl. in *Fedde Repert. Sp. Nov.* 1 (1905) 185.

Common name: Lamb's Tail.

Epiphytic, in tufts, often pendent. Stems subterete, basally naked but covered distichously above with many leaves, up to

90 cm long, 6–10 mm in diameter. Leaves subcoriaceous, lanceolate to elliptic, acute, 9–17 cm long, 1.5–4 cm wide. Inflorescence arcuate or pendent, simple, racemose, laxly many-flowered, up to 40 cm long; flowers borne along almost entire peduncle. Bracts triangular-lanceolate, 3–5 mm long. Flowers large, yellowish green becoming whitish yellow, sometimes greenish violet or brownish red at base of sepals and petals; pedicel (with ovary) 3–4 cm long. Sepals rather fleshy, lanceolate-subspathulate, obtuse or acute; laterals 17–23 mm long, 6–7 mm wide; dorsal similar but wider. Petals ligulate-spathulate, obtuse or acutish, 16–20 mm long, 4–6 mm wide. Lip adnate to column up to apex, deeply 3-lobed, 15–22 mm long, 17–28 mm wide, sometimes undulate-crenate; lateral lobes large, suborbicular, obtuse, much larger than mid-lobe; mid-lobe 2-lobulate, lobules apically rounded, divaricate; disk with 2 minute calluses in front of column and 1 slender, median lamellate keel. Column thickened, claviform, 10–14 mm long.

Flowers: April-May.

Middle America, northern South America, Trinidad.

TRINIDAD: (*Herb. Trin.* 888); (*Herb. Trin.* 5581); Botanic Gardens, April, 1889, Hart s.n. (*Herb. Trin.* 3680); St. Clair Experiment Station, April 12, 1908, Broadway s.n. (*Herb. Ames* 10710); Caparo, April 27, 1908, Broadway s.n. (*Herb. Ames* 11711); Cedros, May 10, 1918, Sankeralli s.n. (*Herb. Trin.* 8747); Hindustan Road, via Princes Town, August 20, 1918, Broadway s.n. (*Herb. Trin.* 8820)?; base of Mount Tamana, April 18, 1920, Britton, Britton & Hazen 1961 (*Herb. Ames* 20367); Moruga Road, Rock Forests, May 17, 1922, Webbe s.n. (*Herb. Trin.* 10137); Tamana, April 15, 1925, Freeman s.n. (*Herb. Trin.* 11199); April 17, 1929, Murray s.n. (*Herb. Trin.* 12128); St. Ann's, April 22, 1934, Broadway s.n. (*Herb. Ames* 40388); Caura Valley, May 7, 1949, Wilson s.n. (*Herb. Trin.* 14318; *Herb. Ames* 66933); Mount Tamana, alt. 1000 ft, June 1954, Piening s.n. (*Herb. Trin.* 15269; *Herb. Ames* 66927); Cumaca, November 30, 1956, Downs & Aitken 1 (*Herb. Ames* 67789); Mafeking Road, Mayaro, April 25, 1956, Aitken & Downs s.n. (*Herb. Trin.* 172 a-d).

17. *Epidendrum nocturnum* Jacq. *Enum. Pl. Carib.* (1760)
29.

Epiphytic, usually caespitose, sometimes up to 1 m. Stem terete, with evanescent, scarious sheaths below, compressed and leafy above. Leaves fleshy-coriaceous, distichous, articulated, oblong, elliptic-oblong, oval or lanceolate-elliptic, acute or obtuse, 7-15 cm long, 1-6 cm wide. Inflorescence abbreviated, 1- to few-flowered raceme. Flowers large, showy, nodding, opening 1 at a time on inflorescence, (with pedicellate ovaries) usually 5-15 cm long, white, sometimes whitish green; sepals usually greenish. Bracts ovate-lanceolate, acute. Sepals linear-lanceolate to almost filiform, long-acuminate, sometimes twisted, 35-85 mm long, 2-5 mm wide. Petals similar to sepals, often smaller. Lip adnate to column up to apex, deeply 3-lobed, 30-55 mm long (rarely longer); lobes usually entire; lateral lobes directed forward, semi-ovate or obliquely lanceolate-ovate, obtuse or subacute, 12-35 mm long, 5-10 mm wide; mid-lobe linear-filiform, long-acuminate, up to 45 mm long; disk 2-lamellate from base of lip to base of mid-lobe. Column apically entire or dentate, about 2 cm long. Capsule elongate-ellipsoidal, up to about 5 cm long, 2 cm in diameter.

Flowers: November-July (most commonly, January-March).

Florida, Mexico, Middle America, West Indies, northern South America.

TOBAGO: Easterfield Road, February 25, 1926, Freeman s.n. (*Herb. Trin.* 11522).

TRINIDAD: Heights of Las Cuevas, January 4, 1861 (*Herb. Trin.* 1823); St. Clair Experiment Station, November 16, 1912 (*Herb. Trin.* 8758); Cedros, March 7, 1917, Sankeralli s.n. (*Herb. Trin.* 8748); El Tucuche, January 26, 1919, Williams s.n. (*Herb. Trin.* 8807); Heights of Aripo, January 10-26, 1922, Broadway s.n. (*Herb. Trin.* 9900; *Herb. Ames* 22682); El Tucuche, January 10, 1922, Freeman & Williams s.n. (*Herb. Trin.* 10083); El Tucuche, January 17, 1924, Hill, Williams et al. s.n. (*Herb. Trin.* 10709); April 10, 1925, Hombersley s.n. (*Herb. Trin.* 11200); Arena Forest Reserve, November 28, 1933, Bruins-Lich s.n. (*Herb. Trin.* 12977); Mt. Aripo, 2600 ft, March 24, 1937, Dean & Swabey CS57

(*Herb. Trin.* 13137); El Tucuche, 2600 ft., February 2, 1947, Simmonds 56 (*Herb. Trin.* 13819; *Herb. Ames* 66934); El Tucuche, trail north side of Naranja, c. 2200 ft., January 2, 1948, Simmonds 239 (*Herb. Trin.* 14071); St. Patrick's Estate, Arima Valley, January 14, 1955 (flowered) Downs & Aitken 2 (*Herb. Ames* 67854); El Tucuche, March 27, 1955, Downs & Aitken 49 (*Herb. Ames* 67834).

18. *Epidendrum nocturnum* Jacq. var. *minus* Cogniaux
in *Bull. Soc. Roy. Bot. Belg.* 43 (1906) 323.

Similar to *Epidendrum nocturnum* but smaller in habit, with smaller, narrowly linear, usually chartaceous (not coriaceous) leaves and smaller flowers of varying proportions.

Flowers: February-March.

Northern South America, Trinidad.

TRINIDAD: Aripo Savannah, February 13, 1915, Freeman s.n. (*Herb. Trin.* 8042); Aripo District, March 21, 1922, Broadway s.n. (*Herb. Trin.* 10562); Downs & Aitken 42 (*Herb. Ames* 67841).

19. *Epidendrum oncidoides* Lindl. in *Bot. Reg.* 19 (1833)
t. 1623.

Caespitose, up to 1 m. Pseudobulbs ovoid to cylindric, up to about 10 cm long, with scarious sheaths, 2- or 3-foliate. Leaves coriaceous, ligulate or oblong-ensiform, acute or obtuse, up to 55-60 cm long and 1.5 cm wide. Inflorescence paniculate, longer than leaves, few- to many-flowered. Flowers of medium size; ovaries smooth, pedicellate. Dorsal sepal oblanceolate to elliptic-lanceolate, acute, 14-18 mm long, 4-6 mm wide; laterals similar to dorsal but oblique, dorsally keeled near apex. Petals clawed, narrowly oblanceolate or elliptic-spathulate, short-acuminate, 13-17 mm long, 6-8 mm wide. Lip almost completely free from column, deeply 3-lobed, 12-15 mm long; lateral lobes erect, clasping column, oblong to subquadrate-ovate, apically rounded to obtuse, oblique, 5.5-9 mm long; mid-lobe ovate or suborbicular, obtuse to subacuminate, subcordate or rather cuneate, 6-7 mm long, 6-10 mm wide; disk with 2 longitudinal, fleshy thickenings forming a fovea on isthmus, extending to mid-lobe as fleshy nerves. Column stout,

about 8 mm long, strongly reflexed at middle, apically with rounded auricles.

Flowers: January-July.

Mexico, Guatemala, Honduras, northern South America, Trinidad.

TRINIDAD: July 1893, Alexander s.n. (*Herb. Trin.* 5525); Cuare River, March 1925, Freeman s.n. (*Herb. Trin.* 10961); L'Orange Road, Aripo Valley, January 21, 1927, Freeman s.n. (*Herb. Trin.* 11717); Long Stretch, Sangre Grande, March 1, 1927, Freeman & Williams s.n. (*Herb. Trin.* 11720); Botanic Gardens, June 1934, Bruins-Lich s.n. (*Herb. Trin.* 13019).

20. *Epidendrum oncidoides* Lindl. var. *gravidum* (Lindl.) A.H.S. in *Bot. Mus. Leaflet. Harvard Univ.* 3 (1935) 104. *Epidendrum gravidum* Lindl. in *Journ. Hort. Soc.* 4 (1849) 114.

Similar to *Epidendrum oncidoides* but smaller in all parts. Mid-lobe of lip with verruculose veins. Column almost straight.

Flowers: January-February.

Mexico, Middle America, Trinidad.

TRINIDAD: Botanic Garden, 1891, Hart s.n. (*Herb. Trin.* 5810); Botanic Garden, 1894, Hart s.n. (*Herb. Trin.* 5472); February 22, 1927, Freeman s.n. (*Herb. Trin.* 11719); February 2, 1931, Broadway s.n. (*Herb. Ames* 66922); Melajo Reserve, January 4, 1949, Ayliffe s.n. (*Herb. Trin.* 14411).

21. *Epidendrum Ottonis* Rehb. f. in *Hamburg Gartenz.* 14 (1858) 213.

Small, epiphytic, usually in tufts, up to 20-25 cm. Pseudobulbs from creeping rhizome, narrowly fusiform, flattened, stipitate, 3-4 cm long, 1-foliate. Leaves subcoriaceous, linear, subacute, obtuse or sometimes retuse, mostly 7-16 cm long, 5-9 mm wide. Inflorescence racemose, few-flowered; peduncle filiform, as long as leaves or shorter, with several linear, acute sheaths. Bracts spathaceous, linear-lanceolate, long-acuminate, 8-20 mm long. Flowers cream-coloured. Sepals fleshy, lanceolate, acute to acuminate, 7-9 mm long, 2-3 mm wide; laterals slightly narrower

than dorsal, oblique. Petals elliptic-lanceolate to ligulate-oblancoate, acute, 6-7 mm long, 1.5-2 mm wide. Lip fleshy, undivided, somewhat similar to sepals and petals, linear-oblong, acute, marginally rather undulate, 5-6.5 mm long, about 1.5 mm wide; disk canaliculate along middle. Column free, clavate, apically 5-dentate, about 4 mm long.

Flowers: December-February.

Panama, northern South America, West Indies.

TRINIDAD: (*Herb. Trin.* 1516); (*Herb. Trin.* 1626); December, 1860 (*Herb. Trin.* 1837); December 10, 1888, Broadway s.n. (*Herb. Ames* 7442); Tamana, February 19, 1915, Broadway s.n. (*Herb. Trin.* 7893); St. Ann's above Chancellor Road, February 25, 1934 (*Herb. Ames* 9379); Tabaquite, December 3, 1955, Downs & Aitken 80 (*Herb. Ames* 67883); Bradford s.n. (ex Cogniaux); Crueger s.n. (ex Cogniaux).

22. *Epidendrum pygmaeum* Hook. in *Bot. Mag.* 60 (1833) t. 3233.

Epiphytic, small, repent. Rhizome branched, creeping, producing pseudobulbs. Pseudobulbs erect, ellipsoid-fusiform, up to 10 cm long, subtended by 1 or several ovate, scarious sheaths, 2- (rarely 3-) foliate at apex. Leaves thick, elliptic-lanceolate to oblong, obtuse or acute, 2-15 cm long, 8-16 mm wide. Inflorescence a sessile, abbreviated, few- to several-flowered raceme. Flowers small, inconspicuous, greenish brown or sometimes whitish green; lip white; with pedicellate ovaries 1.6 cm long. Bracts ovate, acute, up to 5 mm long. Sepals rather thick, lanceolate to elliptic-lanceolate, acuminate, 5-11 mm long, 1.5-3.5 mm wide; laterals larger than dorsal, short-connate at base, dorsally keeled near apex. Petals narrowly linear-lanceolate, thickened near apex and acute, 5-8 mm long, up to about 1 mm wide. Lip fleshy, adnate to lower half of column, 3-lobed, broadly reniform in outline, 4-8 mm long, 3-7 mm wide; mid-lobe very small, apiculate or tooth-like, very acute, up to 3 mm long; lateral lobes erect, ovate to suborbicular, more or less erose, 2.5-3 mm long, 2 mm wide. Column up to 4.5 mm long, apically 3-lobulate. Capsule ellipsoid, up to 2 cm long.

Flowers: January.

Florida, Mexico, Middle America, West Indies, northern half of South America.

TRINIDAD: Heights of Aripo, January 10-26, 1922, Broadway s.n. (*Herb. Trin.* 9880; *Herb. Ames* 22686); Morne Poir, Downs & Aitken 54 (*Herb. Ames* 67904); Bradford s.n. (ex Cogniaux).

23. *Epidendrum ramosum* Jacq. *Enum. Pl. Carib.* (1760) 29

Epiphytic, variable in habit, up to about 1 m. Stems erect, pendent or creeping, simple or much branched, sometimes rather woody below, covered by coriaceous leaf-sheaths. Leaves coriaceous, ligulate, lanceolate or oblong-elliptic, apically obtuse and unevenly retuse, 1-10 cm long, 3-12 mm wide. Inflorescence a 2- to several-flowered, fractiflex raceme. Flowers small, whitish, greenish white or yellowish green, sometimes with maroon tinge. Bracts conspicuous, variable, elliptic-ovate, sometimes keeled, about 8 mm long. Sepals coriaceous, lanceolate to elliptic-oblong, acutish, dorsally keeled near apex, 5-12 mm long, 2-3 mm wide. Petals linear to linear-spathulate, acute or obtuse, as long as sepals but narrower. Lip adnate to whole length of column, lamina thick-coriaceous, entire or sometimes obscurely 3-lobulate, triangular-ovate or ovate-lanceolate, acute or obtuse, 5-9 mm long, 2-5 mm wide; disk at base with V-shaped callus with occasionally a 3-lobulate apex. Column apically truncate to dorsally excavated with or without 2 divergent terminal teeth dorsally, 3 mm long. Capsule short-beaked, ellipsoid-ovoid, about 12 mm long, 8 mm in diameter.

Flowers: November.

Mexico, Middle America, West Indies, northern half of South America.

TOBAGO: Widow (ex Broadway, 1918).

TRINIDAD: Maracas, March 29, 1931, Broadway 7471 (*Herb. Ames* 37544); Arena Forest Reserve, November 28, 1933, Brains-Lich s.n. (*Herb. Trin.* 12979); Spring Hill, Arima Valley, November 16, 1955, Downs & Aitken 77 (*Herb. Ames* 67910); Cumaca, February 27, 1957, Downs & Aitken s.n. (*Herb. Trin.* 198); Spring Hill Estate, Arima Valley, December 17, 1955, Downs & Aitken s.n. (*Herb. Trin.* 130).

24. *Epidendrum rigidum* Jacq. *Enum. Pl. Carib.* (1760) 29.

Epiphytic, up to about 35 cm. Rhizome repent, branched. Stems erect, simple, covered by leaf-sheaths. Leaves coriaceous, distichous, articulate, elliptic-oblong or lanceolate-oblong, obtuse and conspicuously, unequally retuse, 3-12 cm long, 5-20 mm wide. Inflorescence a rigid, few- to several-flowered spike up to about 15 cm long. Flowers sessile, inconspicuous, greenish or yellowish green. Bracts greenish brown, ovate, acute or obtuse, hyaline, dorsally keeled, about 15-20 mm long. Sepals fleshy-coriaceous, ovate (sometimes obovate) to ovate-lanceolate, 4.5-9 mm long, 2-3.5 mm wide. Petals oblanceolate, obtuse, 5-9 mm long, 1.5-2 mm wide. Lip fleshy-coriaceous, adnate to whole length of column; lamina entire, cordate-suborbicular, apically rounded or retuse, marginally crenulate, 4-6 mm long, 4-5.5 mm wide; disk with 2 small fleshy calluses at base. Column stout, apically dentate, up to 3 mm long. Capsule ellipsoid, up to 2 cm long.

Flowers: December-April.

Florida, Mexico, Middle America, tropical South America, West Indies.

TOBAGO: Easterfield Road, February 25, 1926, Freeman s.n. (*Herb. Trin.* 11521); Reservoir, February 1, 1953, Hunnewell 20004 (*Herb. Hunnewell*); between Adelphi and Belmont, Broadway 2480, 3410 (ex Cogniaux); Seitz 17 (ex Cogniaux).

TRINIDAD: January 18, 1846 (*Herb. Trin.* 1521); Promenade, December 20, 1865 (*Herb. Trin.* 1977); June 19, 1889, Broadway s.n. (*Herb. Ames* 7565); St. Ann's, April 1890, Broadway s.n. (*Herb. Ames* 7604); Government House Grounds, December 21, 1906, Broadway s.n. (*Herb. Ames* 10094, 10095, 10096, 68641); April 1917, Sankeralli s.n. (*Herb. Trin.* 8746); Botanic Gardens, March 5, 1918, Broadway s.n. (*Herb. Trin.* 8771); North Trace via Princes Town, August 19, 1918, Broadway s.n. (*Herb. Trin.* 8824); Fifth Company, Moruga Road via Prince's Town, August 26, 1918, Broadway s.n. (*Herb. Trin.* 8823); St. Ann's, April 26, 1920, Broadway s.n. (*Herb. Trin.* 10499; *Herb. Ames* 22033); Heights of Aripo, January 10-26, 1922, Broadway s.n. (*Herb. Trin.* 9906); Long Stretch,

Sangre Grande, July 12, 1925, Williams & Freeman s.n. (*Herb. Trin.* 11272); St. Augustine, April 25, 1949, Simmonds 350 (*Herb. Trin.* 14337; *Herb. Ames* 66939); Cumuto-Tumpuna Road, October 1, 1953, Ayliffe 147 (*Herb. Trin.* 15023); Cumuto, Downs & Aitken 55 (*Herb. Ames* 67794); Sieber 380 (ex Cogniaux); Crueger s.n. (ex Cogniaux).

25. *Epidendrum Schlechterianum* Ames in *Sched. Orch.* 7 (1924) 9, t. 1.

Small, terrestrial or epiphytic, caespitose or matted and prostrate, simple or much-branched, up to about 7 cm. Stems densely many-leaved, covered with imbricating leaf-bases. Leaves non-articulate, fleshy, distichous, spreading, ovate-oblong to elongate-oblong, apically rounded, somewhat retuse, 10-30 mm long, 3-10 mm wide, hyaline, dorsally keeled. Inflorescence bearing 1 to few almost sessile flowers between terminal leaves. Flowers yellowish green, reddish green, green tinged with pink or pinkish violet. Sepals rather fleshy, linear-oblong, often keeled in back, acute to acuminate, 8-20 mm long, 2.5-4.5 mm wide, laterals often wing-keeled and somewhat denticulate dorsally, connate with base of column. Petals ligulate-oblong to linear-lanceolate, acute, serrulate-ciliate along margins or entire, 8-18 mm long, 1.5-2.5 mm wide. Lip fleshy, undivided, adnate to column; lamina suborbicular or reniform, conspicuously apiculate, margins slightly undulate and sometimes minutely erose, 4-8 mm long, 5-11 mm wide; disk thickly 2-callose at base. Column slightly curved, fleshy, 4-6 mm long; clinandrium denticulate. Capsule spherical, up to 10 mm long.

Flowers: November-December.

Mexico, northern South America, Trinidad.

TOBAGO: (ex Broadway, 1918).

TRINIDAD: December 21, 1845, Crueger s.n. (*Herb. Trin.* 1634, *Herb. Ames* 67930); Las Cuevas, November 16, 1850, Crueger s.n. (*Herb. Trin.* 895); Agua Santa, Santa Cruz, March 15, 1908, Broadway s.n. (*Herb. Ames* 10654); Matura, September 1908, Broadway s.n. (*Herb. Ames* 11683); El Paraiso, Tabaquite, October, 12,

1918, Broadway s.n. (*Herb. Trin.* 8732); Tabaquite, October 10, 1918, Broadway s.n. (*Herb. Trin.* 9760); Matchepoorie, March 11, 1921, Britton & Britton 2220 (*Herb. Ames* 22098); Tabaquite, December 3, 1955, Downs & Aitken 71 (*Herb. Ames* 67914).

26. *Epidendrum secundum* Jacq. *Enum. Pl. Carib.* (1760) 29.

In clumps (?), roundish stems, basally naked but loosely many-leaved above, up to 60 cm long, 3–10 mm in diameter. Leaves leathery, ovate-lanceolate, acutish, 8–14 cm long, 1.5–4 cm wide. Inflorescence simple, 25–60 cm long, basally with acute or obtuse, distant sheaths 2–5 cm long, bearing at the apex several to many flowers in a dense head. Pedicel with ovary 2–3 cm long. Bracts acuminate, 3–7 mm long. Flowers rose-coloured, lip with yellowish white flecks. Sepals lanceolate-spathulate, acute, 7–10 mm long, 2.5–3.5 mm wide. Petals obovate-oblong, somewhat acute, about as large as the sepals. Lip deeply 3-lobed, rotundate-subreniform, 5–6 mm long, 6–8 mm wide; lobes denticulate; lateral lobes rounded; mid-lobe twice as large as laterals, widely cuneate, apically deeply notched; disk callose; callus concave, acuminate, crenate. Column 5–6 mm long.

Flowers: April.

West Indies, tropical South America.

TRINIDAD: Bocas Islands, Hart s.n. (*Herb. Trin.* 5771); St. Clair Experiment Station, April 16, 1907, Broadway s.n. (*Herb. Ames* 10203, 10204, 10233); Teteron Bay, April 25, 1934, Broadway s.n. (*Herb. Ames* 40390); Dry River area, between Bamboo Range and summit of Soufriere, February 9–23, 1950, Howard 11196, (*Herb. Ames* 66758); Rodriguez Bay, May 20, 1956, Downs & Aitken 98 (*Herb. Ames* 69921); Schach s.n. (ex Cogniaux); Bradford s.n. (ex Cogniaux); Hart 4027 (ex Cogniaux); Pitch Lake, Bradford s.n. (ex Cogniaux).

27. *Epidendrum stenopetalum* Hook. in *Bot. Mag.* 62 (1835) t. 3410.

Epiphytic, caespitose, up to 45 cm. Stems abbreviated, thickened, sulcate, naked below, laxly many-leaved above. Leaves coria-

ceous, distichous, lanceolate or lanceolate-oblong, obtuse and unevenly retuse, 5–12 cm long, 6–11 mm wide. Inflorescence a short, few-flowered, corymbose raceme, up to 2 cm long. Flowers rose-purple or lilac, showy (with pedicellate ovaries) about 30 mm long. Bracts ovate, acute, about 3.5 mm long. Sepals spreading, lanceolate-ovate or elliptic-oblong, usually acuminate, thickened dorsally near apex, 15–18 mm long, 4–5.5 mm wide. Petals ovate-rhomboid to elliptic, acute, 13–17 mm long, 7–9 mm wide. Lip entire, obovate, rounded or subtruncate, sometimes apiculate, 12–17 mm long, 9–11 mm wide; disk basally tuberculate. Column 5.5 mm long, apically with a conspicuously lobate margin, dorsally keeled. Capsule elongate-ellipsoidal, up to 2.5 cm long.

Flowers: October–January.

Mexico, Middle America, northern South America, Jamaica, Trinidad and Tobago.

TOBAGO: 1954, Thompson s.n. (*Herb. Ames* Alc. coll. 3103); Great Dog River, between Adelphi and Belmont, Eggers 5800 (ex Cogniaux); Broadway 2428 (ex Cogniaux).

TRINIDAD: Marabella, October 20, 1865 (*Herb. Trin.* 1977); 1908, Broadway 2922 (*Herb. Ames* 11728); St. Clair Experiment Station, January 6, 1908, Broadway s.n. (*Herb. Ames* 10642); Santa Cruz, January 7, 1908, Broadway s.n. (*Herb. Ames* 11674); Agua Santa, Arima, April 16, 1908, Broadway 2347 (*Herb. Ames* 10669); October 26, 1908, Broadway s.n. (*Herb. Ames* 11734); St. Clair Experiment Station, November 16, 1912, Broadway (?) s.n. (*Herb. Trin.* 8756); Fifth Company, Moruga Road near Princes Town, August 25, 1918, Broadway s.n. (*Herb. Trin.* 8819); December 4, 1918, Broadway s.n. (*Herb. Ames* 22039); Heights of Aripo, January 10–26, 1922, Broadway s.n. (*Herb. Trin.* 9903); near Talparo, January 25, 1948, Simmonds 260 (*Herb. Trin.* 14124); St. Augustine, April 25, 1949, Simmonds 348 (*Herb. Trin.* 14335); Cumaca, Downs & Aitken 66 (*Herb. Ames* 67814); Bradford s.n. (ex Cogniaux); Fendler 770 (ex Cogniaux).

28. *Epidendrum strobiliferum* Rehb. f. in *Nederl. Kruidk. Arch.* 4 (1859) 333.

15-30 cm, with clustered stems irregularly much-branched and loosely many-leaved. Leaves thick-coriaceous, ligulate-oblong to ligulate-lanceolate, obtuse, blade 10-35 mm long, 2-7 mm wide, sheaths up to 8 mm long. Inflorescence densely several- to 10-flowered, up to 3.5 cm long. Flowers greenish, whitish or yellowish, rarely pinkish or with pinkish lines. Bracts ovate, obtuse or emarginate, cucullate, distichously imbricating, hyaline-erose, up to 8 mm long. Sepals thick; dorsal sepal lanceolate or elliptic-lanceolate, acute, apically somewhat keeled, usually 3-5 mm long, about 1.4 mm wide; laterals broadly lanceolate, or ovate-lanceolate, acute, 3-5 mm long, 2 mm wide. Petals oblanceolate, subacute or obtuse, 2.5-4.5 mm long, 0.5-0.8 mm wide. Lip fleshy-coriaceous, adnate to column, entire, ovate-cordate, acute or sometimes acuminate, 3-3.5 mm long, 2-3 mm wide; disk basally 2-lamellate. Column thick, 1.5 mm long, dilated above, retuse with 2 small teeth. Ovary with an apical sack beneath lip. Capsule broadly ellipsoid, up to 9 mm long, ribs winged.

Flowers: December-April.

Florida, Mexico, Middle America, West Indies, northern South America.

TOBAGO: May 6, 1925, Williams s.n. (*Herb. Trin.* 11031); between Adelphi and Belmont, Broadway 2479, 3409 (ex Cogniaux).

TRINIDAD: December 7, 1845 (*Herb. Trin.* 413); December 20, 1865 (*Herb. Trin.* 1973); Chaguanas, March 12, 1892, Alexander s.n. (*Herb. Ames* 7607); Agua Santa Estate, Arima, April 14, 1908, Broadway 2332 (*Herb. Ames* 10664, 10665); Santa Cruz, January 28, 1911, Broadway 4118 (*Herb. Ames* 16554); near Nestor Village, Sangre Grande, February 16, 1915, Broadway s.n. (*Herb. Trin.* 8822); St. Ann's, 1919, Broadway s.n. (*Herb. Ames* 22024); Heights of Aripo, January 10-26, 1922, Broadway s.n. (*Herb. Trin.* 9904); Maraval, March 5, 1926, Broadway 6300 (*Herb. Ames* 32169); Spring Estate, Tamana Road, March 9, 1938, Cheesman 102 (*Herb. Trin.* 13276); Cumaca Road, third mile, December 27, 1948, Simmonds 315 (*Herb. Trin.* 14237);

Herb. Ames 66936); St. Augustine, April 25, 1949, Simmonds 349 (*Herb. Trin.* 14336; *Herb. Ames* 66935); Long Stretch Forest, February 4, 1953, Baker & Simmonds s.n. (*Herb. Trin.* 14925); Guaico-Tamana Road, May 7, 1953, Baker & Simmonds s.n. (*Herb. Trin.* 15009); Nestor Village, February 11, 1955, Downs & Aitken 7 (*Herb. Ames* 67850); Fendler 786 (ex Cogniaux); Crueger s.n. (ex Cogniaux); Bradford s.n. (ex Cogniaux).

29. *Epidendrum tipuloideum* Lindl. *Fol. Orch.* 1 (1853) *Epid.* 32.

Epidendrum Broadwayi Ames & Schweinf. in *Bot. Mus. Leaf. Harv.* 1 (1932) 5.

Up to 17 cm tall. Stems green, brown or purple-brown, subclavate, 4-8 cm tall, invested by tubular, scarious sheaths, 1- or sometimes 2-foliate. Leaves linear, grass-like, up to 20 cm long, 1.8 cm wide, acute; mid-nerve keeled beneath. Inflorescence racemose, shorter than leaves, up to about 6 cm long, basally enclosed in tubular sheath up to 3.5 cm long, loosely from 4- to 9-flowered. Floral bracts minute, lanceolate, shorter than pedicels. Pedicel (with ovary) up to 1.3 cm long. Flowers yellow or yellowish green, fleshy. Lateral sepals obliquely elliptic-lanceolate, basally somewhat adnate to column, 11 mm long, 3-4 mm wide, dorsally conspicuously carinate-mucronate at apex; dorsal oblong-elliptic or oblanceolate, up to 9.3 mm long, oblique, acute. Lip adnate to tip of column, 3-lobed; lamina up to 5.5 mm long, 3.7-6.4 mm wide (at widest part), basally 2-callose, lateral lobes semi-ovate or rounded, obtuse, marginally erose, extending about half length of lip; mid-lobe larger, broadly triangular to subquadrate, acute or minutely apiculate. Column up to 6.4 mm long.

Flowers: November-April.

Venezuela, Trinidad.

TRINIDAD: Saut d'Eau, North Coast, January 18, 1931, Broadway 7444 (*Herb. Ames* 37893: type of *Epidendrum Broadwayi*); Cumaca, November 1954, Downs & Aitken 48 (*Herb. Ames* 67835); Morne Bleu, April 9, 1955, Downs & Aitken 46 (*Herb. Ames* 67837); Spring Hill Estate, Arima Valley, January 13, 1957, Downs & Aitken s.n. (*Herb. Ames* 68590).

30. *Epidendrum trinitatis* Lindl. in *Bot. Reg.* 30 (1844) Misc. p. 86.

Stems leafy, ancipitous, 30-45 cm long. Leaves glaucescent, linear-lanceolate, obtuse and obliquely emarginate, 10 cm long. Inflorescence simple, nodding, above many-flowered, included in an oblong-linear, elongate spathe. Sepals membranaceous, lanceolate, acuminate, 3-nerved, 6 mm long, 2 mm wide. Petals setaceous, 4 mm long. Lip strongly concave, 3.5-4 mm long, very deeply 3-lobed; lateral lobes subquadrate, acute; mid-lobe elongate, triangular-lanceolate, acuminate, basally 3-callose. Column arcuate, 2.5 mm long.

Flowers: ?

Endemic to Trinidad:

TRINIDAD: (ex Lindley).

31. *Epidendrum vincentinum* Lindl. in *Hooker Journ. Bot.* 3 (1841) 88.

Up to about 20 cm. Stem often branched, many-leaved, 2-3 mm in diameter. Leaves membranaceous, narrowly lanceolate, acute and sometimes mucronate, 15-35 mm long, up to 6 mm wide. Inflorescence a flexuous, laxly many-flowered panicle up to 12 cm long, with long, filiform branches. Flowers small, inconspicuous, greenish yellow. Bracts triangular, acute, up to 1 mm long. Sepals spreading, lanceolate, acute, 3 mm long, 1 mm wide. Petals filiform, about 3.5 mm long. Lip entire, broadly rotundate-reniform, undulate and minutely ciliate, about 1.5 mm long, 2 mm wide; disk with a central keel. Column 2 mm long. Capsule ellipsoid, 1.8 cm long, 7 mm in diameter.

Flowers: January.

West Indies, Costa Rica, Colombia, Peru.

TRINIDAD: Heights of Aripo, January 10-26, 1922, Broadway s.n. (*Herb. Trin.* 9905; *Herb. N.Y.* s.n.).

32. *Epidendrum atropurpureum* Willd. *Sp. Pl.* 4 (1805) 115.

Middle and South America. Cited from Trinidad (Broadway in *Orch. Rev.* 34 (1926) 200), but no specimens seen to authenticate record.

33. *Epidendrum paniculatum* R. & P. *Syst. Veg.* (1798) 243. Middle and South America. Cited from Trinidad (Broadway in *Orch. Rev.* 34 (1926) 199), but no material seen to authenticate record.

22. CAULARTHON Raf.

Epiphytic or semi-epiphytic herbs with fleshy, pseudobulbose, solid or frequently insect-hollowed stems. Leaves few, borne at apex of pseudobulbs, rigidly subcoriaceous. Inflorescence terminal, simple, racemose. Flowers few to numerous, showy, short-pedicellate. Sepals free, spreading, subequal. Petals rather similar to sepals. Lip free and spreading from base of column, 3-lobed; lateral lobes conspicuously tooth-like; mid-lobe triangular or triangular-lanceolate; disk raised between lateral lobes into 2 hollow, often horn-like calluses opening from below to form 2 conspicuous indentations or pits on lower surface of lip. Column short, with conspicuous, fleshy wings; clinandrium oblique, obtuse. Capsule ellipsoid.

Caularthron: Greek, 'jointed stem', undoubtedly in reference to the persistent leaf-bases which lend to the elongated pseudobulbs the appearance of being jointed.

Two species of Middle America, northern South America, Trinidad.

1. Lip 3-lobed, with deep sinuses. Flowers 5.5-6 cm wide. Growing along sea-shore.....1. *Caularthron bicornutum*
- 1a. Lip entire, basally minutely auriculate, or obscurely 3-lobulate, lacking definite sinuses. Flowers 1.2 cm wide. Growing on inland savannahs.....2. *Caularthron bilamellatum*

1. *Caularthron bicornutum* (Hook.) Raf. *Fl. Tellur.* 2 (1836 [1839]) 41.

Epidendrum bicornutum Hook. in *Bot. Mag.* 61 (1834) t. 3332.

Diacrium bicornutum (Hook.) Benth. in *Journ. Linn. Soc. Bot.* 18 (1881) 312.

Common names: Virgin Orchid; Virgin Mary Orchid.

Pseudobulbs long-cylindric, 10–30 cm long, 2–6 cm in diameter. Leaves 3 or 4, oblong or elliptic-oblong, usually obtuse, 6–20 cm long, 2–5 cm wide. Inflorescence erect, up to 35–40 cm long. Flowers showy, few to 20, 5.5–6 cm wide, pedicel (with ovary) 3–5 cm long. Sepals broadly ovate-lanceolate, short-acuminate to obtuse tip, 25–32 mm long, 15–18 mm wide. Petals broadly ovate, acutish, 22–28 mm long, 20–23 mm wide, upper margin usually with a conspicuous notch. Lip fleshy, as long as petals but narrower, deeply 3-lobed, basally with triangular tooth on each side; lateral lobes elliptic-ovate, rounded; mid-lobe triangular-lanceolate, acuminate to an obtuse tip; calluses erect, triangular, obtuse. Column 14–15 mm long.

Flowers: December-May.

Brazil, Colombia, Venezuela, British Guiana, Trinidad and Tobago.

TOBAGO: Bacolet, January 20, 1910, Broadway 3411 (*Herb. Ames* 25657; *Herb. Gray* 4278); Rockley Vale, February 20, 1913, Broadway s.n. (*Herb. Gray* 4277); Little Bacolet Bay, February 9–23, 1950, Howard 10457 (*Herb. Ames* 66738); Meyer 2 (ex Cogniaux).

TRINIDAD: Gasparee Island, December 30, 1906, Broadway s.n. (*Herb. Ames* 10085–10089, 68642); Moruga sea-shore, Lance Mitán, February 9, 1916, Broadway s.n. (*Herb. Trin.* 7595); May 26, 1918, Broadway s.n. (*Herb. Ames* 22062); Chacachacare, January 1, 1922, Broadway s.n. (*Herb. Trin.* 10563); Chacachacare, January 5, 1922, Broadway s.n. (*Herb. Trin.* 10566); Between Balandra and Toco, February 18, 1926, Freeman s.n. (*Herb. Trin.* 11519); 'Sea-shore districts', February 23, 1934, Broadway s.n. (*Herb. Ames* 40385); Quinam Bay, St. Patrick, January 30, 1946, Bailey 121 (*Herb. Ames* 62541); Bradford s.n. (ex Cogniaux).

2. *Caularthron bilamellatum* (Rehb. f.) R. E. Schult. in *Bot. Mus. Leaflet Harv.* 18 (1958) 92, tt. 14, 15.
Epidendrum bilamellatum Rehb. f. in *Walpers Ann. Bot.* 6 (1862) 345.
Epidendrum indivisum Bradf. ex Griseb. *Fl. Brit. W. Ind. Isl.* (1864) 614.

Diacrium bilamellatum (Rehb. f.) Hemsl. in Godman & Salvin *loc. cit.* 3 (1883) 222.

Diacrium indivisum (Bradf. ex Griseb.) Broadw. in *Bull. Misc. Inform. Trinidad* 2 (1895) 79.

Common name: Little Virgin.

Pseudobulbs subcylindric to long-fusiform, terete, 5–23 cm long, up to 4 cm in diameter. Leaves 2 or 3, ligulate-lanceolate to linear-oblong, obtuse, 5–22 (mostly more or less 15) cm long, 6–25 mm wide. Inflorescence erect, up to 15 cm long. Flowers white or white-tinged with pink or lavender, few to numerous, up to about 3 cm wide; pedicel stout, (with ovary) 1.5–2.5 cm long. Bracts triangular, cucullate, acute, up to 5.5 mm long. Sepals concave, elliptic-ovate, acute or sometimes subobtuse and apiculate; dorsal sepal 12–17.5 mm long, 6 mm wide; laterals 10–16 mm long, 6–8 mm wide. Petals short-clawed, elliptic-obovate to broadly obovate, acute or subobtuse, 10–16 mm long, 6–9 mm wide. Lip fleshy, as long as petals, subentire to more or less 3-lobulate; lateral lobes small and auriculate, sometimes only tooth-like, usually without a sinus; mid-lobe triangular-ovate, apically short- or long-acute; disk above with 2 large, erect, triangular, plate-like, obtuse, hollow projections. Column 8–11 mm long. Capsule up to 2.8 cm long.

Flowers: February–June.

Guatemala, Middle America, northernmost South America, Trinidad.

TRINIDAD: 'Inland Districts' (*Herb. Trin.* 5512); 'Inland Woods' (*Herb. Trin.* 5983); 'Savannah near Government House', June 3, 1907, Broadway s.n. (*Herb. Ames* 10736); 'Savannah near Government House grounds', June 22, 1907, Broadway s.n. (*Herb. Ames* 10727); Erin, March 27, 1908, Broadway s.n. (*Herb. Ames* 10640); River Estate, February 18, 1926 (*Herb. Trin.* 11518); St. Augustine, April 25, 1949, Simmonds 351 (*Herb. Trin.* 14338; *Herb. Ames* 66931); Caigual (4 miles from coast), January 24, 1955, Downs & Aitken 15 (*Herb. Ames* 67783, 67831); Port-of-Spain, Government House grounds, February 19, 1963, Trinidad Regional Virus Laboratory (Aitken) 370 (*Ames Herb. Alc. coll.*); Bradford s.n. (ex Cogniaux).

23. TETRAMICRA Lindl.

Terrestrial or epiphytic herbs. Stem thickened but not pseudobulbose. Leaves from 1 to 4, fleshy, linear, semi-terete to almost subulate. Inflorescence a terminal, elongate, rigid, simple, laxly few- to many-flowered raceme. Flowers pedicellate, small. Sepals subequal, free, spreading. Petals similar to sepals. Lip free or adnate to base of column, sessile, spreading, 3-lobed; lateral lobes large and spreading or small and auriculate; mid-lobe wide, entire, basally contracted. Column erect, above or from base broadly 2-alate. Capsule oblong, not beaked.

Tetramicra: Greek, 'four small parts', in reference probably to the four perfect pollinia.

Some 12 species of West Indies.

Tetramicra canaliculata (Aubl.) Urb. in *Fedde Rept. Sp. Nov.* 15 (1919) 306.

Limodorum canaliculatum Aubl. *Hist. Pl. Gui. Fr.* 2 (1775) 821.

Up to 60 cm, robust. Stem basally with many short, scarious acute bracts. Leaves thickly coriaceous, often spreading-recurved, linear-subulate, semi-cylindric, canaliculate, acuminate, 8-16 cm long, 2-4 mm in diameter. Inflorescence above laxly many-flowered, 40-60 cm long. Flowers: sepals and petals greenish purple; lip rose with violet-striped mid-lobe. Bracts membranaceous, triangular-ovate, acute or rather obtuse, 3-4 mm long. Sepals ovate-oblong, rather obtuse, 9 mm long, 3.5-4 mm wide. Petals oblong-obovate, rather acute, 9 mm long, 3-3.5 mm wide. Lip 14-15 mm long, 3-lobed nearly to base; lobes entire, rounded; lateral lobes divaricate, basally semi-cordate; mid-lobe broadly obovate, narrowed at base, 8-9 mm wide. Column about 6 mm long, broadly 2-alate almost to base.

Flowers: May-June.

West Indies.

TRINIDAD: Bradford s.n. (ex Grisebach).

24. *CATTLEYA* Lindl.

Epiphytic herbs. Stems fleshy or pseudobulbose, apically 1- or 2-foliate. Leaves fleshy-coriaceous, usually thick. Inflorescence a terminal, short, few-flowered raceme, subtended by a spathe-like sheath. Bracts small. Flowers mostly large, showy. Sepals free, subequal, often spreading. Petals usually wider than sepals, rarely similar. Lip usually rather membranaceous, sessile, free or sometimes adnate to base of column, entire to 3-lobed; lateral lobes usually enfolding column. Column long, wingless. Capsule ellipsoidal, costate.

Cattleya: dedicated to William Cattley, one of the earliest English horticulturists successfully to cultivate orchids. About 35 species of tropical America.

Cattleya Deckeri Klotzsch in Otto & Dietrich *Allgem. Gartenz.* 23 (1855) 81.

Stout, up to 30 cm. Pseudobulbs clustered, clavate, flattened, basally much attenuated, 2-foliate, up to about 30 cm long. Leaves mostly ovate-oblong, obtuse, 10-15 cm long, 3.5-5 cm wide. Inflorescence 2- to few-flowered; sheath large, up to more or less 10 cm long. Bracts broadly ovate, acute, 3-4 mm long. Flowers pale purplish rose with deep purple lip, about 6 cm in diameter. Sepals lanceolate-elliptic, acute, apiculate, 2.5 cm long. Petals ovate-oblong, acute, undulate, about as long as sepals but twice as wide. Lip obscurely 3-lobed, elliptic-obovate in outline, slightly shorter than sepals; lateral lobes convolute, enfolding column; mid-lobe acute, smooth, without lamellae.

Flowers: January-February.

Mexico, Middle America, West Indies, possibly northern South America.

TRINIDAD: January 12, 1861 (*Herb. Trin.* 1829); Gasparillo Road, Santa Cruz Valley, February 1, 1926, Freeman s.n. (*Herb. Trin.* 11506); Santa Cruz, January 22, 1927, Williams s.n. (*Herb. Trin.* 11718; *Herb. Ames* 68193); Bradford s.n. (ex Cogniaux); Crueger s.n. (ex Cogniaux).

25. LAELIA Lindl.

Terrestrial or epiphytic herbs. Pseudobulbs ancipitous, orbicular or more or less cylindric, sometimes hollow. Leaves 1 to several, at or near apex of stem, fleshy-coriaceous or rigidly carnosae. Inflorescence a solitary flower or a several-flowered raceme or rarely a panicle. Flowers usually large, showy, often crispate. Bracts persistent, coriaceous or thickly membranaceous. Sepals free, spreading, subequal, flat or conspicuously undulate. Petals similar to sepals, sometimes differing in size. Lip erect, shortly adnate to base of column, usually 3-lobed; lateral lobes explanate or convolute and enclasping column; mid-lobe usually smaller than lateral lobes; disk smooth or lamellate. Column mostly long, winged or wingless, apically often toothed. Capsule ellipsoidal.

Laelia: dedicated to Laelia, one of the Vestal Virgins of Roman mythology.

Approximately 50 species of tropical and subtropical parts of the New World.

1. Inflorescence racemose. Bracts thinly membranaceous, linear or linear-lanceolate, long-acuminate, 5-7 cm long. Mid-lobe of lip ovate-cordate, apiculate...2. *Laelia undulata*

- 1A. Inflorescence paniculate. Bracts coriaceous, triangular, acute, up to 2 cm long. Mid-lobe of lip transversely oblong, emarginate or 2-lobulate1. *Laelia*

Thompsoniana

1. *Laelia Thompsoniana* (Rehb. f.) L. O. Wms. in *Darwiniana* 5 (1941) 77.

Schomburgkia Thompsoniana Rehb. f. in *Gard. Chron.*, ser. 3, 2 (1887) 38.

Pseudobulbs more or less cylindric, attenuate above, apically 2- or 3-foliate, 20-30 cm long. Leaves coriaceous, lanceolate to elliptic-oblong, emarginate, 12-26 cm long, 3-4 cm wide. Inflorescences much longer than leaves, sparsely branched, loosely 12- to 15-flowered. Flowers variable as to colour (sepals and petals rust-brown within, pink without; lip deep purple); pedicel (with ovary) 3-3.5 cm long. Bracts coriaceous, triangular, acute, 4-20 mm long. Sepals ligulate, abruptly acute, undulate, 3-3.5 cm

long, 6 mm wide. Petals somewhat narrower, obtuse or rounded, crispate, 3.5 cm long. Lip membranaceous, deeply 3-lobed, subequal to sepals, 2.7 cm across; lateral lobes ovate-triangular, obliquely rounded, incurved; mid-lobe transversely oblong in outline, deeply emarginate or 2-lobulate, crispate; disk 3-crested. Column 2- or 3-dentate, about 1.5 cm long.

Flowers: July.

West Indies.

TRINIDAD: St. Clair Experiment Station (cult.) July 12, 1907, Broadway 2905 (*Herb. Ames* 11703).

2. *Laelia undulata* (Lindl.) L. O. Wms. in *Darwiniana* 5 (1941) 76.

Schomburgkia undulata Lindl. in *Bot. Reg.* 30 (1844) Misc. no. 21.

Pseudobulbs fusiform, strongly attenuate below, 2- or 3-foliate, 20-30 cm long. Leaves thickly coriaceous, lanceolate-oblong, obtuse, 15-21 cm long, 5-6 cm wide. Inflorescence much longer than leaves, unbranched, above loosely many-flowered. Flowers intensely wine-purple, with lateral lobes of lip pale crimson-rose; pedicel (with ovary) 8-10 cm long. Bracts thinly membranaceous, linear, long-acuminate, 5-7 cm long. Sepals linear-ligulate, acute, undulate, recurved, 3-3.5 cm long. Petals similar. Lip rather shorter than sepals, above very deeply 3-lobate; lateral lobes basal, erect, rounded, cordate, not undulate; disk 5- to 7-crested. Column apically 3-toothed, 1.5 cm long.

Flowers: April.

Venezuela, Colombia, Trinidad.

TRINIDAD: St. Clair Experiment Station (cult.), May 4, 1908, Broadway s.n. (*Herb. Ames* 10696); Bradford s.n. (ex Cogniaux).

26. *BRASSAVOLA* R. Br.

Epiphytic herbs. Stems usually thickened, bearing 1 or (rarely) 2 leaves. Leaves mostly rather fleshy, subterete or flat. Inflorescence a 1- to several-flowered raceme, terminal. Flowers usually large, showy. Bracts short. Sepals free, subequal, linear or linear-lanceolate, often long-attenuate. Petals similar, sometimes filiform. Lip sessile at base of column, erect, enfolding column, above expanded into a flat or cucullate lamina. Column more or less 2-winged, footless. Capsule ovoid or ellipsoidal, with elongate beak.

Brassavola: dedicated to Antonio Musa Brassavola (1500-1555), papal physician and professor of medicine at Ferrara, Italy.

Some 15 species of the New World tropics.

Brassavola cucullata (L.) R. Brown in Aiton *Hort. Kew.*, ed. 2, 5 (1813) 216.

Epidendrum cucullatum L. *Sp. Pl.*, ed. 2 (1763) 1350.

Cymbidium cucullatum (L.) Swartz in *Nov. Act. Upsal.* 6 (1799) 73.

Brassavola cuspidata Hooker *Bot. Mag.* 66 (1839) t. 3722.

Brassavola cucullata (L.) R. Brown var. *elegans* Schlechter in *Orchis* 13 (1919) 46.

Plant erect, up to about 40 cm tall. Stems clustered, slender, jointed, up to 20 cm long, concealed by scarious sheaths. Leaf solitary at apex of stem, fleshy, narrowly linear, subterete, up to about 30 cm long, 7 mm wide. Inflorescence usually 1-flowered (rarely with several flowers); peduncle 1.5 cm long, basally with several scarious sheaths 1.5-3.5 cm long. Bracts tubular, about 1 cm long. Flowers large, showy, yellow or white, tinged with red-brown externally; column white; pedicellate ovaries approximately 20 cm long. Sepals linear-lanceolate, long-attenuate, 7-11 cm long, 6-8 mm wide. Petals similar but usually narrower. Lip from a cuneate base, cucullate, cordate-ovate, usually very long-acuminate, conspicuously fimbriate along lateral margins, entire at apex, 6-8 cm long. Column clavate, about 1.5 cm long, apically dentate, winged on anterior margins. Capsule more or less 5 cm long.

Flowers: August.

Middle America, West Indies, northernmost South America.

TOBAGO: King's Bay (ex Broadway, 1918).

TRINIDAD: Scotland Bay, August 1, 1956, Downs & Aitken 101 (Herb. Ames 68422); Bradford s.n. (ex Cogniaux).

27. JACQUINIELLA Schltr.

Epiphytic herbs, erect from abbreviated rhizome. Stems numerous, in tufts, simple, leafy throughout. Leaves small, erect-spreading, distichous, subulate or terete. Inflorescences of 1 flower or a fascicle of flowers at apex of stem, somewhat nodding. Flowers minute, somewhat fleshy. Sepals free or slightly connate at base, subequal, rather fleshy. Petals similar to sepals but smaller. Lip free, simple or above lightly 3-lobed, shortly clawed, sometimes constricted below middle and reflexed, upper portion oblong or rotund and subrhombic, concave. Column short, free from lip, dilated near apex, footless. Capsule ovoid, short-beaked.

Jacquinella: in honour of the Austrian botanist, Nikolaus Joseph von Jacquin who, a contemporary of Linnaeus, did much to advance understanding of the West Indian flora.

Some 3 or 4 species of tropical America.

Jacquinella globosa (Jacq.) Schltr. in *Fedde Repert. Beih.* 7 (1920) 124.

Epidendrum globosum Jacq. *Enum. Pl. Carib.* (1760) 29.

Small, erect or ascending. Stems densely clustered, slender, up to 15 cm long, with close leaf-sheaths. Leaves articulated, short, rather fleshy, rigid, linear, semi-terete, obtuse to apiculate, 15-20 mm long, 1.5-2 mm in diameter, often recurved. Flowers usually solitary, terminal, subsessile, yellow with red blotches. Bracts amplexicaul, keeled, 1-1.5 mm long. Sepals fleshy, elliptic-ovate, bluntly acute and thickened at apex, 3 mm long; dorsal sepal slightly broader; laterals connate, slightly saccate at base. Petals yellow, fleshy, ovate-subrhomboid, acute, obtusely angled, about 2.6-3 mm long. Lip fleshy, undivided, obovate-rhomboid, thickened into a pouch at base, obtuse, entire, 2.5-3 mm long; disk obscurely 2-callose. Column free, fleshy, 1.5 mm long. Capsule nodding, subglobose-ovoid, 6-ribbed, up to 6 mm long.

Flowers: Apparently more or less throughout the year.

Guatemala, Costa Rica, West Indies, the northern half of South America.

- TOBAGO: Forest Reserve above Caledonia, September 7, 1909, Broadway 3020 (*Herb. Ames* 11710); Easterfield Road, February 25, 1926, Freeman s.n. (*Herb. Trin.* 11525); Between Adelphi and Belmont, Broadway 2473 (ex Cogniaux).
- TRINIDAD: (*Herb. Trin.* s.n.)?; (*Herb. Trin.* 1632)?; Guppy s.n., August 1866 (*Herb. Trin.* 2896)?; Agua Santa, Arima, April 16, 1908, Broadway s.n. (*Herb. Ames* 10645); Aripo Savannah, February 13, 1915, Freeman s.n. (*Herb. Trin.* 8027); Tamana, February 19, 1915, Broadway s.n. (*Herb. Trin.* 8818); Tabaquite, October 8, 1918, Broadway s.n. (*Herb. Ames* 22022); Mora Forest, east of Sangre Grande, April 10, 1921, Britton 2883 (*Herb. Trin.* 10501; *Herb. Ames* 66908); Heights of Aripo, January 10-26, 1922, Broadway s.n. (*Herb. Trin.* 9899; *Herb. Ames* 22693); Morne Bleu, February 7, 1922, Freeman s.n. (*Herb. Trin.* 10687); Aripo, September 25, 1924, Freeman s.n. (*Herb. Trin.* 10798); Morne Bleu, November 15, 1927, Williams s.n. (*Herb. Trin.* 11876); Cumaca Road, 3rd mile, December 27, 1948, Simmonds 317 (*Herb. Trin.* 14234); Long Stretch Forest, February 4, 1953, Baker & Simmonds s.n. (*Herb. Trin.* 14928); Arima Road, tenth mile, March 23, 1956, Simmonds s.n. (*Herb. Trin.* 15386; *Herb. Ames* 68204); Cumaca, November 1954, Downs & Aitken 45 (*Herb. Ames* 67838); Aripo, Sieber 195 (ex Cogniaux); Fendler 784 (ex Cogniaux); Othmer 99 (ex Cogniaux).

28. ISOCHILUS R. Br. *New C. Trin.*

Terrestrial or epiphytic herbs, caespitose or sometimes repent. Stems slender. Leaves numerous, distichous, articulated to a sheath, rigidly herbaceous. Inflorescence a terminal, densely or laxly 1- to many-flowered, often unilateral raceme. Flowers small to medium-sized, short-pedicellate or subsessile. Bracts herbaceous, usually shorter than flowers. Sepals subequal, free to almost completely tubular-connate, often somewhat saccate. Petals similar to sepals, sometimes clawed. Lip shortly clawed, entire, almost as long as sepals, adnate to base of column or column-foot. Column rather long, semi-terete, wingless, dentate, without

a foot or with a short foot. Capsule ellipsoid or subglobose.

Isochilus: Greek, 'equal lip', in allusion to the fact that the lip is about equal to the sepals in size.

Several species and varieties of the New World tropics.

Isochilus linearis (Jacq.) R. Br. in Aiton *Hort. Kew.*, ed. 2, 5 (1813) 209.

Epidendrum lineare Jacq. *Enum. Pl. Carib.* (1760) 29.

Terrestrial, up to about 60 cm tall, with numerous caespitose stems covered by verrucose sheaths. Leaves erect, narrowly linear, obtuse and subobliquely emarginate, 5-6 cm long, mostly 2.5-3 mm wide. Inflorescences 1- to several-flowered, laxly distichous or unilateral racemes, up to 3 cm long. Bracts narrowly obovate, acute, up to 10 mm long. Flowers usually purplish or pale rose-coloured, up to 8 mm long. Sepals elliptic or lanceolate-oblong, acute, 10 mm long; dorsal sepal free, dorsally not keeled; laterals long-connate, dorsally wing-keeled. Petals broadly oblong-spathulate, acute, 10 mm long. Lip narrowly oblanceolate, acute, basally long-attenuate, 8-10 mm long. Column 5 mm long.

Flowers: February-July.

Mexico, Middle America, most of South America, West Indies.

TRINIDAD: De Schack s.n. (ex Cogniaux).

29. SCAPHYLOTTIS Poepp. & Endl.

Epiphytic herbs, commonly tufted. Stems slender to pseudo-bulbose, simple or fasciculately branched. Leaves from 1 to several, arising from apex of stems, membranaceous to fleshy-coriaceous, sometimes terete. Inflorescence terminal, fasciculate, 1-flowered or shortly racemose. Flowers small, bracteate at base of pedicels. Sepals subequal, erect or somewhat spreading; dorsal sepal free; laterals somewhat wider, adnate to foot of column to form a short mentum. Petals usually smaller than sepals. Lip articulated to base of column, with or without claw, straight, geniculate or reflexed, entire or 3-lobed, sometimes emarginate. Column short, with or without wings, with distinct, short foot at base. Capsule ovoid to ellipsoid.

Scaphyglottis: Greek, 'boat-shaped tongue', in reference to the concave lip of the flower.

About 45 species of the New World tropics.

1. Pollinia 6. Flowers pedicellate ... 2. *Scaphyglottis fusiformis*

1A. Pollinia 4. Flowers sessile

2. Leaves 5-14 (mostly 10-12) cm long.
Lip slightly 3-lobate with a conspicuous callus. Column stout, short 3. *Scaphyglottis modesta*

- 2A. Leaves 1-5 (mostly 3-4) cm long.
Lip usually entire without a callus (or, at best, with an obscure callus).
Column slender, long 1. *Scaphyglottis cuneata*

1. *Scaphyglottis cuneata* Schltr. in *Beih. Bot. Centralbl.* 36, Abt. 2 (1918) 398.

Up to 20 cm. Stems pseudobulbose, subtended by several distichous, imbricated, scarious sheaths, 2-foliate at apex, 8-9 cm long, about 4 mm in diameter, often with aerial roots arising from junction of stems. Leaves subopposite, erect-spreading, subcoriaceous, linear or linear-ligulate, obtuse and emarginate, 1-5 cm long, up to 0.7 cm wide. Flowers white or pale yellow with purplish lip. Inflorescence a 1- to several-flowered fascicle; pedicels short. Sepals oblong-elliptic, sometimes oblong-subspathulate, acute or sometimes obtuse, subcucullate, 3.5-5 mm long, 1.5-2.5 mm wide; laterals oblique, connate to form a small chin. Petals linear or linear-lanceolate, obtuse or sometimes acute, 5 mm long, 0.5 mm wide. Lip usually undivided (rarely obscurely 3-lobulate), oblong-spathulate, broadly rounded or semi-orbicular, sometimes retuse, entire, 5 mm long, 3-4 mm wide; callus near apex of claw very small or absent. Column slender, 5 mm long, unarined, with short foot. Capsule partly hidden by sheaths, narrowly ovoid, more or less 5 mm long.

Flowers: October-April.

Guatemala to Panama, northern half of South America, Trinidad, Grenada.

TOBAGO: Menna, March 23, 1914, Broadway 4792 (*Herb. Gray* 4417); (ex Broadway, 1918).

TRINIDAD: Chaguanas, March 12, 1892, Alexander s.n. (*Herb. Ames* 7904); Cunupia, March 21, 1892, Alexander s.n. (*Herb. Ames* 7566); November 30, 1892, Broadway s.n. (*Herb. Ames* 7603); Aripo, April 16, 1908, Broadway 2331 (*Herb. Ames* 10666, 10667); Caparo, April 28, 1908, Broadway s.n. (*Herb. Ames* 10706); Tamana, February 19, 1915, Broadway s.n. (*Herb. Trin.* 8829); Cumuto, April 12, 1918, Rogers s.n. (*Herb. Trin.* 8769); Government Forests, October 10, 1923, Broadway 5084 (*Herb. Ames* 39724); Botanic Gardens, February 2, 1926, Williams s.n. (*Herb. Trin.* 11532); Botanic Gardens, December 30, 1933, Bruins-Lich s.n. (*Herb. Trin.* 13026); Crueger s.n. (*Herb. Trin.* 1635); Charuma Forest, Tabaquite, January 12, 1954, Downs & Aitken 17 (*Herb. Ames* 67326); Toco Road, November 29, 1955 (flowered December 20, 1955) Downs & Aitken 17a (*Herb. Ames* 68200); Arima Road, tenth mile, March 23, 1956, Simmonds s.n. (*Herb. Trin.* 15388; *Herb. Ames* 68202).

2. *Scaphyglottis fusiformis* (Griseb.) R. E. Schult. in *Bot. Mus. Leaflet. Harv. Univ.* 17 (1956) 205, t. 52.

Hexadesmia fusiformis Griseb. *Fl. B. W. Ind. Isl.* (1864) 623.

Up to 25 cm tall. Stems few, erect, thickened and pseudo bulbous, fusiform, basally long-attenuate, usually 1-foliate, up to 6 cm long, 3-4 mm in diameter. Leaves erect, linear or linear-ligulate, basally conduplicate, obtuse and emarginate, 7-13 cm long, 4-6 mm wide. Flowers pedicellate, apparently whitish or pale yellow. Inflorescence fasciculate, 1-flowered or shortly racemose; pedicels filiform, 2-2.5 cm long, included in a loose, scarious basal sheath 1 cm long. Sepals and petals similar (but petals usually wider), erect, oblong, apically thickened-acute, about 7 mm long, 2-2.5 mm wide. Lip undivided, broadly spatulate, apical part semi-orbicular and subundulate, retuse, 6.5-7 mm long, 3.5-4 mm wide. Column terete, 5.5 mm long.

Flowers: April.

Endemic to Trinidad and Venezuela.

TRINIDAD: (*Herb. Trin.* 890); Maracas, March 26, 1861 (*Herb. Trin.* 1838); Oropouche, April 1898, Alexander s.n. (*Herb. Trin.* 6076; *Herb. Ames* 66993a); Botanic Gardens, April 1890, Broadway s.n. (*Herb. Trin.* 4031; *Herb. Ames* 66993); Agua Santa Estate, Arima, April 14, 1908, Broadway s.n. (*Herb. Ames* 10708); Caparo, April 28, 1908, Broadway 2317 (*Herb. Ames* 10677, 10678); Cumaca, Downs & Aitken 31 (*Herb. Ames* 67313, 67314); Crueger 39 (ex Cogniaux); Bradford s.n. (ex Cogniaux).

3. *Scaphyglottis modesta* (Rehb. f.) Schltr. in *Fedde Repert. Sp. Nov.* 23 (1926) 46.

Tetragamestus modestus Rehb. f. in *Bonpl.* 2 (1854) 21.

20–50 cm tall. Stems thickened or pseudobulbose, 5–15 cm long, 5–6 mm in diameter. Leaves subopposite, persisting through several years, subcoriaceous, linear or linear-lanceolate, acute, 5–14 cm long, 7–20 mm wide. Flowers fleshy, dull white or greenish white; ovary fusiform, 6–9 mm long. Inflorescence a dense, few-flowered fascicle; pedicels short with numerous bracts 5–12 mm long. Sepals 4–5 mm long; dorsal sepal elliptic-ovate, obtuse; laterals broadly ovate, acute. Petals broadly oblong, obtuse, as long as sepals. Lip slightly 3-lobed, ovate, 5 mm long, 3 mm wide; lateral lobes small, obtuse; mid-lobe conspicuous, broadly ovate, acute; disk with very conspicuous callus. Column rather short, strongly geniculate with ovary, apically 2-winged, basally with obscure foot.

Flowers: December-January; March-May.

West Indies, northern half of South America.

TOBAGO: (ex Broadway, 1918).

TRINIDAD: Botanic Gardens, March 5, 1918, Broadway s.n. (*Herb. Trin.* 8874); Heights of Aripo, January 10–26, 1922, Broadway s.n. (*Herb. Trin.* 9888); May 26, 1925, Hombersley s.n. (*Herb. Trin.* s.n.); January 11, 1926, Williams s.n. (*Herb. Trin.* 11498); Saut d'Eau, North Coast, January 24, 1921, Broadway 7445 (*Herb. Ames* 68587); Cumaca Road, 3rd mile, December 27, 1948, Simmonds 318 (*Herb. Trin.* 14240); El Tucuche, December 30, 1955 (flowered), Downs & Aitken 44 (*Herb. Ames* 67839).

30. **POLYSTACHYA** Hook.

Epiphytic, usually caespitose herbs. Stems short or rather short, leafy, basally sheathed, often thickened into small pseudobulbs. Leaves from 1 to several, distichous, basally contracted into sheaths and articulated to them. Inflorescence a simple raceme or panicle. Flowers small. Bracts small. Dorsal sepal free; laterals connate, forming mentum at point of attachment to column-foot. Petals narrower than sepals, usually linear. Lip erect, on upper side of flower, usually 3-lobed but sometimes almost entire; disk usually with a conspicuous callus, often farinose-glandular. Column short, wingless, truncate, with more or less prominent foot. Pollinia 4, waxy. Capsule oblong-ellipsoid or fusiform.

Polystachya: Greek, 'many spikes', referring to the numerous lateral spikelets of the inflorescence of many species.

One hundred and fifty or more species of the tropics and subtropics of both hemispheres.

1. Leaves lanceolate or oblong-lanceolate.
Sepals and lip rather fleshy. Lateral lobes of lip small, acute. Mentum prominent2. *Polystachya luteola*
- 1a. Leaves linear, rarely linear-lanceolate.
Sepals and lip membranaceous. Lateral lobes of lip rather large, rounded. Mentum inconspicuous1. *Polystachya foliosa*

1. *Polystachya foliosa* (Hook.) Rehb. f. in Walpers *Ann. Bot.* 6 (1863) 640.

Stelis foliosa Hook. in *Ann. Nat. Hist.* 2 (1839) 330.

Erect, usually 8–20 cm. Pseudobulbs 0.8–1.5 cm long, up to 1.5–2 mm in diameter. Leaves usually 2, erect-spreading or spreading, subcoriaceous, linear or (rarely) linear-oblong, emarginate or 3-dentate, 6–18 cm long, usually 3–9 mm wide. Inflorescence a few- to many-flowered simple or branched raceme up to 25 cm long (usually much shorter); peduncle more or less concealed by tubular sheaths. Bracts triangular, 1.5 mm long. Flowers yellowish green or greenish white, fragrant; pedicellate ovary 2 mm long. Sepals membranaceous, usually slightly apiculate, about 2 mm wide;

dorsal sepal narrowly ovate, 1.8–2.4 mm long, about 1 mm wide; laterals oblique, broadly ovate, 2.5–2.8 mm long; mentum inconspicuous, rounded. Petals linear, obtuse, about 2 mm long, 0.5 mm wide. Lip membranaceous, broadly obovate, 3-lobed, 2 mm long, 2.2 mm wide; lateral lobes large, entire, rather broad, rounded; mid-lobe hardly or only slightly larger than lateral lobes, sub-orbicular, marginally undulate-crenate. Column about 1 mm long. Capsule ellipsoid, 5–7 mm long.

Flowers: September–November.

West Indies, Middle and South America.

TRINIDAD: January 10, 1866, Sorzano s.n. (*Herb. Trin.* 1962); Turure River District, June 16, 1917, Williams s.n. (*Herb. Trin.* 8777); Aripo, September 25, 1924, Freeman s.n. (*Herb. Trin.* 10797); Morne Bleu, December 31, 1925, Williams s.n. (*Herb. Trin.* 11492); Long Stretch, Sangre Grande, March 1, 1927, Freeman & Williams s.n. (*Herb. Trin.* 11721); Long Stretch Forest, April 2, 1953, Baker & Simmonds s.n. (*Herb. Trin.* 14926); Paria Road through Blanchisseuse Forest Reserve, January 15, 1955, Herklots s.n. (*Herb. Trin.* 15359); Toco Road, November 29, 1955, Downs & Aitken 70 (*Herb. Ames* 67920); Purdie s.n. (ex Cogniaux); Fendler 776 *pro parte* (ex Cogniaux).

2. *Polystachya luteola* (Sw.) Hook. *Exot. Fl.* 2 (1825) t. 103.
Cranichis luteola Sw. *Fl. Ind. Occ.* 3 (1806) 1433.

Erect, 20–60 cm. Pseudobulbs up to 3.5 cm long, 5 mm in diameter. Leaves 1 to several, erect or erect-spreading, subcoriaceous, oblong-elliptic or elliptic-lanceolate (rarely oblong-oblancheolate), obtuse or acute, 6–25 cm long, 1–3.5 cm wide. Inflorescence a few- to many-flowered, simple or branched raceme up to 50 cm long; peduncle somewhat concealed by tubular sheaths. Bracts triangular, 2–3 mm long. Flowers yellowish green, fragrant; pedicellate ovary 4–5 mm long. Sepals rather fleshy, usually apiculate; dorsal sepal triangular-ovate, about 4 mm long, 3 mm wide; laterals obliquely triangular, 3.5–4 mm long, 4 mm wide; mentum prominent, saccate, obtuse, 5–6 mm long, basally 4 mm wide. Petals linear-spathulate, subobtuse or acute, 3 mm long, 0.5 mm wide. Lip fleshy, cuneate or narrowly obovate, deeply

3-lobed, 3.5-4 mm long, 3-3.5 mm wide; lateral lobes small, entire, narrow, obtuse; mid-lobe much larger, suborbicular, truncate, marginally undulate-crenate. Column about 1 mm long. Capsule ellipsoid, up to 12 mm long.

Flowers: October-January.

Florida, Mexico, Middle America, tropical South America, West Indies, Asia, Africa.

TOBAGO: Widow Woods, March 1911, Broadway s.n. (*Herb. Ames* 26536); Cinnamon Hill, October 29, 1913. Broadway 4821 (*Herb. Ames* 39726); Pigeon Hill, Charlotte Ville (ex Broadway, 1918).

TRINIDAD: Government House Grounds, September 16, 1908, Broadway 2901 (*Herb. Ames* 11695); Government House, December 1908, Broadway s.n. (*Herb. Ames* 11677); Tamana, February 19, 1915, Broadway s.n. (*Herb. Trin.* 8827); November 25, 1918, Broadway s.n. (*Herb. Ames* 22040; *Herb. Gray* 5256); St. Ann's, October 23, 1919, Broadway s.n. (*Herb. Gray* 5255); Heights of Aripo, January 10-26, 1922, Broadway s.n. (*Herb. Trin.* 9891; *Herb. Ames* 68176); Aripo, September 25, 1924, Freeman s.n. (*Herb. Trin.* 10799); Morne Bleu, November 15, 1927, Williams s.n. (*Herb. Trin.* 11878); Talparo, September 21, 1932, Bruins-Lich s.n. (*Herb. Trin.* 12718); tenth mile, Arima-Blanchisseuse Road, September 25, 1949, Baker s.n. (*Herb. Trin.* 14426); Arena Forest Reserve, October 2, 1953, Ayliffe 148 (*Herb. Trin.* 15024); Melajo Forest, Downs & Aitken 61 (*Herb. Ames* 67813); Waller Field, December 4, 1955, Downs & Aitken 75 (*Herb. Ames* 67909); (*Herb. Trin.* 1522); Fendler 776 *pro parte* (ex Cogniaux).

31. BLETIA R. & P.

Erect, mostly terrestrial herbs. Leaves few, often early deciduous, thick-membranaceous, plicate, basally forming a papyraceous petiole, arising from a corm. Inflorescence a slender, erect, lateral scape, racemose above, sometimes paniculate, usually with numerous flowers. Sepals free, spreading; laterals subequal, basally slightly gibbous. Petals similar to dorsal sepal or wider.

Lip attached to base of column, free, erect, entire or 3-lobed; lateral lobes erect, curved upward; mid-lobe broad, erect or recurved, spreading, apically often crisped, sometimes emarginate or 2-lobulate; disk lamellate or with from 5 to 7 fleshy, denticulate crests. Column elongate, apically winged, basally auriculate, footless. Capsule erect, ellipsoid, beakless.

Bletia: in honour of Don Ludovica Blet, a Spanish pharmacist and student of plants of the eighteenth century.

About 50 species of Florida, West Indies, Mexico, Middle America, South America south to Argentina.

Bletia florida (Salisb.) R. Br. in Aiton *Hort. Kew.*, ed. 2, 5 (1813) 206.

Cymbidium floridum Salisb. *Prodr.* (1796) 9.

Pseudobulbs subglobose, transversely annulate above, about 5 cm in diameter. Leaves linear or lanceolate, long-acuminate, basally attenuate, 30–48 cm long, 3–8 cm wide. Inflorescence laxly many-flowered, up to 80–90 cm long. Flowers deep purple; lamellae of lip white or yellow. Bracts triangular-linear, acute, 3–10 mm long. Sepals oblong, acute, 19–30 mm long; laterals slightly shorter than dorsal. Petals obovate, obtuse or rounded, slightly undulate, about 20–22 mm long, 9–10 mm wide. Lip somewhat longer than petals, deeply 3-lobed, oblong in outline; lobes undulate-crispate; lateral lobes almost round; mid-lobe obovate, slightly emarginate; disk 5-lamellate. Column footless, winged throughout, about 15 mm long.

Flowers: December–April.

West Indies, northern South America.

TRINIDAD: Botanic Garden, April 1889, Broadway s.n. (*Herb. Trin.* 3770); Government House Grounds, December 28, 1906, Broadway s.n. (*Herb. Ames* 10084); Government House Grounds, February 15, 1907, Broadway s.n. (*Herb. Ames* 10082, 10083).

All of the collections of *Bletia florida* from Trinidad are from cultivated plants. It is not possible to assign this species with certainty to the native flora of the island.

32. BULBOPHYLLUM Thouars

Epiphytic herbs with small pseudobulbs loosely distributed on creeping rhizome, covered with scarious sheaths. Leaves 1 or 2, on apex of pseudobulbs. Inflorescence from base of pseudobulb, simple, erect or arching. Lateral sepals free or connate and adnate to column foot; dorsal free. Petals usually much shorter than sepals. Lip fleshy, simple or sometimes 3-lobed, with basal callus, appressed to column. Column erect, short, with foot, apically with a pair of stelia, winged. Capsule globose, ovoid or oblong-cylindric, beakless.

Bulbophyllum: Greek, 'bulb' and 'leaf', in reference to the thick fleshy leaves.

A large genus in the Old World, represented in the New World tropics by a few species of West Indies, Mexico, South America south to Paraguay.

Bulbophyllum pachyrhachis (A. Rich.) Griseb. *Fl. Brit. W. Ind. Isl.* (1864) 613 (quoad *Bolbophyllum pachyrrhachis*). *Pleurothallis pachyrhachis* A. Rich. in La Sagra *Fl. Cub.* 11 (1850) 234, t. 74.

Common name: Rat-tail Orchid.

Creeping, often pendent, 10-45 cm. Pseudobulbs ovoid-conical, 2-5 cm long, 8-15 mm in diameter. Leaves coriaceous, oblong-lanceolate, acute or obtuse, 7-20 cm long, 8-25 mm wide. Inflorescence 10-45 cm long. Bracts triangular-ovate. Flowers sessile in pits on fleshy peduncle, greenish yellow, spotted with purple dots. Sepals 3-nerved, triangular-ovate or ovate-lanceolate, long-acuminate, 4-7 mm long, 1.5-3 mm wide. Petals fleshy, 1-nerved, oblong-elliptic, obtuse, less than $\frac{1}{2}$ length of sepals. Lip entire, 3-angled in cross-section, linguiform, articulated with column-foot, 2.5 mm long. Column short, apically 3-dentate, provided with a foot.

Flowers: December-April.

Mexico to Panama, West Indies.

TRINIDAD: (*Herb. Trin.* 1836); December 6, 1848 (*Herb. Trin.* 1633); Chaguanas, March 12, 1892, Alexander s.n. (*Herb. Ames* 7619); Caparo, April 28, 1908, Broadway s.n. (*Herb. Ames* 10712); Blanchisseuse, May 14, 1908,

Broadway 2322 (*Herb. Ames* 10711); Maraval, April 5, 1911, Broadway s.n. (*Herb. Ames* 39735); Santa Cruz, January 28, 1911, Baptiste s.n. (*Herb. Trin.* s.n.); May 20, 1920, Broadway s.n. (*Herb. Ames* 22065); Heights of Aripo, January 10, 1926, Broadway 9895 (*Herb. Trin.* s.n.; *Herb. Ames* 22624); Gasparillo Road, March 15, 1926, Freeman s.n. (*Herb. Trin.* 11528); Biche, March 3, 1955, Downs & Aitken 26 (*Herb. Ames* 67316); Crueger 40 (ex Cogniaux); Bradford s.n. (ex Cogniaux).

33. *EULOPHIA* R. Br. ex Lindl.

Terrestrial herbs with tuberous corms. Leaves few, long, plaited, attenuate below. Inflorescence erect, arising from base of tuberous pseudobulb, long, leafless, racemose. Flowers many. Sepals free, subequal, lateral sepals broad at base and adnate to foot of column. Petals similar to dorsal sepal but narrower. Lip attached to apex of column-foot, 3-lobed, lateral lobes embracing column, mid-lobe spreading; base of lip forming a gibbous sack continuous with column-foot. Column erect, short, basally provided with a short foot. Capsule ellipsoidal, pendent, beakless.

Eulophia: Greek, 'well crested', in reference to the crest on the lip of the type species.

A large genus, chiefly Asiatic and African, with only a few species in the New World.

Eulophia alta (L.) Fawc. & Rendle *Fl. Jam.* 1 (1910) 112 t. 22, figs. 4-8.

Limodorum altum L. *Syst.*, ed. 12 (1767) 594.

60-120 cm tall. Leaves appearing after flowers, lanceolate, acuminate, 1-7 to 9-nerved, 50-120 cm long, 3-10 cm wide, basally contracted into a cylindric petiole. Inflorescence 60-100 cm long, laxly many-flowered. Flowers green with brownish green lip. Sepals lanceolate to oblong-oblongeolate, acute or obtuse, 2-2.5 cm long, 0.7-0.8 cm wide; laterals oblique, adnate at base of column-foot, slightly larger than dorsal sepal. Petals oblong, obtuse, 1.4-1.7 cm long, 0.7-0.8 mm wide. Lip 3-lobed; lateral lobes rounded, erect; mid-lobe entire; disk with 2 warty calluses, papillose-crested along nerves, basally subsaccate. Column about 9 mm long, winged. Capsule 3.5-4.5 cm long.

Flowers: August-September; February-June.

Florida, West Indies, Mexico, Middle America, northern South America. Also Africa, where it may be introduced.

TRINIDAD: Guaico-Tamana junction, February 16, 1915, Broadway s.n. (*Herb. Trin.* 8826); Lalaja Ridge, Arima-Guapo, August 13, 1916, Ulrich s.n. (*Herb. Trin.* 8351); Point Fortin, August 9, 1918, Doyle s.n. (*Herb. Trin.* 8754); Cedros, August 15, 1918, Sankeralli s.n. (*Herb. Trin.* 8843); St. Augustine Estate, September 9, 1918, Freeman s.n. (*Herb. Trin.* 8753); Aripo Savannah Road, August 7, 1925, Williams & Freeman s.n. (*Herb. Trin.* 11322); Long Stretch, August 20, 1940, Cheesman & Baker (*Herb. Trin.* 13643); Long Stretch, August 1949, Ayliffe s.n. (*Herb. Trin.* 14412); Long Stretch, August 4, 1949, Baker s.n. (*Herb. Trin.* 14415); Piarco Savannah, August 15, 1953, Shepherd s.n. (*Herb. Trin.* 15019); Aripo Savannah, June 30, 1956, Downs & Aitken 104 (*Herb. Ames* 68424); Long Stretch, 26½ mile post, Valencia, August 20, 1963, Aitken s.n. (*Trin. Reg. Virus Lab.* 358); Aripo Savannah, Crueger s.n. (ex Cogniaux).

34. CYRTOPODIUM R. Br.

Epiphytic or terrestrial herbs with stout, fusiform pseudobulbs, concealed by scarious leaf-sheaths. Leaves eventually deciduous, plicate-venose, distichous. Inflorescence arising from base of pseudobulbs, erect, many-flowered racemes or panicles; peduncles leafless but with many amplexicaul sheaths as long as or longer than leaves. Flowers medium-sized to large and showy. Bracts linear to lanceolate, often coloured. Sepals subequal, free, spreading; lateral sepals shortly adnate to foot of column. Petals similar. Lip 3-lobed, affixed to foot of column and often clawed; lateral lobes broad or rounded, erect and often more or less incurved over column; mid-lobe entire, retuse, crispate; disk basally with a fleshy crest. Column erect-arcuate, with a foot at base.

Cyrtopodium: Greek, 'curved foot' and referring to the curiously curved column.

About a dozen species of the American tropics and subtropics.

1. Inflorescence usually variously branched,
60–160 cm long.
2. Bracts not undulate. Lip sessile,
basally truncate1. *Cyrtopodium*
Andersonii
- 2a. Bracts undulate. Lip long and
narrowly clawed, basally cordate3. *Cyrtopodium*
punctatum
- 1a. Inflorescence usually simple, 30–45 cm
long2. *Cyrtopodium*
Broadwayi

1. *Cyrtopodium Andersonii* (Lamb. ex Andrews) R. Br.
in Aiton *Hort. Kew.*, ed. 2, 5 (1813) 216.

Cymbidium Andersonii Lamb. ex Andrews *Bot. Repos.* 10
(1811) 651.

Up to 160 cm. Pseudobulbs erect, fusiform-cylindric, 60–100 cm long, 3–5 cm in diameter. Leaves coriaceous, narrowly lanceolate, short-acuminate, 30–60 cm long, 2–5 cm wide. Inflorescence 90–160 cm tall, robust, branched above, broadly pyramidal, many-flowered. Bracts membranaceous, yellowish green, ovate or ovate-lanceolate, acuminate, not undulate or hardly so, 3–5 cm long. Pedicel (with ovary) up to about 3 cm long. Sepals subequal, yellowish green, broadly elliptic-ovate, obtuse or sometimes slightly apiculate, not undulate or hardly so, 18–22 mm long, 13–17 mm wide. Petals lemon-yellow, broadly obovate, rounded, not undulate, 18–23 mm long, 12–15 mm wide. Lip sessile, 18–20 mm long, 25–30 mm wide, basally truncate; lateral lobes obovate, rounded; mid-lobe somewhat shorter, broadly obovate-subquadrate, somewhat rounded; disk longitudinally sulcate. Column 5–6 mm long, without wings.

Flowers: December–February.

West Indies, tropical South America.

TRINIDAD: Hart s.n. (*Herb. Trin.* 1817); Lockhart s.n. (ex Cogniaux).

2. *Cyrtopodium Broadwayi* Ames *Orchid.* 7 (1922), 51, t. 112.

Up to 45 cm. Pseudobulbs fusiform, 5-8 cm long, 1.5 cm in diameter, with 5 to 8 rings on which remnants of leaf-bases persist. Leaves coriaceous, linear, acute, often apiculate, up to 45 cm long, 1.5 cm wide. Inflorescence erect, up to 45 cm tall, usually simple, many-flowered. Bracts ovate-lanceolate, acute, membranaceous, about 1.5 cm long. Pedicel (with ovary) 2 cm long. Flowers 2-2.5 cm in diameter, brown-purple with yellow spots and blotches. Lateral sepals ovate-lanceolate, acute, slightly undulate, 9-14 mm long, 6-7 mm wide; dorsal similar. Petals elliptic-ovate, rounded and usually apiculate, 8-12 mm long, 7-8 mm wide. Lip narrowly long-unguiculate; lateral lobes erect, broadly falcate, rounded, 6-7 mm long, 3-4 mm wide; mid-lobe below subquadrate, then abruptly dilated above middle, broadly emarginate, rounded on distal margin; claw 3.5 mm long, 2 mm wide, oblong-cuneate, with raised nerves ending in a large, oblong, fleshy, 4-lobed crest on disk between lateral lobes. Column 7-8 mm long, clavate, fleshy, without wings, produced into a membranaceous, oblong foot joined to claw of lip.

Flowers: January-April; August.

Endemic to Trinidad.

TRINIDAD: Aripo Savannah (*Herb. Trin.* s.n.); Piarco Savannah, Lunt s.n. (*Herb. Trin.* 6021); Aripo Savannah, Hart s.n. (*Herb. Trin.* 5326); Caroni Savannah, 1888, Hart s.n. (*Herb. Trin.* 3499); Botanic Gardens, February 27, 1893, Hart s.n. (*Herb. Trin.* 5261); Aripo Savannah, March 26, 1893, Broadway s.n. (*Herb. Trin.* 5328); April 1896, Alexander (?) s.n. (*Herb. Trin.* s.n.); Aripo Savannah, April 16, 1908, Broadway 2343 (Type, *Herb. Ames* 11713); Aripo Savannah, August 19, 1908, Broadway 2343a (*Herb. Ames* 66996); July 28, 1909, Broadway 2343b (*Herb. Ames* 11712); Aripo Savannah, February 13, 1915, Freeman s.n. (*Herb. Trin.* 8044; *Herb. Ames* 66997); Aripo Savannah, March 5, 1920, Britton, Broadway & Hazen 313 (*Herb. Trin.* 10526); February-March 1921, Bailey & Bailey T40 (*Herb. Ames* 20553); Aripo Savannah, January 31, 1922, Broadway s.n. (*Herb. Trin.* 10948); Near Mount

Tamana, Mount Harris, February 2, 1922, Nowell s.n. (*Herb. Trin.* 10502); Aripo Savannah, April 2, 1953, Baker & Simmonds s.n. (*Herb. Trin.* 14921); Aripo Savannah, Downs & Aitken 96 (*Herb. Ames* 69910).

3. *Cyrtopodium punctatum* (L.) Lindl. *Gen. and Sp. Orch. Pl.* (1833) 188.

Epidendrum punctatum L. *Syst.*, ed. 10 (1759) 1246.

Robust, up to 120 cm (or more). Pseudobulbs in clusters, stout, fusiform, 12-40 cm long, 1.5-5 cm in diameter, when young leafy, when old naked or with remnants of leaf bases. Leaves coriaceous, linear-lanceolate, acute to acuminate, recurved, 30-65 (rarely up to 120) cm long, 2-7.5 cm wide. Inflorescence up to 120 cm long, branched, broadly pyramidal, many-flowered; peduncle very stout, with large, scarious sheaths. Bracts rigidly membranaceous, ovate-oblong to oblong-lanceolate, acute, undulate, yellowish green. Pedicel (with ovary) 2.5-3.5 cm long. Flowers showy. Sepals yellowish green, irregularly marked with brown spots, ovate or oblong-ovate, acute, undulate; dorsal sepal 1.7-2.5 cm long, 8-11 mm wide; laterals 1.5-2 cm long, 7-10 mm wide. Petals lemon-yellow, sometimes brown-spotted, narrowly obovate, rounded, usually somewhat clawed, undulate-crispate, 1.5-2 cm long, 9-12 mm wide. Lip long and narrowly clawed, 12-16 mm long, 17-22 mm wide, cordate; lateral lobes erect, converging over column, broadly cuneate-obovate, rounded, larger than mid-lobe, 8-9 mm long, 8-10 mm wide, reddish brown grading into yellow at base; mid-lobe rigid, broadly reniform, strongly undulate, crispate and erose-tuberculate, rounded, 7.5-10 mm wide, yellow with deep purple or reddish markings; disk below with a warty callus. Column clavate, with dorsal crest, wingless, with a foot projecting forward at right angles, 7 mm long. Capsule oblong-ovoid, 8 cm long or longer, 3-5 cm in diameter.

Flowers: April-May.

Southern Florida, Mexico, Middle America, West Indies, South America as far south as Paraguay and the Argentine.

TRINIDAD: Chacachacare, April 18, 1865 (*Herb. Trin.* 1972); May 23, 1908, Evans s.n. (*Herb. Ames* 10683, 10684, 10685); Chacachacare, May 18, 1916, Doyle s.n. (*Herb. Trin.* 8121); Chacachacare, May 1925, Williams (*Herb. Trin.* 11059); Chacachacare, 1956, Downs & Aitken 93 (*Herb. Ames* 69908).

35. CATASETUM L. C. Rich.

Herbs, usually epiphytic, with short stems. Pseudobulbs fleshy, ovoid or fusiform, covered with large leaf-sheaths. Leaves large, plicate-veined, basally narrow and articulated to leaf-sheaths, deciduous. Inflorescence lateral from base of pseudobulbs, arching or pendent, simple. Flowers few to many, usually large and showy, unisexual or perfect, monomorphic, dimorphic or sometimes trimorphic. Sepals and petals free, often subequal, fleshy-membranaceous; spreading or reflexed, basally connivent. Lip fleshy, rigid, sessile at base of column. Column erect, fleshy, footless. *Staminate flowers*: lip carnosely, deeply concave, saccate-calceolate or helmet-shaped, margins often crenulate or fimbriate at orifice. Column erect, footless, usually with a pair of elongated, reflexed antennae. *Pistillate flowers* (not so numerous as staminate flowers): lip similar, sometimes dorsally flattened. Column shorter and stouter, without antennae. Capsule very large, oblong, beakless.

Catasetum: Greek, 'reflexed antenna', in reference to the antenna-like appendages borne usually in the staminate flower at the apex of the column and directed downwards.

Some 50 species in the New World.

1. Antennae of staminate flowers symmetrical1. *Catasetum barbatum*
- 1a. Antennae of staminate flowers asymmetrical
2. Lip uppermost, deeply cucullate or sacciform, with a callus2. *Catasetum macrocarpum*
- 2a. Lip lowermost, concave or scutelliform, without a callus3. *Catasetum pileatum*

1. *Catasetum barbatum* (Lindl.) Lindl. in *Bot. Reg.* 30 (1844) Misc. p. 38.

Myanthus barbatus Lindl. in *Bot. Reg.* 31 (1835) t. 1778

Pseudobulbs 10-15 cm long. Leaves oblong-lanceolate, acute, basally long-attenuate, variable but usually 20-45 cm long, 3-8 cm wide, lower ones gradually smaller. Staminate scape robust, erect or arcuate above middle, basal portion with spathe-like sheaths, about 30 cm long, upper half many-flowered. Flowers few to

many, spreading, usually dark green, purple-spotted, lip reddish or white. Bracts slightly concave, linear-lanceolate, 9-12 mm long. Sepals often equal, ovate-lanceolate, acuminate; dorsal connivent and forming with petals a helmet over column. Petals broadly lanceolate, acute, about 25 mm long, 5 mm wide. Lip fleshy, about 15-18 mm long, adnate to base of column, flat, linear, 3-toothed, basally with simple or 3-parted corniform callus and apically with triangular callus (but often ecallose) projecting towards tip, margins of lip and around apical callus with numerous beaked, long, fleshy threads. Column spotted dark blood-red, erect, about 17 mm long, apically with 2 parallel antennae, each 7-9 mm long.

Flowers: August-April.

Trinidad, the Guianas, Colombia, Peru, Bolivia, Brazil to southern Matto Grosso.

TRINIDAD: September (?), Broadway s.n. (*Herb. Trin.* 8751); Royal Botanic Gardens, September 1891, Alexander s.n. (*Herb. Trin.* 5431); September 19, 1914, Nurse s.n. (*Herb. Trin.* 8750); Siparia, April 14, 1916, Broadway (?) s.n. (*Herb. Trin.* s.n.); North Trace via Prince's Town, August 19, 1918, Broadway s.n. (*Herb. Trin.* 8836, 8837); June 1925, Hombersley s.n. (*Herb. Trin.* 11486).

2. *Catasetum macrocarpum* L. C. Rich. ex Kunth *Syn. Pl. Aequin.* 1 (1822) 330.

Common names: Monkshead; Monkey Goblet.

Pseudobulbs 10-20 cm long. Leaves oblong-lanceolate, acuminate, long-attenuate, variable but usually 25-45 cm long, 4-7 cm wide. Staminate scape robust, erect or slightly inclined, 15-30 cm long, uppermost third of its length from 5- to 10-flowered. Bracts narrowly triangular, acute, 6-10 mm long. Flowers spreading, turned downwards, in general green or yellow-green, spotted with purple. Sepals lanceolate, acuminate, about 4 cm long; dorsal erect, 9-12 mm wide; laterals spreading, 14-15 mm wide. Petals almost hidden by sepals, obovate to oblong, acuminate, about 4 cm long, 24 mm wide. Lip uppermost, very fleshy-coriaceous, deeply cucullate, about 2 cm long, mouth almost round, 3-dentate or 3-lobulate at apex; lateral lobe large, erect, rounded; mid-lobe

very small, linguiform; margins entire or sometimes slightly serrulate. Column 2.5-3 cm long, with a long beak; antennae about 2 cm long, one porrect, the other laterally strongly incurved at tip.

Flowers: September-October.

Venezuela, the Guianas, northern Brazil, Trinidad and Tobago.

TOBAGO: Scarborough 1921, Broadway 4288 (ex Sandwith); Roxborough-Parlatuvier Road, eighth to ninth mile-posts, in reserve forests of Main Ridge, 1100-1200 ft, October 25, 1937, Sandwith 1931 (ex Sandwith).

TRINIDAD: Road between Siparia and Erin, Broadway s.n. (*Herb. Ames* 11679); 1908, Broadway s.n. (*Herb. Ames* 11691); Tabaquite, October 31, 1918, Broadway s.n. (*Herb. Ames* 22042; *Herb. Gray* 5920); September 25, 1924, Withycombe s.n. (*Herb. Trin.* 11197); Cumaca, Arima Valley, June 10, 1955 (flowered) Downs & Aitken 6 (*Herb. Ames* 67331, 67901); Melajo Forest, May 18, 1956, Downs & Aitken 95 (*Herb. Ames* 69909).

3. *Catasetum pileatum* Rehb. f. in *Gard. Chron.*, n. ser. 17 (1882) 492.

Pseudobulbs 15-25 cm long. Leaves ligulate-lanceolate, acute, long-attenuate below, 20-35 cm long, 4-7 cm wide. Staminate scape robust, nodding, 20-30 cm long, above densely many-flowered. Bracts oblong, acute, 7-10 mm long. Flowers yellow-white or pale rose, fragrant. Sepals broadly lanceolate, acute, 4-5.5 cm long, 14-18 mm wide; dorsal spreading or erect-spreading; laterals widely spreading. Petals broadly cuneate-lanceolate, acute, 4-5.5 cm long, 15-20 mm wide. Lip lowermost, thickly fleshy, concave, undivided, transversely oblong or almost round, 4-5 cm long, 6-7 cm wide, shortly and obtusely saccate above base, often slightly emarginate at apex. Column 3-3.5 cm long, with a very long beak; antennae 14-17 mm long, subulate, one porrect, the other strongly incurved at tip.

Flowers: July.

Venezuela, northern Brazil, Trinidad.

TRINIDAD: Hand s.n. (ex Cogniaux).

4. *Catasetum cernuum* (Lindl.) Rchb. f. in Walpers *Ann. Bot.* 6 (1863) 670.

Myanthus cernuus Lindl. in *Bot. Reg.* 18 (1832) t. 1538.

A Brazilian species (Mansfeld in *Fedde Repert. Sp. Nov.* 31 (1932) 109), cited from Trinidad (COGNIAUX in *Martius Fl. Bras.* 3, pt. 5 (1902) 438; BROADWAY in *Orch. Rev.* 34 (1926) 170), but no material seen to authenticate record. Type sent to England by Lockhart from Trinidad, but original collection made in Rio de Janeiro (LINDLEY in *Bot. Reg.* 20 (1835) t. 1721).

36. *KEGELIELLA* Mansf.

Small, epiphytic herbs. Pseudobulbs ovoid or pyriform, flattened and angular, 2- or 3-foliate. Leaves elliptic-lanceolate, acute, contracted into a short petiole. Inflorescences racemose, pendulous from base of pseudobulb; axis densely red- or brown-glandular-pilose, 1- to few-flowered. Bracts lanceolate, about 1 cm long, brown-pilose. Sepals subequal, free, spreading, glandular-pilose without, lanceolate or lanceolate-elliptic, acute or acuminate. Petals subequal to sepals or somewhat shorter, but narrower, lanceolate or oblanceolate, acute or acuminate. Lip thin or fleshy, 3-lobed, shortly clawed, glabrous; lateral lobes large, erect or spreading, hatchet-shaped or broadly ovate and subtruncate towards base; mid-lobe smaller, triangular or subcordate, separated from laterals by notched sinuses or plicate folds; callus erect, fleshy, keeled, 2-lobed or linguiform. Column elongate, footless, broadly winged.

Kegeliella: in honour of Herr Kegel, gardener of Halle University in Germany, who first collected this genus in Dutch Guiana.

Two species from Costa Rica, Panama, Jamaica, Trinidad, Dutch Guiana, Venezuela.

Kegeliella Houtteana (Rchb. f.) L. O. Wms. in *Ann. Mo. Bot. Gard.* 29 (1942) 347.

Kegelia Houtteana Rchb. f. in *Bot. Zeit.* 10 (1852) 670.

Pseudobulbs ovoid, 1.5–2 cm long, up to 1.5 cm in diameter. Leaves usually 3, 10–13 cm long, 3.5–5 cm wide. Inflorescence about 10 cm long. Flowers few. Sepals elliptic, yellow, externally red-pilose; dorsal sepal up to 15 mm long, 3–4 mm wide; laterals

up to 16 mm long, 4-5 mm wide. Petals lanceolate, acuminate, yellow with red cross-bands, up to 12 mm long, 1.5-2.5 mm wide. Lip membranaceous, yellow, 3-lobed, 10-11 mm long, 5-7 mm wide; lateral lobes erect; mid-lobe flat, spreading. Column 10-12 mm long, greenish. Anther yellow.

Flowers: August, January.

TRINIDAD: Heights of Guanapo, August 24, 1930, Skinner & Robinson s.n. (*Herb. Ames* 36524); Morne Bleu, January 10, 1931, Williams s.n. (*Herb. Trin.* 12455).

37. PERISTERIA Hook.

Epiphytic or terrestrial herbs. Pseudobulbs fleshy, ovoid or subconic, bearing from 1 to several leaves. Leaves usually large, elliptic-lanceolate, plicate-veined, often deciduous. Inflorescence lateral, short or tall, erect or nodding, racemose. Flowers fleshy, large, showy, bell-shaped or subglobose. Inflorescence an unbranched raceme arising from base of pseudobulbs. Bracts small, usually shorter than ovary. Sepals carnos, subequal, concave; laterals somewhat connate at base, wider than dorsal sepal. Petals smaller than or subequal to sepals. Lip fleshy, 3-lobed, basally broadly clawed; claw adnate to base of column; lateral lobes erect; disk with or without a callus. Column erect, short, fleshy, with a foot, with or without lateral auricles.

Peristeria: Greek, 'dove', in allusion to the appearance of the column in some species.

Some half dozen species of Costa Rica, south throughout northern South America, Trinidad.

1. Flowers without spots. Margin of mid-lobe of lip crisped. Column without wings1. *Peristeria cerina*
- 1a. Flowers purple-spotted. Margin of mid-lobe of lip not crisped. Column auricled or winged.....2. *Peristeria pendula*

1. *Peristeria cerina* Lindl. in *Bot. Reg.* 23 (1837) t. 1953.

Pseudobulbs ovoid, up to 7-9 cm long, flattened, usually 3- or 4-foliate. Leaves membranaceous, plicate, oblong-lanceolate, acute, attenuate, from 5- to 7-nerved, 25-30 cm long, 4-5.5 cm

wide. Flowers spotless, yellow, waxen, with fragrance of juniper. Inflorescence pendent, about 15 cm long, densely 4- to 12-flowered, basally vaginate; sheaths 8-12 mm long. Bracts 8-9 mm long. Sepals fleshy, concave, ovate or suborbicular, obtuse, 2-2.5 cm long, 2 cm wide; laterals basally connate. Petals elliptic-ovate, obtuse, 1.8-2 cm long, 1 cm wide. Lip 3-lobed, longer than lateral sepals; claw elongated, articulated with base of column; lateral lobes small, erect, broadly ovate, acute, entire, apical lobe sharply inflexed, concave, ovate, subtruncate at base, retuse with margins dentate-crispate and tinged with red, about 2.5 cm long. Column erect, semi-terete, 12 mm long.

Flowers: April.

Trinidad, northeastern South America.

TRINIDAD: Siparia, April 11, 1930, Broadway 7429 (*Herb. Ames* 36523); Downs & Aitken 113 (*Herb. Ames* 68530).

2. *Peristeria pendula* Hook. in *Bot. Mag.* 63 (1836) t. 3479.

Pseudobulbs elongate-ovoid, flattened, sulcate, 10-15 cm long, 3- or 4-foliate. Leaves membranaceous, plicate, elliptic-lanceolate, acute, attenuate, 7-nerved, 40-60 cm long, 7-11 cm wide. Flowers pale greenish white without, within tinged with pale pink-violet and purple dots, fragrant. Inflorescence pendent, up to 18 cm long, from 4 to 6-flowered, vaginate. Bracts small. Sepals slightly unequal, fleshy, concave, suborbicular, obtuse, 3-3.5 cm long, 3-3.5 cm wide; laterals usually shorter, basally connate. Petals broadly ovate, obtuse, 3-3.5 cm long, 2-2.5 cm wide. Lip 3-lobed, slightly shorter than lateral sepals; claw elongated, articulated with base of column; lateral lobes rounded, entire; disk with a crescentiform callus; apical lobe ovate, 2-lamellate, apically recurved, obtuse, entire, 2-2.5 cm long. Column erect, semi-terete, apically with porrect wings, 15 mm long.

Panama, British and Dutch Guiana, Peru, Amazonian Brazil, Trinidad.

TRINIDAD: Siparia, April 14, 1916, Broadway s.n. (*Herb. Trin.* 7656.)

38. PAPHINIA Lindl.

Epiphytic herbs with short stems. Pseudobulbs fleshy, apically 2- or 3-foliate. Leaves large, plicate-venose. Inflorescence hanging from base of pseudobulbs, short, 2- or 3-flowered. Flowers large. Sepals subequal, erect-spreading; lateral sepals forming short chin with foot of column. Petals similar. Lip joined to base of column, short-clawed, 3-lobed, shorter than sepals; lateral lobes spreading, apically provided with thread-like glands; disk with callus. Column rather long, clavate, semi-terete, minutely auriculate, basally provided with foot.

Paphinia: from Paphos, a city of Cyprus, sacred to the Goddess Venus.

Four species of northern South America and Trinidad.

Paphinia cristata (Lindl.) Lindl. in *Bot. Reg.* 29 (1843) Misc. p. 14.

Maxillaria cristata Lindl. *loc. cit.* 31 (1836) t. 1811.

Pseudobulbs elongate-ovoid, sulcate, flattened, up to 5 cm long, 1.5–2.5 cm in diameter. Leaves membranaceous, broadly lanceolate or elliptic-lanceolate, acute, pseudopetiolate, 15–25 cm long, 2.5–4.5 cm wide. Inflorescence slender, 1- to 3-flowered, 5 cm long. Bracts large, lanceolate, acute. Flowers showy: sepals white with red stripes; lip purple; claw green with white teeth; column greenish, apically yellow. Sepals somewhat fleshy, broadly lanceolate, acute, 4–5 cm long, 1–1.5 cm wide. Petals similar, 4–4.5 cm long, about 1 cm wide. Lip fleshy, up to 2 cm long, round-ovate, basally sparsely setulose; lateral lobes linear-falcate, acute; mid-lobe much larger, ovate, usually with 2 lateral lobules near base, rounded, cristate-fimbriate or coarsely ciliate; disk with a fleshy, lacinate crest. Column 20–30 mm long, apically with triangular wings, basally with foot, 7–8 mm long.

Flowers: February–September.

Colombia, Venezuela, British Guiana, northern Brazil, Trinidad.

TRINIDAD: Broadway s.n. (*Herb. Trin.* 8833); Aripo Savannah, February 13, 1915, Freeman s.n. (*Herb. Trin.* 8043); Tamana, July 4, 1915, Broadway s.n. (*Herb. Trin.* 8752); Mora Forest, 4½ mile post, September, 1, 1925, Williams s.n. (*Herb. Trin.* 11483); August 31, 1925,

Williams s.n. (*Herb. Trin.* 11484); Old Valencia Road, July 14, 1956 (flowered), Downs & Aitken 106 (*Herb. Ames* 68425).

39. *STANHOPEA* *Frost ex Hook.*

Epiphytic or terrestrial plants. Stems thickened into a pseudobulb. Pseudobulbs small, ovoid to subcylindric, 1-foliate. Leaf usually large, plicate, petiolate. Inflorescence lateral from base of pseudobulb, a 1- to several-flowered, loose, pendent, raceme. Bracts usually conspicuous, papery. Flowers large, showy usually aromatic-fragrant, fleshy, pedicellate. Sepals spreading, free, subequal or with lateral sepals wider and sometimes slightly connate at base. Petals similar to sepals but narrower, usually undulate. Lip very fleshy, adnate to base of column, rarely entire or lobed; basal portion with erect margins, thickened and forming variously shaped (usually globose or slipper-shaped) hypochile; terminal portion entire or divided, with simple or with laterally horned mesochile and entire or 3-lobulate epichile. Column long, erect, footless, nearly wingless to broadly alate above, apically provided with 2 teeth or horns. Capsule large, fusiform or ellipsoidal.

Stanhopea: in memory of the Earl of Stanhope (Philip Henry Stanhope, 1781-1855) who served as president of the Medico-Botanical Society of London.

About 25 species of tropical America.

Stanhopea grandiflora (Lodd.) Lindl. *Gen. and Sp. Orch. Pl.* (1832) 158.

Ceratochilus grandiflorus Lodd. *Bot. Cab.* (1828) t. 1414.

Stanhopea eburnea Lindl. in *Bot. Reg.* 18 (1832) t. 1529.

Stanhopea calceolus Hort. ex Rchb. f. *Xen. Orch.* 1 (1858) 117.

Stanhopea calceolata Hort. ex Rchb. f. *loc. cit.* 1 (1858) 117.

Common name: Lady's Slipper Orchid.

Up to about 60 cm. Pseudobulb ovoid, up to 7 cm long. Leaves chartaceous, oblong-elliptic, 25-55 cm long, 6-11 cm wide (with petiole); petiole 4-8 cm long. Flowers fragrant, white; lip finely purple-spotted; pedicel (with ovary) about 8 cm long. Bracts

3-5 cm long. Dorsal sepal oblong, acute, 7-8 cm long, 2-2.5 cm wide; laterals broadly oblong-elliptic, acute, 7-8 cm long, 3-3.5 cm wide. Petals elongate-lanceolate, acuminate, undulate, 7 cm long, 1.5 cm wide. Lip oblong calceiform-pandurate, 7 cm long; hypochile with a small tooth on each side near base, and having a semi-ovate pit, papillose within; mesochile solid; epichile ovate or triangular, obtuse. Column 7.5 cm long, winged above.

Flowers: December-March.

Venezuela, British Guiana, northern Brazil, Trinidad.

TRINIDAD: Government House Grounds, December 20, 1906, Broadway s.n. (*Herb. Ames* 10065); Tamana Mountain, February 16, 1915, Broadway s.n. (*Herb. Trin.* 7899)?; Botanic Gardens, March 5, 1918, Broadway s.n. (*Herb. Trin.* 8770)?; Brickfield, November 26, 1955 (flowered) Downs & Aitken 69 (*Herb. Ames* 67913, 68427).

40. GONGORA R. & P.

Epiphytic herbs with extremely short stems soon swollen to fleshy pseudobulbs with 1 or 2 leaves at apex. Leaves large, plicate-venose, contracted at base. Inflorescence lateral from base of pseudobulb, simple, lax, racemose, often reflexed and flexuous. Flowers few to many, inverted, medium-sized, rather long-pedicellate. Bracts small. Dorsal sepal erect-spreading, adnate to column; laterals spreading or reflexed, adnate to foot of column. Petals often shorter than dorsal sepal, adnate to sides of column, with free part erect-spreading. Lip continuous with foot of column, spreading to ascending, fleshy; hypochile or lateral lobes fleshy, erect, horned or awned in various ways; epichile or mid-lobe variously saccate to compressed, apex acuminate. Column basally produced into a foot, above semi-terete, wingless, apically often clavate, naked or bicornute at tip. Capsule oblong-cylindric to fusiform, usually beakless.

Gongora: in honour of Sr. Antonio Gongora, Governor of Peru during the Ruiz and Pavon expeditions in that country.

Some 25 or 30 species of the American tropics.

1. Lip subsessile. Horns at base of hypochile relatively minute.....2. *Gongora maculata*
- 1A. Lip long and narrowly clawed. Horns at base of hypochile long.....1. *Gongora atropurpurea*

1. *Gongora atropurpurea* Hook. *Exot. Fl.* 3 (1827) t. 178.

Pseudobulbs ovoid or elongate-ovoid, plurisulcate, up to 8 cm long. Leaves papyraceous, oblong-lanceolate, acute, long-attenuate, 30–55 cm long, 6–11 cm wide. Inflorescence up to 75 cm long, usually shorter. Pedicel (with ovary) 2.5–5 cm long, arcuate. Bracts up to 4 mm long, awl-shaped. Flowers fragrant, dark purple. Dorsal sepal narrowly oblong-ovate, 17–21 mm long, about 8 mm wide, acuminate; laterals narrowly ovate-trapezoid, up to 25 mm long, 12–14 mm wide. Petals elliptic-ovate or ovate-lanceolate, awned, long attenuate-decurrent, 10 mm long, 3.5 mm wide. Lip much shorter than lateral sepals, long and narrowly clawed, attenuate, up to 20 mm long; 2 lateral horn-like projections at base of hypochile elongate, more than half as long as porrect awns. Column erect, arcuate, 20 mm long.

Flowers: November; March–April.

Trinidad and Tobago, Venezuela, British Guiana, Amazonian Brazil.

TOBAGO: Roxborough, July 31, 1957, Aitken s.n. (*Trin. Reg. Virus Lab. Herb.* 259); Cocoawattie (*G. H. Sworder*) Broadway 3267 (ex Cogniaux).

TRINIDAD: (*Herb. Ames* 9769); November 20, 1865 (*Herb. Trin.* 1969); Botanic Gardens, 1889, Hart s.n. (*Herb. Trin.* 3896); Siparia Woods, April 14, 1916 (*Herb. Ames* 66954; *Herb. Trin.* 7655); Botanic Gardens, March 3, 1918, Broadway s.n. (*Herb. Ames* 66953; *Herb. Trin.* 8766); Navet River, Downs & Aitken 24 (*Herb. Ames* 67318); Shepherd s.n. (ex Cogniaux); de Schach s.n. (ex Cogniaux).

2. *Gongora maculata* Lindl. *Bot. Reg.* 19 (1833) t. 1616.

Common name: Jack Spaniard.

Pseudobulbs ovoid-oblong to cylindrical-conic, strongly sulcate and ridged, 4.5–8 cm long, 2.5–3.5 cm in diameter, subtended by several scarious sheaths about 8.5 cm long. Leaves lanceolate or ligulate-oblong to elliptic-obovate, acute or acuminate, short-petiolate, undulate, plicate, 25–40 cm long (not including petiole), 5–14 cm wide. Inflorescence lateral, elongate, pendulous, racemose, laxly many-flowered, up to about 80 cm long. Floral bracts ovate-lanceolate, acuminate, 3–5 mm long. Flowers very fragrant,

brownish red or reddish with yellow or white spots or bands; pedicels (with ovary) 3-4 cm long. Sepals membranaceous, acuminate; dorsals lanceolate to elliptic-lanceolate, margins revolute, adnate to middle of column, 15-23 mm long, 4-6 mm wide; laterals reflexed, obliquely ovate-lanceolate, revolute, 20-30 mm long, about 15 mm wide. Petals adnate to sides of column, linear-lanceolate, acuminate, apically recurved, 7-10 mm long, 1-2 mm wide. Lip subsessile, fleshy, basal claw adnate to foot of column, up to about 25 mm long, 2 lateral, basal, horn-like projections minute, never more than half as long as awns. Column erect, up to about 20-25 mm long.

Flowers: September-April.

Mexico, Middle America, northern South America.

TRINIDAD: St. Clair Experiment Station (cult.) December 20, 1906, Broadway s.n. (*Herb. Ames* 10063, 10064); Government House Grounds, March 19, 1907, Broadway s.n. (*Herb. Ames* 10738, 11689); Caparo, April 27, 1908, Broadway s.n. (*Herb. Ames* 11714); Caparo, April 28, 1908, Broadway s.n. (*Herb. Ames* 10682); Caparo, September 18, 1908 (*Herb. Ames* 11690); Hindustan Road, Prince's Town, August 20, 1918, Broadway s.n. (*Herb. Trin.* 8842); Piparo Forest, October 1954, Downs & Aitken 14 (*Herb. Ames* 67828); Guayaguayare, November 1954, Downs & Aitken s.n. (*Herb. Ames* Alc. coll. 3226).

41. *CORYANTHES* Hook.

Epiphytic herbs with pseudobulbose stems. Leaves 2 at apex of pseudobulbs, large, conspicuously nerved, plicate. Inflorescence pendent, lateral at base of pseudobulb, racemose, few-flowered. Flowers very large. Sepals free, spreading, irregularly undulate-flexed; dorsal shorter and wider than laterals. Petals much smaller than sepals, twisted. Lip fleshy, long-clawed; claw continuous with base of column, basal portion forming a cup-like hypochile; intermediate portion or mesochile cylindrical; mid-lobe or epichile large, galeate. Column long, terete, apically inflexed-clavate, shortly 2-winged, footless, basally 2-auriculate or 2-horned. Pollinia with a linear strap. Capsule pendent, narrowly oblong.

Coryanthes: Greek, 'helmet-flower', in reference to the helmet-shaped appendage to the lip.

About 25 species of Guatemala to Peru and Brazil, Trinidad and Tobago.

1. Intermediate part of lip (mesochile)
with conspicuous transverse ridge.

Dorsal sepals obovate-oblong, obtuse....1. *Coryanthes macrantha*

- 1A. Intermediate part of lip not plicate.

Dorsal sepal broadly rhomboid, acute....2. *Coryanthes speciosa*

1. *Coryanthes macrantha* Hook. in *Bot. Mag.* (1831) sub t. 3102; Hook. fil. *Bot. Mag.* 126 (1900) t. 7692.

Common names: Monkey; Monkey Orchid.

Pseudobulbs oblong-conic, 5-9 cm long. Leaves lanceolate, acute, basally very long-attenuate, 15-30 cm long, 3-7.5 cm wide. Inflorescence reflexed or pendent, 25-40 cm long, laxly several-flowered at tip. Pedicel (with ovary) 8-17 cm long. Flowers predominantly crimson or purplish. Sepals undulate; dorsal oblong-lanceolate, obtuse, about 5 cm long, 2-3 cm wide; laterals contiguous, reflexed, ovate-oblong, falcate, about 9 cm long, 4.5-5 cm wide. Petals ligulate-lanceolate, acute, undulate, 6 cm long, 10-12 mm wide. Hypochile hemispheric, pubescent on outer surface; mesochile transversely and coarsely ridged, pubescent within; epichile 4 cm deep, 5 cm wide, galeate, spreading, apically 3-lobed; lateral lobes hooked; mid-lobe shorter, truncate. Column arcuate, 5 cm long, with obtuse basal horns.

Flowers: April-July; November.

Venezuela, British Guiana, Trinidad.

TRINIDAD: (*Herb. Trin.* 406); Botanic Gardens (*Herb. Trin.* 4585); June, 1896 (*Herb. Trin.* s.n.); St. Clair Experimental Station, April 12, 1907, Broadway s.n. (*Herb. Ames* 10220); St. Clair Experimental Station, April 23, 1908, Broadway s.n. (*Herb. Ames* 10714); St. Clair Experimental Station, May 18, 1908, Broadway s.n. (*Herb. Ames* 10652); July 7, 1908, Broadway s.n. (*Herb. Ames* 11676); St. Mary's College, 1927, Graff s.n. (*Herb. Trin.* s.n.); December 4, 1955 (flowered), Downs & Aitken 72 (*Herb. Ames* 67906); Waller Field, November 11, 1956, Herklots s.n. (*Herb. Trin.* 15413);

2. *Coryanthes speciosa* (Hook.) Hook. in *Bot. Mag.* 58 (1831) sub t. 3102.

Gongora speciosa Hook. in *Bot. Mag.* 54 (1827) t. 2755.

Common name: Bat Orchid.

Pseudobulbs narrowly oblong-cylindric, very deeply multisulcate, 7-15 cm long, 1.5 cm in diameter. Leaves linear-lanceolate, acuminate, conspicuously from 3- to 5-nerved, basally attenuate to petiole, 5-15 cm long; blade 2.5-4.2 cm wide. Inflorescence robust, 35-50 cm long, laxly from 2- to 5-flowered towards tip. Pedicel (with ovary) 6-10 cm long. Flowers preponderantly yellow. Sepals very unequal; dorsal broadly rhomboid, apiculate, undulate, 2.5-3 cm long, 2.5-3.5 cm wide; laterals reflexed-spreading, strongly falcate, ovate-oblong, acute, apically slightly thickened, 6-8 cm long, 3-4 cm wide. Petals narrowed at base, 4 cm long, 8 mm wide, oblique, ligulate, strongly undulate, twisted. Hypochile obliquely hemispheric, pubescent on outer surface; mesochile not ridged, long-exserted, pubescent within, margins strongly inrolled, 3.5 cm long; epichile pendent, galeate-hemispherical, obtuse, deeply 3-toothed in front; lateral teeth hooked; middle tooth longer, linear, 1.3 cm long. Column 3-4 cm long, basally with short recurved horns.

Flowers: January-June.

Guatemala, Honduras, West Indies, British Guiana, eastern Brazil.

TOBAGO: Cocoawattie, 200 m, (*G. H. Sworder*) Broadway 3226 (ex Cogniaux).

TRINIDAD: Botanic Garden, 1889 (*Herb. Trin.* 3925); Botanic Garden, 1890 (*Herb. Trin.* 5846); June 22, 1896 (*Herb. Trin.* s.n.); Maraval, April 2, 1908, Broadway 2345 (*Herb. Ames* 10657, 10658); February 19, 1916, Driggs s.n. (*Herb. Trin.* 7889); Waller Field, January 1, 1957, Herklots s.n. (*Herb. Trin.* 15418); Rio Claro-Guayguayare Road, 6 mile post, March 10, 1957, Aitken & Downs (*Trin. Reg. Virus Lab. Herb.* 281); Maraval, Broadway 3266 (ex Cogniaux).

42. *XYLOBIUM* Lindl.

Epiphytic or terrestrial herbs. Pseudobulbs usually short, with several sheaths, 1- to 3-foliate at apex. Leaves plicate-venose,

petiolate. Inflorescence basal, a simple, few- to many-flowered raceme. Flowers medium-sized or large. Bracts linear, usually long. Sepals subequal, at first erect, later spreading; dorsal free; laterals adnate to base of column-foot, forming a mentum. Petals similar to dorsal sepal, but usually smaller. Lip articulated to column-foot, sessile or basally contracted, erect; lateral lobes small, embracing column; mid-lobe short, broad, spreading; disk keeled, callose. Column erect, narrowly 2-winged, with prominent foot; clinandrium obliquely truncate. Capsule erect, ellipsoid.

Xylobium: Greek, 'wood' and 'life', alluding probably to the usual epiphytic habit of the species of this genus.

Fifteen or 20 species of the New World tropics.

1. Inflorescence long, nodding, laxly few- to many-flowered. Flowers white or yellowish2. *Xylobium palmifolium*
- 1A. Inflorescence a subcapitate raceme, densely 3- to 6-flowered. Flowers brownish pink with purplish or crimson spots; lip dark purple or crimson1. *Xylobium Colleyi*
1. *Xylobium Colleyi* (Batem. ex Lindl.) Rolfe in *Gard. Chron.* ser. 3, 7 (1890) 288.
Maxillaria Colleyi Batem. ex Lindl. in *Bot. Reg.* 24 (1838) Misc. p. 87.

Common name: Goat's Mouth.

Plant epiphytic. Pseudobulbs clustered, ovoid or sub-spherical, up to 4 cm long, but usually much shorter, 1- or 2-foliate. Leaves elliptic-oblong, acute, cuneate, long-petiolate, 23-60 cm long, 4.5-15 cm wide; petiole 4.5-10 cm long. Inflorescence subcapitate, 3- to 6-flowered, much shorter than leaves. Flowers pale brownish pink with intense purplish or crimson spots and crimson or dark purple lip, fragrant. Bracts broadly cucullate-oblong, acuminate, 10-22 mm long, 6-10 mm wide. Sepals fleshy, short-acuminate, 20-24 mm long; dorsal ligulate, 6-8 mm wide; laterals broadly oblong, up to 9 mm wide, basally conspicuously

saccate. Petals ligulate, short-acuminate, 16–20 mm long, 4–6 mm wide. Lip fleshy (especially near tip), entire, ligulate, subacute, 16–20 mm long, 4.5 mm wide; disk with crest about 9 mm long. Column 6–8 mm long, basally with a foot 5 mm long.

Flowers: July.

Trinidad, British Guiana.

TRINIDAD: Valencia Forest, 1957, Herklots s.n. (*Herb. Ames* 69019; *Herb. Trin.* 15449); *Hort. Kew* (ex Cogniaux).

2. **Xylobium palmifolium** (Sw.) Benth. ex Fawcett *Fl. Pl. Jam.* (1893) 39.

Epidendrum palmifolium Sw. *Prodr.* (1788) 123.

Plant epiphytic. Pseudobulbs clustered, narrowly ovoid-conic, up to 7.5 cm long, 1-foliate. Leaves usually elliptic-lanceolate to oblong-elliptic, acuminate, up to 42 cm long, 3–8 cm wide. Inflorescence nodding, slender, laxly few- to many-flowered above, 10 cm long. Flowers white or sometimes yellowish, scented (often unpleasantly so). Bracts linear-lanceolate or narrowly ovate, acute, up to 35 mm long. Dorsal sepal oblong-lanceolate, acuminate, about 2 cm long, 5 mm wide; laterals triangular-lanceolate, basally somewhat saccate, 22 mm long, 9 mm wide. Petals ovate-lanceolate, acute, about 15 mm long, 3.5 mm wide. Lip obsoletely 3-lobed, obovate-oblong, 16 mm long, 9 mm wide; lateral lobes very small; mid-lobe large, rather fleshy, verruculose, apically rounded or retuse; disk with 4 or 5 thickened, callose nerves. Column about 15 mm long.

Flowers: January–February.

West Indies.

TRINIDAD: Saut d'Eau, August 1930, Broadway 7435 (*Herb. Ames* 36526); Bradford s.n. (ex Grisebach).

43. **BIFRENARIA** Lindl.

Epiphytic herbs. Leaves 1 or 2 at apex of pseudobulbs, thinly papyraceous, plicate-veined. Inflorescence simple, at base of pseudobulb, erect, usually few-flowered. Sepals subequal, spreading; laterals adnate to foot of column, forming an obscure, obtuse spur-like mentum. Petals similar to dorsal sepal or smaller. Lip articulated to apex of column-foot, with prominent claw; lateral lobes erect. Column erect, fleshy, wingless, with long foot at base. Pollinia 4, waxy, ovoid, adhering to viscid gland on rostellum, with 3 distinct stipes.

Bifrenaria: Latin, 'two straps', in reference to the double strap connecting the pollen masses and glands.

About a dozen species from northern South America, Trinidad, Panama.

1. Pseudobulbs clustered, roundish. Lip deeply 3-lobed1. *Bifrenaria aurantiaca*
- 1A. Pseudobulbs remote, oblong-elliptic to pyriform. Lip lightly 3-lobed.....2. *Bifrenaria longicornis*

1. ***Bifrenaria aurantiaca*** Lindl. in *Bot. Reg.* 22 (1836) t. 1875.
Lindleyella aurantiaca (Lindl.) Schltr. *Die Orchideen* (1914) 414.

Pseudobulbs clustered, subrotund, flattened, tetragonous, bright green or yellowish green. Leaves cuneate-oblong, acute, 10-20 cm long, 3-5 cm wide. Inflorescence up to 30 cm long, usually shorter. Flowers showy, orange or yellow-orange with brown spots. Lateral sepals spreading, ovate, acute or rather obtuse, oblique, sometimes pubescent above, 12-13 mm long, 7-8 mm wide; dorsal oblong-lanceolate, acute, 13 mm long, 4-5 mm wide. Petals obovate or oblong, acute, or obtuse, 12-15 mm long, 4-6 mm wide. Lip long and narrowly clawed, 3-lobed, 12-15 mm long; lateral lobes almost hatchet-shaped; mid-lobe widely triangular, 8-9 mm wide, emarginate; disk with a callus. Column slightly pubescent, 8-9 mm long.

Flowers: March.

British Guiana, Venezuela, Trinidad.

TRINIDAD: Bradford s.n. (ex Cogniaux); March 31, 1846 (*Herb. Trin.* 894); March 21, 1889, Broadway s.n. (*Herb. Ames* 7600); Maraval Hills, February 14, 1911, Broadway 4114 (*Herb. Ames* 16564); Northern Range, March 23, 1934, Broadway 9378 (*Herb. Ames* 40391); Northern Range, March 29, 1934, Broadway 9387 (*Herb. Ames* 40392).

2. *Bifrenaria longicornis* Lindl. in *Bot. Reg.* 24 (1838) Misc. p. 93, no. 177.

Pseudobulbs remote, oblong-elliptic to pyriform, flattened, up to 10 cm, yellow-green when young, red-brown with age. Leaves narrowly elliptic-oblong, acute, up to 24 cm long, 6-7 cm wide. Inflorescence up to about 16 cm long. Flowers small: petals and sepals golden with reddish or brownish spots. Lateral sepals long-adnate to column foot, forming a pseudo-spur 10 mm long, fleshy, up to 10 mm long, 5 mm wide. Dorsal fleshy, ovate, or elliptic, acute, 10 mm long, 4-5 mm wide. Petals more or less elliptic-lanceolate, acute, about 7.5 mm long, 3 mm wide. Lip long and narrowly clawed (claw 10 mm long), obscurely 3-lobed, lamina semi-orbicular-ovate, about 8 mm long, callus small between lateral lobes, pale yellow with rose-purple to brown edge. Column 15 mm long or shorter.

Flowers: August.

Northern South America, Trinidad.

TRINIDAD: Aripo Savannah, (flowered August-September 1961), Richardson s.n. (*Herb. Ames* Alc. Coll.).

44. *KOELLENSTEINIA* Rehb. f.

Herbs, usually terrestrial, rarely epiphytic. Pseudobulbs present or apparently lacking. Pseudobulbs, when present, hidden by sheaths, 1- or 3-foliate above. Leaves plicate, long-petiolate (or, if pseudobulbs lacking, short-petiolate with petioles basally sheathed). Inflorescence a lateral, erect or ascending, few- to many-flowered raceme. Flowers small to medium-sized, short-pedicellate. Bracts small. Sepals free, subequal, spreading, membranaceous. Petals usually similar. Lip clawed, deeply 3-lobed; lateral lobes erect-spreading; mid-lobe rounded,

transversely oblong or subreniform, entire, emarginate or 2-lobed; disk with conspicuous, fleshy, 2-lobed callus. Column short, basally with foot, apically provided with hood over clinandrium.

Koellensteinia: in honour of Capt. Kellner von Koellenstein of Austria.

A small genus of Panama, West Indies, northern South America.

Koellensteinia graminea (Lindl.) Rehb. f. in *Bonpl.* 4 (1856) 323.

Maxillaria graminea Lindl. in *Bot. Reg.* 21 (1836) sub. t. 1802.

Up to about 30 cm. Pseudobulbs apparently lacking. Leaves membranaceous, linear, acuminate, basally long-attenuate, up to about 23 cm long, 5 mm wide. Inflorescence from 1- to several-flowered, 4.5-5 cm long (possibly longer); rhachis with several appressed sheaths 3-4 mm long. Flowers 15-18 mm in diameter, whitish green with purplish bands at base of segments. Sepals elliptic-ovate, obtuse or subacute; dorsal up to 9 mm long, 4.5-5 mm wide; laterals smaller. Petals oblong-elliptic, obtuse, up to 7-8 mm long, 3.5 mm wide. Lip spreading, fleshy, shorter than sepals; lateral lobes more or less elongate-ovate, rounded above, 2-2.5 mm long; mid-lobe transversely reniform, deeply emarginate, up to 3 mm long, 8 mm wide; callus large. Column clavate, about 2.5 mm long.

Flowers: October.

Colombia, Peru, Amazonian Brazil, British Guiana, Trinidad.

TRINIDAD: Quare River forests, near the reservoir, January 24 1930, Broadway 7545 (*Herb. Ames* 37542); same, locality, October 19, 1930, Broadway 7436 (*Herb. Ames* 37119); 9 miles on Paria Road, January 15, 1955, Herklots s.n. (*Herb. Ames* 69099).

45. AGANISIA Lindl.

Epiphytic or terrestrial herbs, often creeping and almost vine-like. Pseudobulbs very small, cylindrical to fusiform, usually 1-foliate and hidden by long, sheathing bracts. Leaves petiolate,

plicate, papyraceous. Inflorescence a lateral, lax, short-pedunculate, erect or arcuate, several- to 10-flowered raceme. Flowers usually large and showy, short-pedicellate. Bracts small. Sepals free, spreading. Petals subsimilar to sepals. Lip subsessile to short- or long-clawed, simple, 3-lobed; lateral lobes (when present) usually small; mid-lobe concave, spreading, large, often emarginate or sublobulate; disk prominently cristate. Column short, erect, with or without foot, conspicuously winged and 2-auriculate at apex.

Aganisia: Greek, 'pleasing to the sight.'

Three species of South America, Trinidad.

Aganisia pulchella Lindl. in *Bot. Reg.* 25 (1839) Misc. p. 45; 26 (1840) t. 32.

Aganisia brachypoda Schltr. in *Beih. Bot. Centralbl.* 42, Abt. 2 (1925) 126.

Often with very long, creeping rhizome up to 3-4 mm in diameter. Pseudobulbs very small, about 2 cm long, covered (initially at least) by long, papery, acrescent sheathing bracts. Leaf elliptic or oblong-elliptic, acuminate, 10-18 cm long, 3-4 cm wide; petiole slender, 4-6 cm long. Inflorescence short-pedunculate, erect, 3- to 8-flowered, shorter than leaves. Bracts triangular-ovate, 3-4.5 mm long. Flowers showy, about 3 cm in diameter, white with lip tinged with yellow and red. Sepals and petals spreading, subequal, oblong or oblong-ovate, acutish, 12-13 mm long, 7-8 mm wide. Lip subsessile, 3-lobed, divided into 2 parts by a contraction $\frac{1}{2}$ distance from the base: lower part concave, somewhat rhombiform with erect sides; upper part undivided, suborbicular, ovate or subtriangular, rounded or obtuse, 12 mm (rarely up to 15 mm) long, 10-12 mm wide; lateral lobes triangular, obtuse or subacute, 2.5 mm long; callus yellow, fleshy, cristate, irregularly verrucose, 1.5 mm high. Column short, 5 mm long, footless, apically with auriculate, falcate wings.

Flowers: March.

British Guiana, Amazonian Brazil, Trinidad.

TRINIDAD: Aripo Savannah, March 5, 1920, Coker 9196 (*Herb. Trin.* s.n.; *Herb. Ames* 68214; *Herb. N.Y.* s.n.); Aripo Savannah, July 28, 1958, Schultes & Downs s.n. (*Trin. Reg. Virus Lab. Herb.* 275).

46. OTOSTYLIS Schltr.

Plants terrestrial, rather robust, erect. Pseudobulbs small, when young completely enclosed in sheaths. Leaves narrowly lanceolate or linear-elliptic. Inflorescence a simple, erect, laxly many-flowered raceme. Bracts short, appressed. Flowers of medium size, rather showy. Sepals and petals more or less similar, spreading, free. Lip cuneate-clawed; lamina 3-lobed; lateral lobes basal; small disk with a transverse, semi-circular or reniform, elevated, crenulate or dentate callus. Column short, glabrous, laterally with auricular-subquadrate or rhombic wings; clinandrium with a short 2-dentate lobe.

Otostylis: Greek, 'ear-style', in allusion to the 2 auricular wings on the column in this genus.

Four species of British Guiana, Venezuela, Amazonian Brazil, Trinidad.

Otostylis brachystalix (Rehb. f.) Schltr. in *Orchis* 12 (1918) 39, t. 5; Ames *Orch.* 7 (1922) 49, t. 111.

Zygopetalum brachystalix Rehb. f. in Walpers *Ann. Bot.* 6 (1863) 660.

Cyrtopodium cristatum Griseb. *Fl. Brit. W. Ind. Isl.* (1864) 630.

Common name: White Aripo Orchid.

Pseudobulbs ovoid to pyriform, concealed by sheaths, about 2 cm long. Leaves 4 or more, erect, linear-lanceolate or elliptic-linear, acuminate, long-attenuated to a winged petiole, up to 70 cm long, 1-4 cm wide. Inflorescence strict, basally with several tubular bracts (approximately 1 cm long) about 10 cm apart; raceme above from 15- to 30-flowered, up to 20 cm long. Flowers showy, about 2.5 cm in diameter, white, sometimes with tips of petals and sepals rose-pink; lip-callus golden yellow; pedicel (with ovary) about 16 mm long. Bracts ovate, acute, 5 mm long. Sepals rather fleshy, ovate-elliptic, acute, 1.3 cm long, 8 mm wide. Petals oblong-spathulate, obtuse, 1.2 cm long, 6 mm wide. Lip 9-10 mm long; lateral lobes very small, triangular; mid-lobe suborbicular, apiculate, 7 mm long, 7 mm wide; crest between lateral lobes and uniting them carunculate, extended into 3 keels at base of mid-lobe. Column 5 mm long, with fleshy foot 3 mm long, apically broadly 2-alate; rostellum produced into awl-shaped, deflexed process.

Flowers: February-December.

Colombia, Venezuela, British Guiana, Trinidad.

TRINIDAD: Aripo Savannah, April 16, 1908, Broadway 2336 (*Herb. Ames* 10702, 10703, 10704, 10705, 11716); Aripo Savannah, March 5, 1920, Britton, Broadway & Hazen 295 (*Herb. Ames* 20368); Aripo Savannah, July 27, 1943, Beard 141 (*Herb. Ames* 62674); Aripo Savannah, February 9-23, 1950, Howard 10485 (*Herb. Ames* 66771); Aripo Savannah, April 29, 1956, Downs & Aitken 91 (*Herb. Ames* 69903).

47. BATEMANNIA Lindl.

Epiphytic herbs with pseudobulbous stems; pseudobulbs oblong-ovoid, compressed, with furrows and projections, basally sheathed. Leaves 1 to 3 at apex of pseudobulbs, thinly coriaceous. Inflorescence at base of pseudobulb, recurved or pendent, flowering almost from base. Sepals unequal; lateral sepals adnate to foot of column; dorsal sepal free, erect. Petals similar to dorsal sepal, adnate to basal part of foot of column. Lip almost adpressed to column, 3-lobed, lateral lobes embracing column, erect. Column subterete, wingless, with foot at base.

Batemannia: in honour of James Bateman, an English orchidophile of the last century.

Eight or 9 species from the tropical parts of northern South America and Trinidad.

Batemannia Colleyi Lindl. in *Bot. Reg.* 20 (1835) t. 1714.

Common name: Goat's Head Orchid.

Pseudobulbs clustered, dark purple-green, bearing 1 or 2 leaves, 4-8 cm long. Leaves reflexed near tip, broadly lanceolate, acute or short-acuminate, long-attenuate, 14-25 cm long, 2.5-7 cm wide. Inflorescence a loose raceme, arcuate, 5-15 cm long. Flowers large, drooping, with unpleasant odour. Bracts 12-20 mm long, ovoid-rhombic. Sepals fleshy, oblong, rounded, 22-27 mm long, 6-9 mm wide, greenish tinged with purple-red. Petals fleshy, oblong-ovate, rounded and apiculate at apex, 22-23 mm long, 6-11 mm wide, like sepals in colour. Lip whitish, erect, fleshy, 3-lobed, oblong-ovate, 20-25 mm long, 10-15 mm wide, margins of

lobes denticulate in front. Column erect, white, red-spotted, 16-26 mm long, basally produced into a foot which is 6-9 mm long. Capsule pendent, oblong-ovoid, usually retaining remnants of sepals and petals, deeply 6-sulcate, 5-7 mm long.

Flowers: September-January.

Peru, Venezuela, Amazonian Brazil, British Guiana, Trinidad.

TRINIDAD: St. Ann's, December 19, 1851 (*Herb. Trin.* 1519); Oropouche Local Road, January 23, 1930, Hombersley s.n. (*Herb. Trin.* 12327); Heights of Guanapo, November 15, 1930, Robinson s.n. (*Herb. Trin.* 12438); Saut d'Eau, North Coast, December 14, 1930, Broadway 7440 (*Herb. Ames* 37198); Valencia, September 3, 1956 (flowers), Downs & Aitken 87 (*Herb. Ames* 68428, 69904); [Questionably from Trinidad] Freeman s.n. (*Herb. Trin.* 11573).

48. *STENIA* Lindl.

Small to medium-sized, epiphytic herbs. Stem abbreviated. Pseudobulbs aggregated, 1- to 3-foliate. Leaves rigid-chartaceous. Inflorescence radical, semi-prostrate, 1-flowered. Flowers large, lemon-yellow (lip often brown-spotted). Sepals membranaceous, subequal, spreading, free, adnate to base of column. Petals similar to dorsal sepal. Lip fleshy, not articulated to column-foot, 3-lobed, strongly concave-subsaccate; lateral lobes small; disk transversely cristate. Column fleshy, erect, basally produced into short foot, apically entire. Pollinia 4, linear-cylindric.

Stenia: Greek, 'narrow', referring to the elongated pollinia.

One species of northern South America, Trinidad.

Stenia pallida Lindl. in *Bot. Reg.* 23 (1837) sub t. 1997; 24 (1838) t. 20.

Pseudobulbs inconspicuous, usually 2-foliate. Leaves elliptic-oblong, acute, cuneate and pseudocarinate, 9-15 cm long, 2.5-3.8 cm wide. Inflorescence up to 4 cm long. Dorsal sepal narrowly ovate-oblong, acute, 25-26 mm long, 8-9 mm wide; laterals acuminate, 28-30 mm long, 10 mm wide. Petals lanceolate, acute, 25 mm long. Lip triangular-ovate, about 20 mm long and wide; lateral lobes obscurely entire; disk cristate, dentate. Column 1 cm long, sometimes somewhat pubescent.

Flowers: January-March.

Venezuela, British Guiana, Trinidad.

TRINIDAD: Botanic Gardens, 1894, Hart s.n. (*Herb. Trin.* 5591); Heights of Aripo, January 10-26, 1922, Broadway s.n. (*Herb. Trin.* 9898); El Tucuche, March 27, 1955, Downs & Aitken 38 (*Herb. Ames* 67844).

49. COCHLEANTHES Raf.

Epiphytic herbs with short, leafy stem, lacking pseudobulbs. Leaves numerous, borne distichously in shape of fan, thinly membranaceous, articulated to conduplicate sheaths near base. Inflorescence axillary, 1-flowered, scapes much shorter than leaves. Flowers fleshy, showy, whitish with bluish or violet lip, fragrant. Sepals subequal, spreading, free; laterals attached to column-foot. Petals rather similar to sepals. Lip articulated to foot of column, 3-lobed, forming with it a small chin, shortly clawed, basally with transverse fleshy callus; lateral lobes erect, embracing column; mid-lobe broad. Column fleshy, incurved, basally with short foot, apically wingless or with two short wings. Capsule ovoid or oblong-fusiform, beakless.

Cochleanthes: Greek, 'shell flower', in reference to the appearance of the flowers.

Fourteen species of the American tropics.

1. Lip entire, elliptical, 8 mm long; crest prominently corrugate.....2. *Cochleanthes trinitatis*
- 1A. Lip slightly 3-lobed, suborbiculate or somewhat square in outline, 30 mm long; crest obscurely corrugate.....1. *Cochleanthes flabelliformis*
1. *Cochleanthes flabelliformis* (Sw.) R. E. Schult. & Garay in *Bot. Mus. Leaflet Harv. Univ.* 18 (1959) 324.
Epidendrum flabelliforme Sw. *Prodr.* (1788) 123.
Cymbidium flabellifolium Sw ex Griseb. *Fl. Brit. W. Ind. Isl.* (1864) 629, in *synon.*
Warsceviczella flabelliformis (Sw.) Cogn. in *Urban Symb. Antill.* 4 (1903) 182.

Up to 30 cm tall. Leaves oblanceolate or narrowly oblong, abruptly acute, gradually narrowing into sheathing stalk, articulated, up to 30 cm long, 5 cm wide. Inflorescence 5–15 cm long, with 1 basal sheath about 2 cm long. Bracts several near base of scape and 2 near base of flower, narrowly ovate-triangular, short-acuminate, 1–2 cm long. Flowers 5 cm broad. Sepals oblong-ovate, acuminate, about 3.5 cm long, 10–11 mm wide. Petals similar, somewhat smaller. Lip large and broad, somewhat square, 3-lobed towards apex, cordate, ventricose, strongly involute-undulate, 3 cm long, 3–3.5 cm wide; crest of disk broadly sub-orbiculate-crenulate. Column 1 cm long, apically with 2 wings. Capsule 4–5 cm long.

Flowers: August–March.

West Indies, Venezuela, Brazil.

TRINIDAD: March 1890, Broadway s.n. (*Herb. Ames* 7598); Tabaquite, November 25, 1924, Farfan s.n. (*Herb. Trin.* 11198); August 26, 1927 (*Herb. Trin.* 11778); Morne Bleu, March 23, 1928, Hombersley, Freeman & Williams s.n. (*Herb. Trin.* 11959); Bradford s.n. (ex Cogniaux).

2. *Cochleanthes trinitatis* (Ames) R. E. Schult. & Garay in *Bot. Mus. Leaflet. Harv. Univ.* 18 (1959) 326.

Zygopetalum trinitatis Ames *Sched. Orch.* 3 (1923) 21.

With densely clustered whitish roots. Stems abbreviated, more or less 1 cm long, at first concealed by sheathing bases of leaves, thickened, attenuated upwards. Leaves membranaceous, oblong-oblanceolate, many-nerved, acuminate, longer than scape, 7.6–13 cm long, up to 1.5 cm wide. Inflorescence erect or ascending, about 5 cm long, 1-flowered, slender, with few bracts. Ovary (with pedicel) up to 8 mm long, slender, subtended by 2 bracts, the outer bract embracing base of pedicel nearly 5 mm long, inner bract oblong, acute. Sepals patent; laterals 9–11 mm long, up to 4 mm wide, undulate, lanceolate, gradually acute, with short mentum basally; dorsal similar, obtuse, about 10 mm long. Petals oblong, gradually acute, undulate, 9 mm long, 3 mm wide. Lip entire, clawed, 8 mm long, 4.5 mm wide above middle, at oblong claw about 2 mm wide, with apical, obtuse lamina in front of claw:

crest about 3 mm long, fleshy with 7 porrect keels; central keel 3-dentate, others laterally compressed, obtuse. Column simple, about 7 mm long, fleshy.

Flowers: December.

Endemic to Trinidad.

TRINIDAD: Rio Claro-Guayaguayare Road, seventh mile, December 5, 1922, Farfan s.n. (Type, *Herb. N.Y.*).

50. *HUNTLEYA Batem. ex Lindl.*

Epiphytic, caespitose herbs, without pseudobulbs. Leaves numerous, arranged in fan shape, plicate, membranaceous to thinly coriaceous, elongate-lanceolate, acute. Inflorescences axillary, 1-flowered scapes, shorter than leaves. Flowers large, fleshy. Sepals subequal, spreading, free; laterals basally connate and fixed to foot of column. Petals similar and equal to sepals, spreading, inserted at foot of column. Lip articulated at tip of column-foot, basally contracted, dilated above, clawed (claw making an angle with column-foot), transversely callose below; basal callus long-fimbriate. Column arcuate, dilated and subcrenulate, above with 2 wings, basally produced into foot.

Huntleya: in compliment to the Rev. J. T. Huntley, an ardent English orchid-fancier of the first half of the nineteenth century.

Four species of the American tropics.

Huntleya Meleagris Lindl. in *Bot. Reg.* 23 (1837) sub t. 1991.

Leaves thinly coriaceous, linear-lanceolate to elliptic-lanceolate, acute, basally narrow and long-duplicative, 20-40 cm long, 3-5 cm wide. Inflorescences erect, apically with one bract, up to 15 cm long. Pedicel (with ovary) up to 9 cm long. Bracts triangular, long. Sepals elliptic-ovate to elliptic-lanceolate, acute, 1-2 cm long. Sepals elliptic-ovate to elliptic-lanceolate, acute or acuminate, undulate, upper $\frac{2}{3}$ glossy, red-brown with yellow flecks, lower $\frac{1}{3}$ white or whitish yellow; dorsal free, 4-5 cm long, 1.5-2.5 cm wide; laterals basally connate, strongly divergent, 4.5-6 cm long, 1.8-2.5 cm wide. Petals narrowly ovate, acuminate, undulate, 3.5 cm long, 1.6-2.5 cm wide, in colour similar to sepals but basally purple-streaked. Lip 2.5-3.5 cm long, 1.7-2.5 cm

wide above, with a long, narrow claw, in colour similar to petals; apical lobe obscurely 3-lobulate, ovate, abruptly long-recurved-acuminate, articulate with callus plate; callus with fimbriate crest. Column attenuate below, dilated above, with dorsal keel, up to 2 cm long; wings broadly round-triangular.

Flowers: October.

TRINIDAD: Cultivated, October 3, 1866 (*Herb. Trin.* 2894) ?; Aripo Road, Hombersley s.n. (*Herb. Trin.* 11205).

51. MAXILLARIA R. & P.

Herbs, epiphytic or terrestrial. Stems thick, clustered or distant pseudobulbs. Leaves from 1 to 3 at apex of pseudobulb, coriaceous, often fleshy. Inflorescence of from 1 to many peduncles arising from base of pseudobulbs or in leaf-axils, solitary, with 2 or more sheathing bracts, always 1-flowered. Sepals usually free; laterals sometimes slightly connate at base, adnate to foot of column, often producing a chin. Petals similar to sepals but usually smaller. Lip 3-lobed or undivided, concave, erect at apex of foot of column and parallel to column, often clawed, usually shorter than sepals; lateral lobes erect; mid-lobe spreading; disk fleshy-tuberculate, callose or often naked. Column erect, arcuate, semiterete with a short foot, wingless. Capsule ovoid or obovoid-oblong, erect, without a beak.

Maxillaria: Latin, *maxilla* ('jaw'), in reference to the spur-like, angulate projection of the column foot and lip.

About 250 species of the tropics and subtropics of the New World.

1. Plants caespitose or without an elongated stem
 2. Leaves distinctly long-petiolate 2. *Maxillaria albiflora*
 - 2A. Leaves not distinctly long-petiolate, at most long-conduplicate at base
 3. Pseudobulbs 1-foliate. Lip distinctly 3-lobed
 4. Scape short, up to 7 cm long
 5. Pseudobulbs 1-2 cm long

6. Leaves narrowly oblong or oblong-ligulate, 7-14 mm wide. Mid-lobe of lip acute... 7. *Maxillaria liparophylla*
- 6A. Leaves broadly elliptic-oblong, 30-55 mm wide. Mid-lobe of lip obtuse..... 8. *Maxillaria Reichenheimiana*
- 5A. Pseudobulbs 3-6 cm long..... 9. *Maxillaria rufescens*
- 4A. Scape long, 13-19 cm long..... 10. *Maxillaria trinitatis*
- 3A. Pseudobulbs 2-foliate. Lip obscurely 3-lobed..... 3. *Maxillaria Broadwayi*
- 1a. Plants caulescent, with a more or less elongated stem.
7. Pseudobulbs usually from 2- to 3-foliate..... 4. *Maxillaria Camaridii*
- 7A. Pseudobulbs 1-foliate
8. Peduncles very short, 2-4 mm long.. 6. *Maxillaria conferta*
- 8A. Peduncles long, 20-60 mm long
9. Lip clawed..... 5. *Maxillaria coccinea*
- 9A. Lip not clawed
10. Stems leafy. Lip usually 3-lobed..... 1. *Maxillaria alba*

- 10A. Stems not leafy. Lip usually undivided, at most very obscurely 3-lobed.....11. *Maxillaria variabilis*

1. *Maxillaria alba* (Hook.) Lindl. *Gen. and Sp. Orch. Pl.* (1832) 143.

Dendrobium album Hook. *Exot. Fl.* 2 (1825) t. 142.

Epiphytic, stems robust, sometimes branching, 10-25 cm long, erect or semi-pendulous, covered with persistent, papery bracts. Pseudobulbs remote or approximate, narrowly obovoid, flattened, obliquely truncate, 3.5-5 cm long, 2-2.5 cm in diameter, 1-foliate. Leaves coriaceous, sessile, ligulate, acuminate, 25-40 cm long, 1.5-2 cm wide. Inflorescences of solitary or several scapes, 2.5-5 cm long. Flowers usually few, small. Bracts narrowly triangular-lanceolate, acute, 1.5 cm long. Sepals subcoriaceous, oblong-ligulate, acute, 18-27 mm long, 4.5-7 mm wide, white. Petals ligulate-lanceolate, acute to acuminate, 15-20 mm long, 4-5 mm wide, white. Lip fleshy, sessile, usually conspicuously 3-lobed, yellowish, papillose throughout, oblong-elliptic, acute, 12-15 mm long, 5 mm wide; lateral lobes small, erect; mid-lobe fleshy, ovate, acute, slightly recurved, about $\frac{1}{3}$ length of lip; disk with a ligulate, fleshy callus near centre of mid-lobe. Column 7-9 mm long, apically obscurely auriculate. Capsule ellipsoidal, 3 cm long.

Flowers: October.

Middle America, West Indies, northern South America.

TRINIDAD: Prestoe s.n. (*Herb. Trin.* 1640); Botanic Gardens, October 1891, Hart s.n. (*Herb. Trin.* 5432); Bradford s.n. (ex Cogniaux).

2. *Maxillaria albiflora* Ames & Schweinf. *Sched. Orch.* 8 (1925) 56.

Epiphytic, caespitose. Roots fibrous. Pseudobulbs narrowly arcuate-pyriform, finely rugose-striate, invested with imbricating sheaths, up to 4 cm long, 2-2.5 cm in diameter, 1-foliate. Leaves papyraceous, long-petiolate; petiole borne on pseudobulb, 8-11.5

cm long; lamina elliptic-lanceolate, acute, cuneate-narrowed at base, mid-nerve carinate beneath, 16-29 cm long, 3-4.5 cm wide. Inflorescences of 1 or several scapes, 5.5-7.5 cm long, covered with loose, imbricating, scarious sheaths. Flowers large, white, fragrant. Ovary (and pedicel) 1.5 cm long, exceeded by a scarious, sheathing bract 2.7 cm long. Sepals subcoriaceous; dorsal lanceolate, long-acuminate, with a minute dorsal mucro, concave or navicular, 2.9-3 cm long, 8 mm wide; laterals lanceolate-triangular, long-acuminate, acute, with a short mucro from a dorsal subapical keel, 3 cm long, about 1 cm wide. Petals similar to dorsal sepal, about 2.5 cm long, 7 mm wide. Lip simple or almost so, recurved, shorter than other segments, sides contracted by a fleshy 3-lobulate median callus, ovate, rounded at minutely retrorse apex, anterior margin denticulate-erose, 1.6-1.7 cm long, 10 mm wide near base, whole centre fleshy-thickened, thickening in apical part prominent beneath and terminating in a subapical mucro. Column stout, 1 cm long, margin of apical portion lobulate and minutely ciliate, produced into a foot about 7 mm long.

Flowers: January-February.

Endemic to Trinidad.

TRINIDAD: Tucuche, January 10, 1922, Freeman & Williams s.n. (Type, *Herb. N.Y.*; *Herb. Trin.* 10086; *Herb. Ames* 28243); Mount Tucuche, alt. 1500 ft, February 2, 1954, Baker s.n. (*Herb. Trin.* 15113).

3. *Maxillaria Broadwayi* (Cogn.) R. E. Schult. in *Bot. Mus. Leafsl. Harv. Univ.* 17 (1956) 197.

Ornithidium Broadwayi Cogn. in *Urban Symb. Antill.* 6 (1910) 612.

Small, epiphytic, caespitose. Roots densely fasciculate, filiform. Pseudobulbs erect, elongate-ovoid, flattened, 4-7 mm long, 1-2 mm in diameter, 2-foliate. Leaves fleshy, rigid, erect or erect-spreading, linear-subulate, acuminate, 3.5-6 cm long, 1-1.5 mm wide. Inflorescences of solitary scapes; peduncles erect, flexuous, subequal to leaves, 3-6 cm long, invested with 4 or 5 narrow, acute, dorsally subcarinate sheaths 2-4 cm long. Bracts minute, lanceolate, acute. Flowers very small; segments thinly membranaceous, connivent. Sepals equal, linear-triangular, acute, hardly producing a chin, obtuse, 5 mm long, 1 mm wide. Petals narrowly linear, obtuse, 5 mm long, 0.75 mm wide. Lip sessile,

narrowly spatulate, subtruncate and obscurely 3-lobate, entire, longer than sepals, 6 mm long, 2 mm wide near apex; disk broadly 2-alate above, attenuate below. Column fleshy, very short, 1.5 mm long, apical portion very acutely and narrowly 1-dentate.

Endemic to Tobago.

TOBAGO: Between Adelphi and Belmont, Broadway 2474 (ex Cogniaux).

4. *Maxillaria Camaridii* Rehb. f. in *Hamb. Gartenz.* 19 (1863) 547.

Camaridium ochroleucum Lindl. in *Bot. Reg.* 10 (1824) t. 844.

Epiphytic, ascending or spreading. Stems elongate, flattened, much-branched, concealed by appressed, scarious, distichous, ovate or oblong cataphylls. Pseudobulbs approximate or distant, ancipitous, ellipsoidal, flattened, smooth, 3-6 cm long, 1.5-3 cm in diameter, apically 2- or 3-foliate, basally enveloped by persistent, papery, leaf-like sheaths. Leaves subcoriaceous, linear-lanceolate, obtuse or rounded, obliquely retuse, 10-40 cm long, 8-16 mm wide. Inflorescences usually in successive pairs from axils of cataphyll-sheaths of new growths, 3 cm long, invested by several scarious, brownish sheaths 1.5-2 cm long. Flowers white or cream-coloured, rarely violet-tinged, fragrant, conspicuous; lip yellow, sometimes streaked with red. Sepals free, subequal, erect or widely spreading, concave, elliptic-oblong or broadly elliptic-oblong, acute, 25-32 mm long, 10-12 mm wide; laterals forming an inconspicuous, rounded chin with base of column-foot. Petals subequal to sepals, spreading, elliptic-oblong or oblong, usually acute, 24-26 mm long, 6-9 mm wide. Lip fleshy, conspicuously 3-lobed, orbicular, 10-13 mm long, 10-13 mm wide; lateral lobes erect, rounded; mid-lobe orbicular, rounded or obtuse at apex, concave, fleshy in centre; disk with a linear-lanceolate callus, tuberculate; lower part densely orange-papillose, with papillae forming a denticulate, fleshy lamella in upper part. Column arcuate, 8-10 mm long, white with red spot near base. Capsule obliquely ellipsoid, winged, 2-2.5 cm long.

Flowers: April-October.

Middle America, Trinidad, British and Dutch Guiana.

TOBAGO: (ex Broadway, 1918).

TRINIDAD: (*Herb. Trin.* s.n.); April 6, 1866 (*Herb. Trin.* 616); St. Clair Experimental Station, June 7, 1907, Broadway s.n. (*Herb. Ames* 11682); St. Clair Experimental Station, May 24, 1908, Broadway 2344 (*Herb. Ames* 10674, 10675); Sangre Grande, October 20, 1908, Broadway s.n. (*Herb. Ames* 11735); July 17, 1916, Rogers s.n. (*Herb. Trin.* 8287); Atagual, Tabaquite, October 11, 1918, Broadway s.n. (*Herb. Trin.* 9688; *Herb. Ames* 67050; *Herb. Gray* 6244); Downs & Aitken 36 (*Herb. Ames* 67796, 67829); Cruieger s.n. (ex Cogniaux); Bradford s.n. (ex Cogniaux); Fendler 788 (ex Cogniaux).

5. *Maxillaria coccinea* (Jacq.) L. O. Wms. ex Hodge in *Am. Orch. Soc. Bull.* 23 (1954) 42.

Epidendrum coccineum Jacq. *Enum. Pl. Carib.* (1760) 29

Epiphytic, stem elongate, robust, branched, covered with distichous, imbricating sheaths below. Pseudobulbs distant, basal, ovoid, flattened, 2.5–4 cm long, 1-foliate. Leaves subcoriaceous, caducous, linear-lanceolate or elliptic-ligulate, acute or obtuse, obliquely emarginate, 10–35 cm long, 1–2.5 cm wide. Inflorescence fasciculate, 4–6 cm long. Bracts oblong, obtuse, 8–12 mm long. Flowers red, nodding. Sepals fleshy, ovate, long-acuminate, 11 mm long, 5 mm wide; laterals forming a small, rounded chin. Petals ovate, long-acuminate, 7–8 mm long, 4 mm wide. Lip fleshy, slightly 3-lobed, shortly and broadly clawed, broadly ovate-deltoid in outline; lateral lobes broadly ovate, rounded; mid-lobe narrowly ovate-triangular, acute; disk thickened up to middle. Column fleshy, apically with 2 wings, 3.5 mm long.

West Indies, Venezuela, Colombia.

TRINIDAD: Sieber 283 (ex Cogniaux).

6. *Maxillaria conferta* (Griseb.) C. Schweinf. ex Leon in *Contrib. Ocasión. Mus. Hist. Nat. Coleg. Salle*, no. 8 (*Fl. Cuba*, vol. 1) (1946) 395.

Ornithidium confertum Griseb. *Fl. Br. W. Ind. Isl.* (1864) 626.

Epiphytic, stems repent, slender, 10–45 cm long, covered with densely imbricating, appressed, papyraceous, ovate, acute sheaths. Pseudobulbs distant, sometimes aggregated, elliptic-oblong, 1-foliate,

flattened, 1.5–2.5 cm long, basally covered with 1 or more brown, papyraceous sheaths up to 3 cm long. Leaves thinly papyraceous, linear, long-acuminate, acute or obtuse, 7–17 cm long, 6–15 mm wide. Inflorescence glomerate, from a sheath of stem. Bracts ovate-lanceolate, acute, up to 5 mm long. Flowers spreading, white- and purple-variegated. Sepals unequal, thin, ovate-lanceolate, acute or short-acuminate; dorsal 3 mm long, 1.5 mm wide; laterals 2.5 mm long, 1.5 mm wide, producing a very small, obtuse chin. Petals lanceolate, acute, 2.5 mm long, 0.75 mm wide. Lip fleshy, long and narrowly clawed, as long as petals, undivided, deltoid, blunt; disk basally with a transverse callus excurrent to margin. Column thick, 0.75 mm long.

Flowers: November–July.

West Indies.

TOBAGO: Between Adelphi and Belmont, Broadway 2476 (ex Cogniaux).

TRINIDAD: November 30, 1845 (*Herb. Trin.* 1627); Tamana, February 2, 1915, Broadway s.n. (*Herb. Trin.* 8225); Botanic Gardens, March 5, 1918, Broadway s.n. (*Herb. Trin.* 8772); Road to Maracas Bay, July 10, 1924, Williams et al. (*Herb. Trin.* 11249); Cumaca Road, third mile, December 27, 1948, Simmonds 314 (*Herb. Trin.* 14238; *Herb. Ames* 66942); Cumaca, November 1954, Downs & Aitken 20 (*Herb. Ames* 67324); Bradford s.n. (ex Cogniaux).

7. *Maxillaria liparophylla* Summerh. ex Sandw. in *Kew Bull.* (1938) 377.

Epiphytic. Stem with numerous slender, branched roots. Pseudobulbs densely caespitose, narrowly oblong-ovate in outline, flattened, 1–2 cm long, about 3 mm in diameter, basally covered with chartaceous cataphylls, 1-foliate. Leaves thinly subcoriaceous, narrowly oblong or oblong-ligulate, obliquely emarginate, rounded, petiole 6–12 cm long, 7–14 mm wide. Inflorescence from base of pseudobulb, 3–4 cm long, with about 3 acute, keeled, imbricating sheaths. Bracts similar to sheaths, longer than ovary, 1.7–2 cm long. Flowers brownish yellow. Sepals unequal; dorsal lanceolate, short-acuminate, 16 mm long, 2.5–3 mm wide; laterals obliquely lanceolate, short-acuminate, 17 mm long, 2.5–3 mm wide,

producing an obtuse chin up to 2 mm long. Petals similar to dorsal sepal but smaller, somewhat oblique. Lip 3-lobed, 11 mm long, 5.5 mm wide; lateral lobes rounded, 0.5 mm long, 1.5 mm wide; mid-lobe broadly lanceolate, acute, 5 mm long, 2 mm wide, apically fleshy, canaliculate-acute; disk provided with a callus ligulate below, fleshy-hemispheric above, decurrent almost to base of lateral lobes. Column semi-terete, above incurved, 4.5 mm long, with a small foot.

Flowers: October.

British Guiana, Tobago.

TOBAGO: Roxborough-Parlatuvier Road, seventh-eighth mile-posts, near summit of Main Ridge, alt. 1400 ft, October 25, 1937, Sandwith 1925 (Type, *Herb. Kew*; *Herb. Ames* 66912).

8. *Maxillaria Reichenheimiana* Endres & Rehb. f. in *Gard. Chron.* (1871) 1678.

Epiphytic caespitose, up to 16 cm. Roots fibrous. Pseudobulbs ellipsoidal, flattened, 1-2 cm long, basally with imbricating sheaths, 1-foliate. Leaves firmly chartaceous, short-petiolate; petiole flattened, 6-21 mm long, lamina usually broadly elliptic-oblong, obtuse or acutish, broadly cuneate to rounded at base, 5-12 cm long, usually 3-5.5 cm wide. Inflorescence of 1 or several scapes, up to 13 cm long, covered with from 4 to 6 loose, scarious sheaths. Bracts similar to sheaths. Flowers large, yellow, up to 4 cm long. Sepals subpapyraceous, subequal, lanceolate-triangular, long-acuminate, up to 4.7 cm long, basally 2.5 mm wide. Petals similar to sepals but smaller, up to 3 cm long. Lip ovate in outline apically 3-lobed, much shorter than other segments, sides somewhat contracted by fleshy median callus 7 mm long, up to 15 mm long, 5-7 mm wide at widest part; mid-lobe rather subquadrate, apically very strongly fleshy and mucronate-keeled beneath; lobes small, rounded. Column very stout, 3 mm long, 2 mm in diameter, apically fimbriate.

Flowers: February.

Costa Rica, Honduras, Trinidad.

TRINIDAD: Cumaca, February 10, 1957 (flowered), Downs & Aitken 64 (*Herb. Ames* 67811).

9. *Maxillaria rufescens* Lindl. in *Bot. Reg.* 21 (1836) sub. t. 1802; 22 (1836) t. 1848.

Cacspitose, epiphytic, up to about 40 cm. Pseudobulbs clustered on creeping stem, ovoid-cylindrical, flattened, 3-6 cm long, 0.5-2 cm in diameter, subtended by 3 or more papery, imbricating sheaths, 1-foliate. Leaves coriaceous, ligulate-elliptic, abruptly acute, sometimes acuminate, shortly conduplicate at base, 10-35 cm long, 1.2-4 cm wide. Inflorescences arising from axil of sheath subtending pseudobulb (usually solitary sheaths about 2.5-4 cm long) basally provided with several infundibuliform sheaths. Flowers deep yellow, greenish yellow or whitish, fragrant; pedicellate ovary 2-3 cm long. Bracts oblong, acute, 12-15 mm long. Sepals subequal, fleshy, elliptic-oblong, rounded or obtuse and apiculate, 15-20 mm long, 4-6 mm wide; laterals spreading, adnate to foot of column, producing a short rounded mentum. Petals similar to dorsal sepal, appressed to column, 11-15 mm long, 5-7 mm wide. Lip fleshy, articulated to foot of column, conspicuously 3-lobed, ovate-oblong in outline, 10-14 mm long, 5-6 mm wide; lateral lobes small, erect, and upcurved, triangular, usually acute, 1-1.5 cm long; mid-lobe oblong-subquadrate, truncate and emarginate at apex $\frac{3}{5}$ length of lip; disk with ligulate, velvety callus between lateral lobes extending above middle of lip. Column stout, clavate, arcuate, 10-14 mm long including short foot. Capsule pendent, obovoid-ellipsoid, usually warty, 2 cm long.

Flowers : January-July.

Middle America, West Indies, northern South America.

TRINIDAD : Maracas, May 18, 1855 (*Herb. Trin.* 1514); March 23, 1890 (*Herb. Trin.* 7449); Caparo, April 28, 1908, Broadway 2327 (*Herb. Ames* 10690, 10692, 10693, 10733); Mount Tamana, February 19, 1915, Broadway s.n. (*Herb. Trin.* 7892); July 17, 1916, Rogers s.n. (*Herb. Trin.* 8288); Matchepoorie, March 11, 1921, Britton & Britton 2225 (*Herb. Ames* 21463); Heights of Aripo, January 10-26, 1922, Broadway s.n. (*Herb. Trin.* 9889); Irois Forest, January 24, 1928, Williams s.n. (*Herb. Trin.* 11929); Melajo Reserve, June 1949, Ayliffe s.n. (*Herb. Trin.* 14387); Downs & Aitken 21,

(*Herb. Ames* 67323); Melajo Forest, Sangre Grande, August 20, 1954, Downs & Aitken 18 (*Herb. Ames* 67325); Bradford s.n. (ex Cogniaux); Horne s.n. (ex Cogniaux).

10. *Maxillaria trinitatis* Ames *Sched. Orch.* 2 (1923) 34.

Maxillaria trinitensis Broadw. in *Orch. Rev.* 34 (1926) 202, *sphalm.*

Epiphytic, roots fibrous, numerous. Pseudobulbs congested, ovoid, flattened, up to 4 cm long, about 2 cm in diameter, 1-foliate, basally with large, papery, ovate-deltoid sheaths up to 6 cm long. Leaves coriaceous, ligulate, acute or sometimes subobtuse, basally conduplicate, 30-44 cm long, 3.5-4.5 cm wide, overtopping inflorescence. Inflorescences arising from base of pseudobulb, scapes up to 16 cm long, with about 7 tubular, brownish sheaths which are 2-3 mm in diameter. Flowers yellowish white with pink markings. Sepals fleshy, unequal; dorsal sepal concave, oblong, obtuse, 2.2 cm long, 5 mm wide; laterals 2.4 cm long, 4 mm wide, obtuse, forming distinct chin. Petals linear-oblong, obtuse, 2.2 cm long, about 3 mm wide. Lip fleshy, clawed, 3-lobed in front; lateral lobes rounded, erect, 1.1 cm long to claw; mid-lobe subquadrate, obtuse, thickened, about 3 mm long, 3 mm wide; disk with longitudinal, thickened ridge. Column fleshy, 7 mm long.

Flowers: January-March.

Venezuela, Trinidad.

TRINIDAD: Las Cuevas Heights, January 4, 1861 (*Herb. Trin.* 1832); Heights of Aripo, January 10-26, 1922, Broadway s.n. (Type, *Herb. Ames* 22672, 67049; *Herb. Trin.* 9890); Tucuche, January 10, 1922, Freeman & Williams 10085; Trail to El Tucuche, January 2, 1948, Simmonds 240 (*Herb. Trin.* 14070); Charuma Forest, January 18, 1955 (flowered), Downs & Aitken 16 (*Herb. Ames* 67327); El Tucuche, March 27, 1955, Downs & Aitken 39 (*Herb. Ames* 67842).

11. *Maxillaria variabilis* Batem. ex Lindl. *Bot. Reg.* 23 (1837) sub. t. 1886.

Epiphytic, erect or pendulous, caespitose or with elongated stems. Stems up to 30 cm, simple or branched, provided with closely appressed, more or less imbricating sheaths. Pseudobulbs distant, ovoid to elliptic-ovoid, 1.5–6 cm long, 7–20 mm in diameter, 1-foliate, subtended by several papery sheaths. Leaves coriaceous, linear-elliptic or ligulate, obliquely retuse, basally shortly conduplicate, 5–20 cm long, 5–20 mm wide. Inflorescences several, arising from axils of sheaths that cover stems or from base of pseudobulbs; peduncle 20–25 mm long, subtended by several thin sheaths. Flowers usually small, white, yellow or orange marked with dark red or sometimes entirely dark red; lip sometimes red. Sepals subequal, spreading, linear-lanceolate to oblong-elliptic, obtuse or acute, usually apiculate, 8–14 mm long, 2–5 mm wide; laterals forming a short chin. Petals lanceolate or oblanceolate, apically acute and revolute, sometimes rather granular-papillose along margins, 6–12 mm long, 3–5 mm wide. Lip articulated to column-foot, fleshy, erect-arcuate, undivided or sometimes very obscurely 3-lobed near apex, oblong-subquadrate in outline, rounded or truncate and emarginate; disk with large rectangular black-red callus near base. Column about 10 mm long. Capsule ellipsoid, 1.5–2.5 cm long.

Flowers: May.

Middle America, Peru, British Guiana, Trinidad.

TRINIDAD: January 9, 1864 (*Herb. Trin.* 1821); Cedros, July 4, 1866, Prestoe s.n. (*Herb. Trin.* 2895); Charuma Forest, May 31, 1955 (flowered), Downs & Aitken 50 (*Herb. Ames* 67798).

52. PLECTROPHORA Focke

Plectrophora iridifolia (Lodd. ex Lindl.) Focke in *Tijdschr. Wiss. Natuurk. Wetensk. Amsterd.* 1 (1848) 212.

Known from British Guiana, where the type was collected. Cited (as *Trichocentum iridifolium* Lodd. ex Lindl.) from Trinidad (Broadway in *Gardn. Chron.* 1 (1893) 446; Broadway in *Orch. Rev.* 34 (1926) 133), but no material seen to authenticate record.

53. *IONOPSIS* H.B.K.

Epiphytic herbs. Stems short, with or without small pseudobulbs, leafy. Leaves few, distichously imbricated, leathery. Inflorescence of from 1 to 3 simple or paniculate racemes, lateral or subterminal from leaf-axils, slender, lax, erect or arching. Flowers small to medium-sized, showy. Bracts small. Sepals subequal, erect or spreading at apex; dorsal free; laterals basally connate to form small sack under lip. Petals similar to dorsal sepal but wider. Lip clawed, commonly 2-lobed or deeply emarginate at apex, attached to base of column, longer than sepals, apical portion expanded; disk 2-callose. Column short, erect, thick. Capsule oblong-cylindric to ovoid, with a short beak or beakless.

Ionopsis : Greek, 'like a violet'.

Nine or 10 species of southern Florida, West Indies, Mexico, Middle America, the northern half of South America.

1. Pseudobulbs obsolescent. Leaves terete.

Lip entire1. *Ionopsis satyrioides*

1a. Pseudobulbs conspicuous. Leaves flat.

Lip 2-lobed2. *Ionopsis*
utricularioides

1. *Ionopsis satyrioides* (Sw.) Rehb. f. in Walpers *Ann. Bot.* 6 (1863) 683.

Epidendrum satyrioides Sw. *Prodr.* (1788) 123.

Up to about 30 cm, usually shorter. Pseudobulbs obsolescent. Leaves fleshy, terete, subulate, 4-13 cm long, 3-4 mm wide. Inflorescences racemose or laxly paniculate, up to about 15 cm, few-flowered, peduncle purple with a few, distant, lanceolate, closely appressed sheaths, up to 8 mm long. Bracts small, triangular, acute, 2-3.5 mm long. Flowers 5 mm wide, fragrant, yellowish white, lip and petals sometimes red-striped. Sepals subequal, lanceolate, acute, 7-8 mm long, 2-2.5 mm wide; laterals basally united, forming a 2-lobed sack. Petals ovate-oblong, obtuse or acuminate, undulate, about 7 mm long, 3 mm wide. Lip entire, obovate, narrowly clawed, undulate, obtuse, about 8.5 mm long; claw basally with 2 minute, bright yellow calluses and apically 2-lamellate. Column 2 mm long. Capsule ellipsoidal, up to 16 mm long, 5 mm in diameter.

Flowers: March.

Jamaica, Hispaniola, Trinidad, northern South America.

TRINIDAD : Brasso Caparo, (flowered) March 10, 1957, (Martinez) Downs & Aitken 110 (*Herb. Ames* 68544).

2. *Ionopsis utricularioides* (Sw.) Lindl. *Collect. Bot.* (1825) t. 39a.

Epidendrum utricularioides Sw. *Prodr.* (1788) 122.

Up to 75 cm, usually shorter. Pseudobulbs ellipsoid-conical, up to 3 cm long. Leaves flat, leathery, jointed to sheathing base, linear-lanceolate to oblanceolate, acute, cuspidate or obtuse, mid-vein forming keel beneath, 3-15 cm long, 6-15 mm wide, lower surface often red-brown. Inflorescences from 1 to 3, lateral from base of pseudobulb, erect or arching, racemose or laxly paniculate, usually 30-60 cm long, up to 20-25 cm in diameter, peduncle bearing a few distant, closely appressed sheaths up to 10-12 mm long. Bracts minute, triangular to lanceolate, acute, about 2.5 mm long. Flowers white or pale rose, sometimes lavender or purple-tinged, showy. Pedicel and ovary 12 mm long. Sepals subequal, not spreading, broadly lanceolate, acute, 3-6 mm long, 1.5-2 mm wide; dorsal free; laterals connate at base to form a small, simple or 2-lobed obtuse sack. Petals oblong or elliptic-ovate, obtuse, apiculate, 5-6.5 mm long, 3-3.5 mm wide. Lip clawed, 2-lobed, entire to somewhat crenulate, up to 12 mm long, 10-12 mm wide; claw minutely 2-auriculate, apically 2-callose. Column short, stout, truncate, 2 mm long. Capsule ovoid, long-beaked, 2 cm long, 7 mm in diameter.

Flowers: February-May.

Florida, Mexico, Middle America, northern half of South America, West Indies.

TOBAGO : Providence (ex Broadway, 1918).

TRINIDAD : Government House Grounds, March 21, 1907, Broadway s.n. (*Herb. Ames* 10093, 68640, 68644); Agua Santa, Arima, March 15, 1908, Broadway s.n. (*Herb. Ames* 10739, 10740); Erin, March 27, 1908, Broadway 2235 (*Herb. Ames* 11715); Agua Santa, near Arima, April 16, 1908, Broadway 2351 (*Herb. Ames* 11700); Tamana, February 19, 1915, Broadway s.n. (*Herb. Trin.* 8839); Bande de l'Est Road, near Princes Town, August 16, 1918, Broadway s.n. (*Herb. Trin.* 8841);

Fifth Company, Moruga Town, August 16, 1918, Broadway s.n. (*Herb. Trin.* 8841); Fifth Company, Moruga Road, August 26, 1918, Broadway s.n. (*Herb. Trin.* 8840); 'on the way to Mount Tamana', March 27, 1925, Broadway s.n. (*Herb. Ames* 37409); Cascade via River Estate, Diego Martin, April 25, 1934, Broadway s.n. (*Herb. Ames* 40387); Guaico-Tamana Road, alt. 100-200 ft., May 7, 1953, Baker & Simmonds s.n. (*Herb. Trin.* 15010); Caroni, March 8, 1955 (flowered), Downs & Aitken 29 (*Herb. Ames* 67830); Woodford s.n. (ex Cogniaux); Kuntze s.n. (ex Cogniaux); De Schack s.n. (ex Cogniaux); Lockhart s.n. (ex Cogniaux).

3. *Ionopsis teres* Lindl. *Bot. Reg.* 24 (1838) Misc. p. 95.

Known from British Guiana, where type was collected. Cited from Trinidad (BROADWAY in *Orch. Rev.* 34 (1926) 132) and Tobago (BROADWAY in *Bull. Dept. Agric. Trin. Tob.* 17, pt. 2 (1918) 98), but no specimens seen to authenticate record.

54. *RODRIGUEZIA* R. & P.

Epiphytic herbs. Rhizome elongated. Pseudobulbs short, ovoid, flattened, distant or approximate, usually covered by foliaceous bracts, 1- or 2- foliate at apex. Leaves coriaceous. Inflorescence lateral, consisting of 1 to several, few- to many-flowered racemes. Flowers medium-sized to large, often showy. Sepals subequal, usually unlike; dorsal free, petaloid; laterals variously connate (usually entire length), sometimes slightly gibbose. Petals similar to dorsal sepal. Lip clawed at base, continuous with base of column or very short-connate, produced into small spur; limb spreading, obovate; disk often cristate. Column slender, footless, apically dilated or auriculate. Capsule rather small, usually ellipsoidal.

Rodriguezia: dedicated to Don Manuel Rodriguez, Spanish botanist and royal apothecary to the King of Spain at the time of the Ruiz and Pavon expedition to Peru and Chile.

Fewer than 35 species of the New World tropics, especially of Brazil.

Rodriguezia secunda H.B.K. in *Nov. Gen. et Sp.* 1 (1815) 367, t. 92.

Common name: Coral Orchid, Coralito.

Up to 30 cm. Pseudobulbs elliptic-ovoid, flattened, up to 4 cm long, 2.5 cm in diameter, 1-foliate. Leaves rigid-coriaceous, lanceolate or oblong-lanceolate, acute or emarginate-obtuse, up to 20 cm long, 2.5 cm wide. Inflorescence arcuate, 10–25 cm long, densely many-flowered in upper half. Flowers fragrant, pink, rose-purple or occasionally white, secund or distichous; pedicel (with ovary) up to about 10 mm long. Bracts concave, triangular, acute, 4–6 mm long. Sepals erect-spreading, acute; dorsal ovate, dorsally keeled, 10–12 mm long, 5 mm wide; laterals up to almost completely connate, forming a basally gibbous, conduplicate blade 12–13 mm long, 5–7.5 mm wide. Petals erect, narrowly obovate, acute, basally attenuate, 10 mm long, about 5 mm wide. Lip uppermost, membranaceous, concave, long-clawed (claw linear, auriculate on each side near middle), 13–14 mm long; blade obovate-obcordate, deeply emarginate, entire, 5–6 mm wide; spur deep purple, 2 mm long; disk basally 2-keeled. Column often slightly puberulent, apically shortly 2-dentate on each side, 6–7 mm long. Capsule 14–15 mm long, 10 mm in diameter.

Flowers: March–April, June.

Panama, northern South America, Trinidad.

TRINIDAD: Botanic Garden, May 1890, Hart s.n. (*Herb. Trin.* 4096); St. Clair Experiment Station, April 4, 1908, Broadway s.n. (*Herb. Ames* 10222); Agua Santa, Arima, April 14, 1908, Broadway s.n. (*Herb. Ames* 11699); Agua Santa, April 16, 1908, Broadway 2325 (*Herb. Ames* 10687, 10688, 10689); Santa Cruz, February 27, 1911, Broadway 4097 (*Herb. Ames* 16430); Maraval, March 3, 1911, Baptiste s.n. (*Herb. Gray* 6302); Maraval, March 3, 1911, Broadway s.n. (*Herb. Trin.* s.n.); Agua Santa, Arima, May 3, 1915, Broadway s.n. (*Herb. Trin.* 7896); Siparia, April 14, 1916, Broadway s.n. (*Herb. Trin.* 7657); North Trace, Princes Town, August 19, 1918, Broadway s.n. (*Herb. Trin.* 8838); Carmichael Road, April 18, 1920, Britton & Hazen 1928 (*Herb. Gray* 6303); Tamana, April 18, 1920, Freeman s.n. (*Herb. Trin.* 9060); April 26, 1920, Broadway s.n.

(*Herb. Ames* 22067); Aripo Savannah, March 21, 1922, Broadway s.n. (*Herb. Trin.* 10565); Cuare River July 12, 1925, Williams & Freeman s.n. (*Herb. Trin.* 11265); 'Northern part of Trinidad', May 1933, Broadway 9188 (*Herb. Gray* 6303a); Imperial College of Tropical Agriculture, April 2, 1949, Simmonds 339 (*Herb. Trin.* 14285); Long Stretch Gravel Pit, June 6, 1949, Simmonds 371 (*Herb. Trin.* 14367; *Herb. Ames* 68192); Arena Forest, June 9, 1950, Baker s.n. (*Herb. Trin.* 14594); Downs & Aitken 5 (*Herb. Ames* 67852).

55. *TRIZEUXIS* Lindl.

Epiphytic herbs. Stems abbreviated, foliaceous, terminating in monophyllous pseudobulb surrounded by distichous leaf-bases. Leaves equitant, coriaceous, falcate or sword-shaped. Inflorescence densely paniculate, basal. Flowers small. Sepals subequal; dorsal erect-arching, fornicate; laterals almost completely connate. Petals about as long as sepals. Lip erect from base of column, undivided or obscurely 3-lobed, lateral margins erect; disk 2-callose. Column fleshy, erect, parallel to lip, wingless, footless.

Trizeuxis: Greek, 'three-yoked', in reference to the connate condition of the sepals.

Monotypic genus of Middle America, northern half of South America, Trinidad.

Trizeuxis falcata Lindl. *Collect. Bot.* (1823) t. 2.

Small, 3-10 cm tall. Pseudobulb oblong-ovoid, flattened, up to 1.5 cm long. Leaves linear-lanceolate or falcate, acute, 2-10 cm long, 2-10 mm wide, imbricating bases flabellate. Inflorescence slender, up to 20 cm long. Flowers subglobose, yellowish, in dense, capitate or elongate racemes along branches of panicle. Pedicel and ovary 1-1.5 mm long. Sepals about 2 mm long; dorsal oblong-ovate, acute or obtuse; laterals connate for $\frac{2}{3}$ of length. Petals broadly ovate, obtuse or acutish, 1.5 mm long, about 1.6 mm wide. Lip sessile, oblong, acute or obtuse, apex fleshy and recurved, 2.5 mm long, 1 mm wide. Column about 1 mm long.

Flowers: March-May.

Costa Rica, Panama, Venezuela, Brazil, Bolivia, Peru, Trinidad.

TRINIDAD: Botanic Gardens, 1889, Broadway s.n. (*Herb. Trin.* 3895); Botanic Gardens, April 1890, Broadway s.n. (*Herb. Trin.* 4032); St. Ann's, March, 1890, Broadway s.n. (*Herb. Ames* 7599); St. Ann's, April 15, 1890, Broadway s.n. (*Herb. Ames* 7597); Government House Grounds, December 21, 1906, Broadway s.n. (*Herb. Ames* 10081); Government House Grounds, May 2, 1907, Broadway s.n. (*Herb. Ames* 10218, 10219, 16249, 67870); Agua Santa, near Arima, April 1908, Broadway s.n. (*Herb. Ames* 11688); Maraval, March 14, 1911, Broadway s.n. (*Herb. Trin.* 9767); Maraval, April 21, 1911, Broadway s.n. (*Herb. Trin.* 9708); Maraval, April 22, 1911, Broadway 4100 (*Herb. Ames* 16546); Siparia, March 12, 1915, Broadway s.n. (*Herb. Trin.* 7898); Beausejour, road to Blue Basin, May 11, 1915, McLean s.n. (*Herb. Trin.* 7752); Dabadie, 1920, Broadway s.n. (*Herb. Ames* 22043); May 17, 1923, Hombersley s.n. (*Herb. Trin.* s.n.); St. Augustine, April 2, 1949, Simmonds 341 (*Herb. Trin.* 14298; *Herb. Ames* 68177); Guaico-Tamana Road, May 7, 1953, Baker & Simmonds s.n. (*Herb. Trin.* 15011); Arena Forest Station, October 2, 1953, Ayliffe s.n. (*Herb. Trin.* 15025); Biche, Downs & Aitken 23 (*Herb. Ames* 67320); Caparo, March 10, 1957, Downs & Aitken 110 (*Herb. Trin.* 201).

56. QUEKETTIA Lindl.

Small, epiphytic herbs. Stems abbreviated, swollen into small, fleshy, 1-foliate pseudobulbs. Leaves fleshy, often linear or terete. Scape simple, filiform, loosely few- to many-flowered. Flowers small, subsessile in axil of small scarious bracts. Sepals subequal, free, erect-spreading. Petals similar to sepals. Lip erect, free, sessile, basally sometimes lightly excavated. Column erect, short, slender or thick, footless, apically with 2 recurved, appendiculate auricles.

Quekettia: in honour of Edwin J. Quekett, F.L.S., a plant morphologist and contemporary of Lindley.

Three species of the Argentine, Brazil, Paraguay, British Guiana, Trinidad.

Quekettia pygmaea (Cogn.) Garay & R. E. Schult. ex Schultes in *Rhodora* 59 (1957) 288.

Ionopsis pygmaea Cogn. in Urban *Symb. Antill.* 6 (1910) 624.

Trizeuxis pygmaea (Cogn.) Schltr. in Urban *loc. cit.* 7 (1913) 498.

Very small. Leaves spotted red-brown, terete, subulate, rigid, erect-spreading, arcuate, 12–30 mm long, 1.5–2.5 mm wide. Inflorescence much longer than leaves, 2–6.5 cm long. Bracts broadly triangular, acute, scarious, 0.5–0.7 mm long. Pedicel and ovary 1–1.5 mm long. Flowers very small, pale purple. Sepals 1.5 mm long; dorsal ligulate, rounded, hardly 0.5 mm wide; laterals ovate-oblong, obtuse, very slightly connate and slightly gibbose, 0.6 mm wide. Petals erect, broadly elliptic-ovate, obtuse, entire, 1.3 mm long, 0.6 mm wide. Lip concave, narrowly ovate, obtuse, 3-lobulate to entire, 1.75 mm long, 1 mm wide. Capsule erect, obovoid-subglobose, 1.5 mm long.

Flowers: December–March.

Endemic to Trinidad.

TRINIDAD: Caparo, March 27, 1908, Broadway 2251 (*Herb. Ames* 10644, 21048).

57. *ASPASIA* Lindl.

Epiphytic herbs with short, erect, pseudobulbous stems; lower stems and bases of flattened pseudobulbs concealed by imbricating, foliaceous sheaths. Leaves 1 or 2 at apex of pseudobulbs, subcoriaceous. Inflorescence an axillary, erect, 1- or few-flowered raceme. Sepals subequal, spreading; laterals free, reflexed; dorsal adnate to base of petals and column. Petals similar to dorsal sepal. Lip ecalcarate; limb adnate to column and spreading. Column at right angles to lip, erect, subterete, lower portion marginate, lower half adnate to lip. Capsule cylindrical-fusiform.

Aspasia: Greek, 'to embrace', in reference to the lip which at the very base embraces the column.

Some 6 species of tropical Middle and South America.

Aspasia variegata Lindl. in *Bot. Reg.* 22 (1836) t. 1907.

Pseudobulbs large, clustered, ovoid or ellipsoid, 5-8 cm long, basally with several foliaceous sheaths when young. Leaves 2, chartaceous, elongate-lanceolate, recurved, acute or short-acuminate, basally long-attenuate, 12-20 cm long, 1-2 cm wide. Inflorescence above laxly 2- or 3-flowered, up to 10 cm long. Bracts coriaceous, triangular, acute, green, 8-12 mm long. Flowers erect or erect-spreading, without fragrance. Sepals fleshy, spreading, oblong-lanceolate, greenish or yellowish with purple lines; laterals acute, slightly oblique, 17 mm long, 6 mm wide; dorsal rounded, 16 mm long, 5 mm wide. Petals fleshy, rigid, slightly cucullate, undulate, obovate-oblong, acute, 16 mm long, 7 mm wide, yellowish with purplish lines, basally adnate to column. Lip membranaceous, spreading, above somewhat velvety, beneath glabrous, ovate-quadrangle in outline, 3-lobed, 13 mm long, at base 16 mm and above 10 mm wide, lobes very obtuse, with curled lobulate margins; disk 2-callose to middle. Column subclavate, straight, 15 mm long, yellow. Capsule nodding, fusiform, acutely trigonous, 8-9 cm long.

Flowers: August.

Guiana, Brazil, Trinidad.

TRINIDAD: Siparia, June 14, 1920, Centeno s.n. (*Herb. Trin.* 8911); Charuma Forest, Tabaguite, July 21, 1955, Downs & Aitken 60 (*Herb. Ames* 67812); Cumaca Road, alt. 1700 ft, August 14, 1956, Herklots s.n. (Water colour drawing from living plant: *Herb. Trin.* 15410; *Herb. Ames* 68421).

58. *TRICHOPILIA* Lindl.

Epiphytic herbs. Pseudobulbs clustered, rounded or slender, 1-foliate at apex. Leaves subcoriaceous to coriaceous or fleshy, erect. Inflorescence from base of pseudobulb, a 1- to few-flowered scape. Flowers usually large, showy. Bracts small. Sepals subequal, free or basally connate, plain or twisted, spreading. Petals similar to sepals. Lip much larger than other segments, clawed, with claw adnate to basal half of column, entire or 3-lobed;

lateral lobes often convolute, forming tube; disk smooth or lamellate. Column elongate, footless; clinandrium large, membranaceous, entire, 2-auriculate or 2-dentate, often fimbriate. Capsule ellipsoidal.

Trichopilia: Greek, 'hair-hood', referring to the fringed margins of the hood-like clinandrium of most of the species.

From 20 to 30 species of the New World tropics.

1. Lip entire. Clinandrium muticous.....1. *Trichopilia mutica*
- 1a. Lip denticulate to sublacerate. Clinandrium basally with 2 elongate, setaceous, denticulate processes2. *Trichopilia subulata*

1. *Trichopilia mutica* (Lindl.) Rehb. f. & Wulfschl. ex Rehb. f. in Walpers *Ann. Bot.* 6 (1863) 679.

Macradenia mutica Lindl. in *Bot. Reg.* 25 (1839) Misc. p. 20.

Pseudobulbs ellipsoid-cylindric, flattened, 12-16 mm long. Leaves fleshy-coriaceous, linear-ligulate, dorsally convex, long-acuminate, 11-12 cm long, 4-6 mm wide. Inflorescence subfiliform, nodding, laxly 3- or 4-flowered, up to 6 cm long. Flowers dirty white, lightly red-tinted; pedicel (with ovary) 7-8 mm long. Bracts ovate-oblong, 6-8 mm long. Sepals linear-ligulate, short-acuminate, not twisted; dorsal 11 mm long, 2.5 mm wide; laterals a little longer and narrower. Petals broadly oblong, 9-10 mm long, 3.5 mm wide. Lip entire, broadly ovate, abruptly acute, marginally entire, 11 mm long, 8 mm wide. Column 6-6.5 mm long, muticate on both sides under clinandrium.

Flowers: December.

British and Dutch Guiana, Trinidad.

TRINIDAD: Saut d'Eau, North Coast, December 14, 1930, Broadway 7437 (*Herb. Ames* 37342); Hort. Knight (ex Cogniaux).

2. *Trichopilia subulata* (Sw.) Rehb. f. in *Flora* 48 (1865) 278.
Epidendrum subulatum Sw. *Prodr.* (1788) 123.

Pseudobulbs inconspicuous, subcylindric, slightly flattened, up to about 2.5 cm long, 0.5 cm in diameter. Leaves fleshy, rather terete-subulate, acuminate, canaliculate above, basally contracted, up to 22 cm long, 0.5-1 cm wide. Inflorescence pendulous, laxly

few-flowered, up to 15 cm long. Flowers whitish with pale violet spots; pedicel (with ovary) 12–20 mm long. Bracts papery, usually lanceolate-ovate, acute, as long as ovary. Sepals free, subequal, linear-lanceolate, acuminate, up to about 20 mm long, 3–4 mm wide. Petals spreading, linear-lanceolate, acuminate, slightly shorter and narrower than sepals. Lip entire to obscurely 3-lobed, ovate or ovate-rhomboid, acute or obtuse and apiculate, marginally denticulate to almost lacerate, 15–20 mm long, 12–18 mm wide; lateral margins erect, slightly enclosing column; disk with fleshy, 2-keeled callus. Column up to 9 mm long; clinandrium denticulate, basally provided with 2 elongate, toothed, setaceous processes.

Panama, Colombia, Peru, Cuba, Jamaica, Trinidad.

TRINIDAD: (ex Cogniaux).

59. *BRASSIA* R. Br.

Epiphytic, rarely terrestrial herbs, with stout rhizomes giving rise to thickened stems or slender pseudobulbs. Leaves from 1 to 3 at apex of pseudobulb, enveloped in several large sheaths. Inflorescence of 1 or 2 laxly few- to many-flowered, erect or arching racemes from base of pseudobulbs. Flowers usually large and attractive. Sepals free, spreading, equal, or (more commonly) with laterals much longer, acuminate or caudate. Petals subequal to dorsal sepal or shorter. Lip sessile, adnate to base of column, entire or sometimes obscurely 3-lobed, spreading, shorter than sepals, basally with 2-lamellate disk. Column short, erect, wingless, footless. Capsule ellipsoid, obovoid or cylindrical.

Brassia: in honour of William Brass, a botanical artist and successful collector of plants in South Africa for the Royal Botanic Gardens, Kew.

Some 50 species from Florida, West Indies, Mexico, Middle America, South America.

1. Sepals unequal. Lateral sepals long-caudate1. *Brassia caudata*
- 1A. Sepals subequal. Lateral sepals acuminate2. *Brassia Lanceana*

1. *Brassia caudata* (L.) Lindl. in *Bot. Reg.* 10 (1824) t. 832.
Epidendrum caudatum L. *Syst.*, ed. 10 (1759) 1246.

Common name: Cricket Orchid.

Terrestrial, up to about 50 cm. Pseudobulbs oblong-elliptic, truncate, ancipitous, up to 15 cm long, 4 cm in diameter, basally with several imbricating, papery sheaths. Leaves 2 or 3, coriaceous, oblong-elliptic to oblanceolate, obtuse or acute, 15-30 cm long, 2-6 cm wide. Inflorescence simple, often arching, few- to about 12-flowered, 15-30 cm long or longer, rhachis reddish. Flowers large, showy, distichous. Sepals and petals greenish yellow to bright orange-yellow, with red-brown spots. Lateral sepals linear-lanceolate, long-attenuate, about 12-25 cm long, 5-7 mm wide, externally keeled; dorsal erect, similar to laterals, 4-9 cm long, 3-5 mm wide. Petals narrowly lanceolate, long-attenuate, falcate, incurving, 2-3 cm long, 3-4 mm wide. Lip entire, oblong-lanceolate to elliptic-ovate, acuminate, upper margins crenulate. Column stout, 4-5 mm long.

Flowers: October-April.

Florida, West Indies, Mexico, Middle America, Colombia, Peru.

TRINIDAD: Botanic Gardens (cult.) (*Herb. Trin.* 4056); January 15, 1846 (*Herb. Trin.* 407); Guapo, August 7, 1903, Dan-nouse s.n. (*Herb. Trin.* s.n.); Piparo, April 16, 1917, Sankeralli s.n. (*Herb. Trin.* 8745); Carmichael Trace, Tamana, January 1, 1948, Ayliffe s.n. (*Herb. Trin.* 14410); Tabaquite, October 10, 1956 (flowered), Downs & Aitken 59 (*Herb. Ames* 67790).

2. *Brassia lanceana* Lindl. in *Bot. Reg.* 21 (1836) t. 1754.

Terrestrial. Pseudobulbs oblong-cylindric, truncate, ancipitous, basally with imbricating, papery sheaths. Leaves 1 or 2, coriaceous, oblong-lanceolate, acute, 15-30 cm long, 3-6 cm wide. Inflorescence simple, erect and spreading or nodding, laxly 7- to 10-flowered, 20-40 cm long. Flowers large, showy, distichous. Sepals and petals bright yellow with dark reddish brown spots. Lateral sepals narrowly linear-ligulate, acuminate, 4-6 cm long, 3-5 mm wide; dorsal similar, sometimes smaller. Petals similar, subulate-acuminate, 2-3 cm long, 3-6 mm wide. Lip entire,

ovate-lanceolate, acute or shortly acuminate, undulate, with a slightly pubescent callus, 25–35 mm long, 8–12 mm wide. Column 5–6 mm long.

Flowers: December-January.

Panama, northern South America, Tobago.

TOBAGO: Cocoawattie, 220 m (*G. W. Sworder*) Broadway 3227 (ex Cogniaux.)

60. *ONCIDIUM* Sw.

Plants erect or hanging, epiphytic or terrestrial. Stems short or very short, usually thickened into a 1- to 2-leaved pseudobulb subtended by papery or foliaceous bracts, sometimes many-leaved and without pseudobulbs. Leaves subcoriaceous to fleshy-coriaceous, equitant, flat or terete. Inflorescence usually of 1 or several short or elongate, few- to many-flowered racemes or rarely a 1-flowered scape, produced laterally from base of pseudobulb or, in non-pseudobulbose species, from leaf-axils. Flowers small and inconspicuous to large and showy, usually yellow or brownish. Bracts small. Sepals usually subequal, spreading or reflexed, free (or lateral sepals rarely more or less connate). Petals subequal to or larger than dorsal sepal. Lip adnate to base of column, usually at right angles to column, sessile or shortly clawed, usually 3-lobed or rarely subentire; lateral lobes porrect, spreading or reflexed, sometimes minute; mid-lobe usually larger than other lobes, broad and transversely dilated, sometimes emarginate or 2-lobulate; disk usually tuberculate or cristate. Column short, stout, usually with lateral petaloid auricles at apex, footless; clinandrium truncate, entire or apically 2-dentate. Capsule ovoid to ellipsoid-fusiform, usually beaked.

Oncidium: from the Greek for 'little swelling', referring to the calluses on the lip of most of the species.

450 or more species of the tropical and sub-tropical parts of the New World.

1. Plant without pseudobulbs. Leaves equitant6. *Oncidium pusillum*
- 1A. Plant pseudobulbose. Leaves not equitant

- 2. Petals much larger than lateral sepals1. *Oncidium ampliatus*
- 2A. Petals equal to or smaller than lateral sepals
 - 3. Wings of column crenulate, marginally capitate-glandulose...5. *Oncidium Papilio*
 - 3A. Wings of column not crenulate, not marginally capitate-glandulose
 - 4. Column-wings membranaceous. Pollinia long-stipitate.....2. *Oncidium citrinum*
 - 4A. Column-wings fleshy. Pollinia sessile
 - 5. Sepals and petals long and narrowly-clawed ...4. *Oncidium luridum*
 - 5A. Sepals and petals basally cuneate, not clawed.....3. *Oncidium Lanceanum*

1. ***Oncidium ampliatus*** Lindl. *Gen. and Sp. Orch. Pl.* (1833) 202.

Common name: Yellow Bee.

Epiphytic, up to 1 m. Pseudobulbs clustered, suborbicular, strongly flattened, sometimes brown- or purple-spotted, from 1- to 2-leaved, 5-9 cm in diameter, subtended by scarious sheaths. Leaves fleshy-coriaceous, oblong-elliptic, usually obtuse, basally shortly conduplicate, up to 25 cm long, about 5 cm wide. Inflorescence an arcuate, usually rather branched, densely many-flowered raceme, commonly up to about 42 cm long (sometimes apparently much longer). Bracts ovate, obtuse, 3 mm long. Flowers long-pedicellate, pale yellow or yellowish white; petals and base of lip brown-spotted, (with pedicellate ovaries) up to 3 cm long. Sepals free, spathulate or oblong-spathulate, rounded, concave, about 8 mm long, 8 mm wide above middle. Petals shortly clawed, suborbicular or broadly spathulate, rounded, sometimes emarginate or crenulate, about 9-10 mm long, 9 mm

wide. Lip shortly clawed, 3-lobed, almost twice as wide as long, 15-20 mm long; lateral lobes small, auriculate, oblong, about 3 mm long; mid-lobe large, transversely oblong or reniform, apically 2-lobulate, about 2.5 cm wide; callus thick, red-brown, 3-tuberculate. Column 3-3.5 mm long, apically with 2 or 3 reddish, toothed wings. Capsule fusiform, about 3 cm long.

Flowers: March-April.

Middle America, Colombia, Peru, Venezuela, Trinidad.

TRINIDAD: Government House Grounds, March 2, 1907, Broadway s.n. (*Herb. Ames* 10075); Belmont, April 5, 1907, Broadway s.n. (*Herb. Ames* 10076, 10077, 10078, 10079, 10080); December 17, 1955 (flowered), Downs & Aitken 78 (*Herb. Ames* 67859).

2. *Oncidium citrinum* Lindl. in *Bot. Reg.* 21 (1835) t. 1758.

Epiphytic, up to about 35 cm. Pseudobulbs conic-ovoid, compressed, 2-foliate. Leaves rigid-coriaceous, lanceolate or oblong-ensiform, acutish, basally canaliculate, 15-18 cm long, 14-16 mm wide. Inflorescence a simple, above loosely few-flowered scape, 30-35 cm long. Flowers lemon-yellow, (with pedicellate ovary) 2-2.5 cm long; sepals and base of lip red-spotted. Bracts triangular-ligulate, acute, 6-7 mm long. Sepals and petals free, equal, oblong-lanceolate or oblong-oblancheolate, acute, undulate, recurved, 13-15 mm long, 3-4 mm wide. Lip pandurate, shortly clawed, 3-lobed, obovate in outline, longer than sepals; lateral lobes small, rounded, retrorse, mid-lobe broadly clawed, abruptly dilated, reniform, apically 2-lobulate; callus 8-tuberculate; pubescent. Column rather slender, 5 mm long, footless, with small, undulate wings.

Flowers: March.

Endemic to Trinidad.

TRINIDAD: Hort. Loddiges (ex Cogniaux); Chacachacare, April 25, 1954; St. Patrick's Estate, Arima Valley, March 7, 1956, Downs & Aitken 35 (*Herb. Ames* 69902); Downs & Aitken s.n. (*Herb. Ames* s.n.).

3. *Oncidium Lanceanum* Lindl. in *Trans. Hort. Soc.*, n. ser. 2 (1836) 100, t. 7.

Common name: Cedros Bee.

Epiphytic, up to 60 cm. Pseudobulbs narrowly ovoid, strongly compressed, small, up to 2 cm long, 1-foliate. Leaves coriaceous, elliptic-oblong, acute, dorsally keeled near base, 30-40 cm long, 7-12 cm wide. Inflorescence a laxly few- to many-flowered, sparsely branched or simple raceme, up to 60 cm long. Flowers fragrant, yellow or yellowish green, densely purple-brown spotted, with lip purple-violet below, rose-purple above, (with pedicellate ovary) 2-3 cm long. Bracts coriaceous, narrowly triangular, acuminate, 5-8 mm long. Sepals fleshy, narrowly obovate, obtuse, basally long-cuneate, not clawed, undulate; dorsal 24-28 mm long, 12-15 mm wide; laterals 24-28 mm long, 10-12 mm wide. Petals similar to lateral sepals. Lip sessile, 3-lobed, obovate, widely cuneate, 22-30 mm long; lateral lobes basal, small, triangular-oblong, obtuse; mid-lobe large, with a long and broad claw, transversely reniform, apically emarginate, 22-25 mm wide; callus basal, fleshy, elongate, 3-keeled with central keel much longer. Column 6-8 mm long, with broad, fleshy, obliquely oblong-rotundate lateral wings, apically unarmed.

Flowers: May-October.

Amazonian Brazil, Dutch and British Guiana, Trinidad.

TRINIDAD: October 5, 1873, Guppy s.n. (*Herb. Trin.* 818); Cedros, May 16, 1890, Alexander s.n. (*Herb. Trin.* 4103); St. Clair Experiment Station, July 17, 1907, Broadway s.n. (*Herb. Ames* 10737); California, Esperanza Estate, June 20, 1916, Connel s.n. (*Herb. Trin.* 8219; *Herb. Ames* 67924); Cedros, November 26, 1955, Downs & Aitken 68 (*Herb. Ames* 67912).

4. *Oncidium luridum* Lindl. in *Bot. Reg.* 9 (1823) 727.

Epiphytic, large, up to 2 m. Pseudobulbs small or almost absent, elongate-ovoid, strongly flattened, up to 15 mm long, 1-foliate, subtended by large, scarious sheaths. Leaves coriaceous, elliptic-oblong or lanceolate-elliptic, acute or obtuse, dorsally keeled, 30-75 cm long, 6-11 cm wide. Inflorescence a loosely branched, laxly few- or many-flowered panicle, usually 80-90 cm

long but often much longer; peduncle robust, with tubular, appressed sheaths about 15 cm long at nodes. Flowers showy, yellow with dense and irregular red-brown spots, (with pedicellate ovaries) 15–25 mm long. Bracts small, triangular-lanceolate, acute, up to about 10 mm long. Sepals free, long-clawed, usually undulate-erispate; claw about 8 mm long with involute margins; dorsal obovate, rounded, undulate, about 15 mm long, 10–12 mm wide; laterals spatulate to elliptic, narrower than dorsal, obtuse or subacute, about 14 mm long, 7–9 mm wide. Petals clawed, sub-orbicular, rounded or retuse, subequal to dorsal sepal. Lip sessile, 3-lobed, broadly obovate-suborbicular, 15–18 mm long, 7–8 mm wide; lateral lobes small, auriculate, rounded; mid-lobe clawed, large, broadly reniform, emarginate, entire or crenulate, 18–22 mm wide; crest at base of disk with 5 fleshy, coloured tubercles. Column 4–5 mm long, apically with broad 2-lobulate wings. Capsule ellipsoid, 3.5 cm long.

Flowers: March-May.

Florida, Mexico, Guatemala, Colombia, Peru, Venezuela, Trinidad.

TOBAGO: Culeodow, May 30, 1910, Broadway s.n. (*Herb. Ames* 16545); King Peter's Bay (ex Broadway, 1918).

TRINIDAD: Government House Grounds, March 2, 1907, Broadway s.n. (*Herb. Ames* 10074); Government House Grounds, March 25, 1907, Broadway s.n. (*Herb. Ames* 10221); Belmont, April 4, 1907, Broadway s.n. (*Herb. Ames* 10072, 10073); Government House Grounds, March 1908, Broadway s.n. (*Herb. Ames* 10650, 10651, 10731, 10732); Vicinity of Pitch Lake, March 27, 1920, Britton & Freeman 1051 (*Herb. Ames* 20366); Moruga Road, May 17, 1922, Broadway s.n. (*Herb. Trin.* 10136); Charuma, Downs & Aitken 40 (*Herb. Ames* 69804).

5. *Oncidium Papilio* Lindl. in *Bot. Reg.* 11 (1825) t. 910.

Common name: Butterfly; Trinidad Butterfly Plant.

Epiphytic, up to 120 cm (usually shorter). Pseudobulbs suborbicular, strongly flattened, ancipitous, 3–5 cm long, 1-foliate. Leaves coriaceous, lanceolate-elliptic, acute, 15–22 cm long, 3.8–6.5 cm wide. Inflorescence usually a laxly few-flowered, unbranched

raceme, 60–120 cm long. Flowers pale yellow-brown, sparsely deep yellow-veined, with lip centrally lemon-yellow. Bracts coriaceous, broadly triangular, 7–10 mm long, brown-red. Sepals free; dorsal erect, linear-spathulate, acute, 8–12 cm long, 5–7 mm wide; laterals pendent, narrowly oblong-lanceolate, acute, undulate-crispate, 6 cm long, 14–15 mm wide. Petals similar to dorsal sepal. Lip pendent, sessile, 3-lobed, obovate in outline, 3.5–5 cm long; lateral lobes basal, very small, broadly rounded; mid-lobe much larger, shortly clawed, suborbicular, emarginate, 3–4 cm wide; callus basal, fleshy, triangular, obscurely 3-lobate. Column 8 mm long, incurved, 2-winged on each side; upper wings elongate, subulate, apically capitate-glandulose; lower wings large, dilated, 3–4 mm wide, crenulate. Capsule pendent, elongate-ovoid, 6–7 cm long, about 2 cm in diameter.

Flowers: October–November, May.

Venezuela, northern Brazil, Peru, Trinidad.

TRINIDAD: Blanchisseuse, May 14, 1908, Broadway s.n. (*Herb. Ames* 10716); Blanchisseuse, May 15, 1908, Broadway s.n. (*Herb. Ames* 10700, 10701); St. Clair Experiment Station, November 16, 1912 (*Herb. Trin.* 8755); Moruga, October 28, 1920, Rodriguez s.n. (*Herb. Trin.* 9437); Downs & Aitken 52 (*Herb. Ames* 67905).

6. *Oncidium pusillum* (L.) Rehb. f. in Walpers *Ann. Bot.* 6 (1863) 714.

Epidendrum pusillum L. *Sp. Pl.*, ed. 2 (1763) 1352.

Epiphytic, small, up to about 9 cm without pseudobulbs. Leaves numerous, fleshy, equitant, linear-ensiform, acute, 3–6 cm long, more or less 1 cm wide, forming flabelliform clusters. Inflorescence of 1 to 6 or more erect, slender, ancipitous, 1-flowered scapes, as long as leaves. Flowers yellow, sometimes with brownish marks, about 20 mm wide, with slender pedicellate ovary. Bracts distichous, ovate-triangular, up to about 3 mm long. Sepals free, spreading, dorsally keeled; dorsal narrowly obovate, obtuse and mucronate, 5–6 mm long, 3–3.5 mm wide; laterals linear-lanceolate or elliptic-lanceolate, acuminate, 4.5–5.5 mm long, about 1.5 mm wide. Petals spreading, usually elliptic-ovate, obtuse, undulate, 7–8 mm long, 3–4 mm wide. Lip subsessile, 3-lobed at base, broadly pandurate, about 18 mm long; lateral lobes basal, large,

broadly obovate-spathulate, obtuse, basally constricted; mid-lobe large, clawed, suborbicular, 4-lobulate, undulate, about 20 mm wide; callus fleshy, subquadrate, terminating anteriorly in a longitudinally several-lobed plate. Column 3-4 mm long, provided laterally with denticulate wings. Capsule ellipsoid, winged, about 2 cm long.

Flowers: April-May, August-September.

Tropical America.

TRINIDAD: Maracas, May 18, 1845 (*Herb. Trin.* 1526); November 2, 1867, Leroy s.n. (*Herb. Trin.* s.n.); Caparo, April 28, 1908, Broadway 2346 (*Herb. Ames* 10659, 10660, 10661); El Paraiso, Tabaquite, October 19, 1917, Broadway s.n. (*Herb. Trin.* 8749); Cumuto, April 12, 1918, Rogers s.n. (*Herb. Trin.* 8800); Bande de l' Est Road, near Adivinanza, August 17, 1918, Broadway s.n. (*Herb. Trin.* 8834; *Herb. Ames* 68189); Tabaquite, September, 1918, Broadway s.n. (*Herb. Trin.* 8733, 9687; *Herb. Ames* 68190); Tabaquite, September 18, 1918, Broadway s.n. (*Herb. Gray* 6465, 6466); Toco Road, Valencia, April 16, 1920, Britton, Hazen & Mendelson 1780 (*Herb. Gray* 6464); Downs & Aitken 103 (*Herb. Ames* 68423, 69802, 69803; *Herb. Trin.* 1404).

7. *Oncidium Cebolleta* (Jacq.) Sw. *Vet. Acad. Handl. Stockh.* 21 (1800) 240.

Dendrobium Cebolleta Jacq. *Enum. Pl. Carib.* (1760) 30.

Oncidium Cebolleta, a widely distributed tropical American orchid, occurs in Trinidad apparently only under conditions which suggest introduction and cultivation. Downs has noted, in connection with the collection cited below, that 'this species is said to be found only in Port-of-Spain, in Woodford Square, St. Patrick's churchyard and a couple of other localities'. Broadway stated: 'I incline strongly to the belief that it got here originally as an introduced plant.'

TRINIDAD: Port-of-Spain, Churchyard of St. Patrick's, Maraval Road, November 20, 1955, Downs & Aitken 67 (*Herb. Ames* 67866, 67907).

8. *Oncidium haematochilum* Lindl. & Paxt. in *Flow. Gard.* 1 (1850-51) 21, t. 6.

The concept which has been known as *Oncidium haematochilum* is a natural hybrid between *O. luridum* and *O. lanceanum*.

Flowers: September.

TRINIDAD: Cedros, 1893, Alexander s.n. (*Herb. Trin.* 5493; *Herb. Ames* 67925); Siparia, September 5, 1919, Inniss s.n. (*Herb. Trin.* 8816; *Herb. Ames* 67925a); Siparia, September 6, 1919, Inniss s.n. (*Herb. Trin.* 8817; *Herb. Ames* 67925b).

61. LEOCHILUS Knowles & West.

Herbs small, caespitose, epiphytic. Stem pseudobulbose. Pseudobulb enclosed basally in 1 to several leaf-sheaths, 1- or 2-foliate at apex. Leaves coriaceous, petiolate, usually ligulate or lanceolate. Inflorescence of 1 or 2 lateral, short or elongated, laxly few-flowered racemes or panicles. Flowers small, inconspicuous. Bracts acute. Sepals spreading, free or variously connate, subequal. Petals more or less similar to sepals. Lip adnate to base of column, entire to 3-lobed, usually longer than petals; disk with a fleshy callus. Column footless, usually with a slender porrect arm (steliidium) on each side near middle, truncate; rostellum elongate. Capsule subglobose or ovoid-ellipsoidal, winged or wingless, with or without beak.

Leochilus: Greek, 'smooth lip'.

About 15 species from Mexico to northern Argentina and West Indies.

1. Inflorescence much exceeding leaves.

Lateral sepals connate for more than half their length1. *Leochilus labiatus*

1A. Inflorescence not much exceeding leaves.

Lateral sepals free2. *Leochilus scriptus*

1. *Leochilus labiatus* (Sw.) O. Kuntze *Rev. Gen. Pl.* 2 (1891) 656, *quoad Leiochilus*.

Epidendrum labiatum Sw. *Prodr.* (1788) 124.

Up to about 18 cm. Roots long. Pseudobulbs clustered, elliptic-oblong, strongly compressed, vernicose, often reddish.

1-foliate, 20 mm long, about 9 mm in diameter, subtended by several large sheaths. Leaves subcoriaceous, apical on pseudobulb or subtending it, elliptic-oblong to ligulate-lanceolate, acute to obtuse, 2-6 cm long, 0.6-1.5 cm wide. Inflorescence of 1 or 2 simple or very sparsely branched racemes, much exceeding leaves, up to about 20 cm long, at nodes with conspicuous, narrowly triangular, acute bracts 3-4 mm long. Flowers small, pale greenish or yellowish, often suffused or dotted with red, brown or purple. Sepals elliptic-lanceolate or elliptic-ovate, acute or obtuse; dorsal concave, about 5 mm long, 1.8 mm wide; laterals connate about to middle, dorsally somewhat keeled, 8 mm long, 2.5-3 mm wide at point of union. Petals similar to dorsal sepal, elliptic-oblong, obtuse, dorsally keeled, up to about 5 mm long, 2.5-3 mm wide. Lip basally reflexed at right angle, entire, oblanceolate, obtuse or retuse, sometimes constricted near middle, about 7 mm long, 4 mm wide; disk with a 2-lobed, fleshy callus; saccate base of lip fleshy with small lateral calluses. Column about 1.5 mm long, wingless, denticulate, laterally with 2 slender arms near middle. Capsule ellipsoidal, beaked, 13 mm long, 6 mm in diameter.

Flowers: April.

Middle America, West Indies.

TOBAGO: Old Belmont, May 13, 1913, Broadway s.n. (*Herb. Gray* 6627); Between Adelphi and Belmont, Broadway 2472 (ex Cogniaux).

TRINIDAD: Crueger s.n. (ex Cogniaux); Bradford s.n. (ex Cogniaux); St. Patrick's, Arima, March 8, 1955, Downs & Aitken 28 (*Herb. Ames* 67315, 67797); Blue Basin Road, Diego Martin, January 24, 1960, Aitken (TRVL) 333 (*Herb. Ames* Alc. Coll.).

2. *Leochilus scriptus* (Scheidw.) Rehb. f. in *Xen. Orch.* 1 (1854) 15, t. 6.

Cryptosanus scriptus Scheidw. in Otto & Dietrich *Allgem. Gartenz.* 11 (1843) 101.

Up to about 15 cm. Pseudobulbs oblong-ovoid, flattened, sometimes vernicose, up to 5 cm long, about 2 cm in diameter, 1-foliate, subtended by distichously imbricating sheaths (uppermost foliaceous). Leaves elliptic-ligulate to lanceolate, usually obtuse,

basally conduplicate-pseudopetiolate, up to about 12 cm long, 24 mm wide. Inflorescence of 1 or several erect, few- to about 10-flowered racemes or panicles, subequal to or slightly longer than leaves; peduncle rigid, straw-coloured. Flowers green-yellow or green-white marked with purplish stripes or spots; pedicellate ovaries about 10 mm long. Bracts lanceolate-ovate, acute, 3-5 mm long. Sepals membranaceous, dorsally keeled; dorsal cucullate over column, elliptic-oblong, acute or obtuse, 8-11 mm long, 3.5-4.5 mm wide; laterals free, oblong-lanceolate or elliptic, obtuse and apiculate, 8-11 mm long, 2.5-4 mm wide. Petals lanceolate, obtuse to acute, dorsally keeled, 8-11 mm long, 2.5-4 mm wide. Lip basally reflexed, entire, obovate-oblong, truncate to retuse or 2-lobulate, dorsally keeled; disk basally saccate; callus marginally pubescent, apically with 2 fleshy, puberulent lobes. Column about 3 mm long, laterally with 2 slender arms at about middle. Capsule ellipsoidal, beaked, usually about 3 cm long.

Flowers: January (?)

Middle America, Cuba (?), Trinidad.

TRINIDAD: Aripo Road, February 11, 1931, Broadway 7448 (*Herb. Ames* 67926); El Tucuche, January 15, 1956, Downs & Aitken 82 (*Herb. Ames* 67858).

62. LOCKHARTIA Hook.

Epiphytic, tufted herbs, without pseudobulbs. Stems erect or pendulous, simple, leafy. Leaves erect or spreading, equitant distichously imbricated. Inflorescences in axils of upper leaves, either short, few-flowered scapes or laxly many-flowered, dichotomously branched panicles. Flowers small to medium-sized, long-pedicellate. Bracts amplexicaul, often conspicuous. Sepals free, subequal, usually spreading, sometimes with lateral sepals reflexed. Petals similar to sepals. Lip rather longer than sepals, usually 3-lobed, rarely entire; lateral lobes (when present) linear, basally incurved or recurved; mid-lobe obovate or oblong, from 2- to 4-lobulate; disk strongly papillose- or tuberculate-callose. Column very short, 2-lobate or 2-auriculate, footless. Capsule short, ovoid or subglobose, beakless.

Lockhartia: in honour of David Lockhart, first Superintendent of the Botanic Gardens in Trinidad (1818-1846), who sent the type material of the genus to Kew from Trinidad.

From 25 to 30 species of Mexico, northern half of South America, Trinidad.

1. Leaves blunt at tip. Inflorescence simple, 1- or 2-flowered 2. *Lockhartia imbricata*

1A. Leaves acute or acuminate at tip.

Inflorescence branched, many-flowered... 1. *Lockhartia acuta*

1. *Lockhartia acuta* (Lindl.) Rehb. f. in *Bot. Zeit* 10 (1852) 767

Fernandezia acuta Lindl. in *Bot. Reg.* 21 (1836) t. 1806.

20-50 cm tall, up to 2 cm wide. Leaves leathery, ovate triangular, acutish, 15-30 mm long, 4-10 mm wide, carinate. Inflorescences several, each several- to many-flowered, spreading, a terminal or lateral panicle, about 8-9 cm long. Flowers small, yellowish or whitish with a yellow lip, 8-10 mm in diameter. Bracts small, obtuse, hyaline. Sepals spreading, ovate, obtuse, 4 mm long, 2.5 mm wide. Petals elliptic-oblong, obtuse, 5 mm long, 2-2.5 mm wide. Lip 3-lobed, subquadrate, 6-6.5 mm long, 4 mm wide; lateral lobes linear, apically rounded; mid-lobe obtusely subquadrate, deeply emarginate; disk with callus extending to middle; callus velvety, basally 1-tuberculate. Column with triangular wings, marginally undulate.

Flowers: March-April.

Panama, Colombia, Venezuela, Trinidad.

TRINIDAD: (*Herb. Trin.* 1524); March 1846 (*Herb. Trin.* s.n.); Botanic Gardens, April 22, 1890, Hart s.n. (*Herb. Trin.* 4030); St. Ann's, 1892, Broadway s.n. (*Herb. Ames* 7606a); Botanic Gardens, March 3, 1918, Broadway s.n. (*Herb. Trin.* 8765).

2. *Lockhartia imbricata* (Lam.) Hoehne in *Argu. Bot. Est. S. Paulo*, n.s. 2, fase. 6 (1952) 139.

Epidendrum imbricatum Lam. *Encycl.* 1 (1783) 189.

Lockhartia elegans Hook. in *Bot. Mag.* 54 (1827) t. 2715.

15-30 cm tall, up to 1.5 cm wide. Leaves leathery, narrowly triangular, truncate, 1.5-2 cm long, about 5-6 mm wide, not conspicuously carinate. Inflorescence several, each 1- to several-

flowered, spreading or nodding, unbranched, 0.8–2.5 cm long. Flowers small, yellow or yellowish green with purplish spots on lip. Bracts 3 mm long, acute, hyaline. Sepals spreading, narrowly ovate, apiculate, 4 mm long, 1.5–2 mm wide. Petals ovate, obtuse or apiculate, 3–3.5 mm long, 2–2.5 mm wide. Lip 3-lobed, 5–5.5 mm wide; lateral lobes short, lanceolate, rounded; mid-lobe oblong-linguiform, sometimes obscurely 3-lobulate, entire or emarginate; disk with callus almost to apex; callus basally 4- or 5-tuberculate. Column fleshy, 1.5–2 mm long; wings large, crescentiform, serrulate.

Flowers: February–August.

British Guiana, Venezuela, Trinidad.

TRINIDAD: (*Herb. Trin.* s.n.); (*Herb. Trin.* 1523); Botanic Gardens, April 22, 1890, Hart s.n. (*Herb. Trin.* 4029); St. Ann's, 1892, Broadway s.n. (*Herb. Ames* 7606); Guanapo, August 8, 1918, McLean s.n. (*Herb. Trin.* 8693; *Herb. Ames* 67048); Moruga Forest past La Fortuna Trace, February 14, 1916, Broadway s.n. (*Herb. Trin.* 7616); Near Piparo Settlement, Williamsville, November 29, 1919, Broadway s.n. (*Herb. Ames* 22066); Siparia, November 1954, Downs & Aitken 12 (*Herb. Ames* 67329).

63. ORNITHOCEPHALUS Hook.

Small epiphytic plants without pseudobulbs. Leaves fleshy-coriaceous, equitant, densely and distichously imbricated, articulated to sheaths, forming flabelliform clusters; basal leaves caducous, leaves thickened, conduplicate sheaths sometimes resembling pseudobulbs. Inflorescence an axillary, erect or pendulous several-to many-flowered raceme. Flowers small, yellowish green. Sepals subequal, free, spreading, concave or navicular. Petals subequal to or larger than sepals, usually broadly cuneate to flabellate. Lip adnate to base of column, undivided or 3-lobed; lateral lobes (when present) often thickened; mid-lobe often inflexed; disk fleshy-callose. Column short, rather fleshy, wingless, footless; rostellum long-beaked. Anther produced into a very long appendage above. Capsule obovoid.

Ornithocephalus: Greek, 'bird head', in reference to the resemblance of the column and anther to the head and beak of a bird.

Fewer than 25 species of tropical America.

1. Roots glabrous
 2. Lip bicornute at base 1. *Ornithocephalus bicornis*
 - 2A. Lip not bicornute at base 3. *Ornithocephalus Krugeri*
 - 1A. Roots villose 2. *Ornithocephalus gladiatus*
1. *Ornithocephalus bicornis* Lindl. in Benth. Bot. Voy. Sulphur (1846) 172.
O. Oberonia Rehb. f. in Gard. Chron. (1869) 988.

Roots glabrous. Leaves oblong-lanceolate, acute, 6-12 cm long, 5-12 mm wide. Inflorescence densely hirtellous, densely many-flowered, up to 8 cm long. Bracts triangular, ciliate-denticulate. Sepals ovate, dorsally carinate, serrulate, 2 mm long, externally hispid. Petals obovate, apically minutely crenulate, 2 mm long. Lip short-clawed, more or less subquadrate, basally bicornute, medium appendage canaliculate. Column sigmoid, up to about 1 mm long.

Central America, Venezuela, Trinidad.

TRINIDAD: Introduced to cultivation by W. W. Saunders (Herb. Rehb.)

2. *Ornithocephalus gladiatus* Hook. Exot. Fl. 2 (1825) t. 127.

Roots densely villose. Leaves lanceolate-oblong, acute, long-attenuate below, slightly falcate, 2.5-4 cm long, 4-6 mm wide. Inflorescence glabrous, loosely many-flowered, up to 5 cm long. Bracts broadly ovate, glabrous, 3 mm long. Sepals broadly oblong-elliptic, obtuse, 3 mm long. Petals obovate, subtruncate, slightly mucronate, 3 mm long. Lip very shortly clawed, hastate-oblong, 5 mm long, acute, with a transverse, ovate callus. Column 1 mm long; rostellum 3 mm long.

Flowers: January-April.

Known from Grenada, Trinidad and Tobago.

TOBAGO: Near Les Coteaux, March 3, 1909, Broadway 2430 (Herb. Ames 11723, 11724, 26498; Herb. Gray 6838); Near Les Coteaux, March 11, 1909, (Herb. Gray 6836); Road between Adelphi and Belmont, March 23, 1909, Broadway 2475 (Herb. Ames 11717); Easterfield Road, February 25, 1926, Freeman s.n. (Herb. Trin. 11524).

TRINIDAD: Caparo, April 28, 1908, Broadway 2320 (*Herb. Ames* 10646); Blanchisseuse, May 14, 1908, Broadway s.n. (*Herb. Ames* 10646a); Santa Cruz, January 1, 1911, Broadway 4108 (*Herb. Ames* 16547); Maraval, April 2, 1911, Baptiste s.n. (*Herb. Gray* 6837); Santa Cruz, February 27, 1911, Baptiste s.n. (*Herb. Trin.* s.n.); Tamana, February 19, 1915, Broadway s.n. (*Herb. Trin.* 8831); Heights of Aripo, January 10-26, 1922, Broadway s.n. (*Herb. Trin.* 9897; *Herb. Ames* 67788); (*Herb. Trin.* 825)?; Siparia, November 1954, Downs & Aitken 8 (*Herb. Ames* 67849); De Schacke s.n. (ex Cogniaux); Crueger s.n. (ex Cogniaux); Bradford s.n. (ex Cogniaux); Fendler 771 (ex Cogniaux).

3. *Ornithocephalus Kruegeri* Rehb. f. in Walpers *Ann.-Bot.* 6 (1863) 495.

Roots glabrous. Leaves oblong-lanceolate, acute, apiculate, 2-3.5 cm long, 4-9 mm wide. Inflorescence densely short-hirtellous, loosely many-flowered, up to 9 cm long. Bracts triangular-ovate, hispidulous or ciliate, 3 mm long. Sepals and petals obovate, acute, serrulate, 2 mm long. Lip very shortly clawed, dilated-roundish and callose, constricted at middle, obovate-roundish, emarginate, serrulate at apex, 3 mm long. Column 1 mm long; rostellum 2 mm long.

Flowers: January-March.

Apparently endemic to Trinidad.

TRINIDAD: January 30, 1846, Bradford s.n. (*Herb. Trin.* 411); Arima, February 15, 1846, Crueger s.n. (*Herb. Trin.* 1631, Type collection); Chaguanas, March 12, 1892, Alexander s.n. (*Herb. Ames* 7450); Caparo, April 27, 1908, Broadway 2926 (*Herb. Ames* 11675); Blanchisseuse, May 1908, Broadway 2899 (*Herb. Ames* 11694); Heights of Oropouche, April 23, 1916, Freeman s.n. (*Herb. Trin.* 7772); Siparia, November 1954, Downs & Aitken 9 (*Herb. Ames* 67848); Othmer 311 (ex Cogniaux).

64. NOTYLIA Lindl.

Herbs small, epiphytic, with or without pseudobulbs. Stems abbreviated. Pseudobulbs (when present) small, fleshy, monophyllous. Leaves solitary at apex of pseudobulb or (lacking pseudobulbs) distichous, imbricated or equitant. Inflorescence arising from base of pseudobulb or leaf-axil, an arching or hanging, simple or branched, few- to many-flowered raceme. Flowers small to minute. Sepals equal, erect or spreading, free or with laterals variously connate. Petals similar to sepals or smaller. Lip continuous with base of column, usually clawed, simple or lobed; disk smooth or with a callus. Column erect, recurved, terete or sulcate, wingless, footless, glabrous or variously papillose-pilose with a long rostellum. Capsule ellipsoid or subglobose, usually beaked.

Notylia: Greek, 'back' and 'hump', in allusion to the recurved apical portion of the column.

Some 15 species of tropical America.

1. Leaves narrowly linear1. *Notylia angustifolia*
- 1A. Leaves broadly oblong or elliptic
 2. Lip narrowly trulliform, apically acute or subobtusate3. *Notylia punctata*
 - 2A. Lip broadly hastate, subtrilobulate, apically broadly rounded2. *Notylia incurva*

1. *Notylia angustifolia* Cogn. in Urban *Symb. Antill.* 6 (1910) 618.

Notylia nana Cogn. *loc. cit.* 6 (1910) 619.

2.5-11 cm long. Pseudobulbs small, cylindric, flattened, 5-8 mm long. Leaves fleshy, linear-ligulate, acute to obtuse-retuse, basally abruptly narrowed and conduplicate, 2-6 cm long, 3.5-6 mm wide. Inflorescence arcuate, nodding or pendulous, laxly many-flowered, 3.5-10 cm long. Flowers greenish white; pedicel filiform, glabrous, (with ovary) 2-2.5 mm long. Bracts subulate, 2 mm long. Sepals narrowly linear, obtuse and apiculate, 3.5-5 mm long; dorsal 0.8-1 mm wide; laterals $\frac{1}{2}$ - $\frac{2}{3}$ connate. Petals linear, acute, shorter than dorsal sepal. Lip shortly clawed, lanceolate-rhomboid, acute to subobtusate, 3-3.5 mm long, 0.8-1 mm wide. Column up to 2 mm long.

Flowers: March.

TRINIDAD: Caparo, March 27, 1098, Broadway 2348 (*Herb. Ames* 10655a, 11684); Oropouche via Valencia, March 5, 1931, Broadway 7454 (*Herb. Ames* 10655); Broadway 2431 (ex Cogniaux, Type of *N. nana*); Hart s.n. (ex Cogniaux, Type of *N. angustifolia*).

2. *Notylia incurva* Lindl. in *Bot. Reg.* 24 (1838) Misc. no. 167.

Leaves flat. Flowers relatively large, straw-coloured with deep yellow spots at base of petal. Sepals lanceolate, acute; laterals basally connate, apically free and straight. Petals lanceolate, acute. Lip clawed, cordate-ovate, acuminate, keeled beneath apex, marginally reflexed, ecallose. Column abruptly incurved.

TRINIDAD: Botanic Gardens, Hart s.n. (*Herb. Trin.* 2092)? : Hort. Loddiges (ex Cogniaux).

3. *Notylia punctata* (Ker) Lindl. in *Bot. Reg.* 11 (1825) sub t. 930.

Pleurothallis punctata Ker in *Bot. Reg.* 9 (1823) t. 759.

Notylia apiculata Cogn. in *Urban Symb. Ant.* 6 (1910) 617.

Notylia Broadwayi Cogn. loc. cit. 6 (1910) 618.

15–40 cm tall. Pseudobulbs ovoid-conic, flattened, about 1 cm long, with large sheaths. Leaves thinly fleshy, oblong or elliptic-oblong, obtuse and retuse, basally abruptly narrowed and conduplicate, up to 10 cm long, 2 cm wide. Inflorescence arcuate, slender, densely or laxly many-flowered, up to about 33 cm long. Flowers white, yellow or yellow-orange; pedicel filiform, puberulent or glabrous, (with ovary) up to 6 mm long. Bracts subulate, 2.5–3.5 mm long. Sepals linear-ligulate, obtuse (sometimes apiculate), 5–6 mm long, 1.6 mm wide; laterals often shorter, $\frac{1}{2}$ – $\frac{3}{4}$ connate. Petals linear-oblong, obtuse, shorter than dorsal sepal, 5 mm long, 1.3 mm wide. Lip clawed; lamina ovate-cordate to triangular-sagittate, obtuse or subacute, about as long as sepals, up to 4.5–5 mm long, 1.8 mm wide, with a basal callus. Column 2.5–3 mm long.

Flowers: April–July.

TRINIDAD: Botanic Gardens, Hart s.n. (*Herb. Trin.* 5665); Agua Santa, near Arima, 1908, Broadway s.n. (*Herb. Ames* 11692); Agua Santa, Arima, July 26, 1908, Broadway s.n. (*Herb. Ames* 10671, 10672); North Trace via

Prince's Town, August 19, 1918, Broadway s.n. (*Herb. Trin.* 8835); Siparia, April 4, 1918, Rogers s.n. (*Herb. Trin.* 8768); Cuare River, July 12, 1925, Williams & Freeman s.n. (*Herb. Trin.* 11264); Jackson Trace via Cap de Ville, April 1, 1931, Broadway 7503 (*Herb. Ames* 37541); Tamana, May 17, 1934, Bruins-Lich s.n. (*Herb. Trin.* 13020); Melajo Forest, April 1956, Downs & Aitken 88 (*Herb. Ames* 69906, 69907); Woodford ex Loddiges (ex Cogniaux); Broadway A, B, C, D (ex Cogniaux).

65. *CRYPTARRHENA* R. Br.

Epiphytic herbs with abbreviated, leafy, non-pseudobulbose stems. Leaves numerous, more or less coriaceous, distichous, imbricated. Inflorescences axillary, erect or arcuate, longer than leaves, racemose. Sepals subequal, free, spreading. Petals subequal to sepals, often broader. Lip continuous with base of column, with a long claw which is keeled above, 3- or 4-lobed; lobes linear or triangular-ovate. Column short, thickened above, wingless, footless, with clinandrium possessing toothed margin enclosing anthers. Capsule ovoid or oblong-cylindric, beakless.

Cryptarrhena: Greek, 'hidden kidney', in reference probably to the shape of the lip.

Several species of the American tropics.

Cryptarrhena lunata R. Br. in *Bot. Reg.* 2 (1816) t. 153.

Leaves linear-oblongate or ligulate-lanceolate, acute or acuminate, articulated, 6-15 cm long, 7-15 mm wide. Leaf sheaths congested, conduplicate, 2 mm long. Inflorescences up to 25 cm long, with amplexicaul bracts up to 1.5 cm long. Floral bracts lanceolate, 2.5-5 mm long. Flowers small, yellowish green, carnosae. Sepals elliptical, apiculate to short-acuminate, dorsally keeled, 3.5-5.5 mm long, 1.5-2 mm wide; laterals oblique, larger than dorsal. Petals oblong-spathulate or cuneate-obovate, acute to obtuse and apiculate, 3 mm long, 1.5-2 mm wide. Lip 5 mm (including claw); claw elongate, narrowly linear; lateral lobes subulate, bent backwards, apically crenulate, 2 mm long; mid-lobe trapeziform, 2-fid, 1 mm long, 2 mm broad. Column 2 mm long. Capsule 6-8 mm long, on pedicel 5 mm long.

Flowers: June-November.

West Indies, Middle America, northern South America.

TRINIDAD: Bradford s.n. (*Herb. Trin.* 1520); (*Herb. Trin.* 5809); Guayaguayare Road, Rio Claro (*Herb. Trin.* 9439), Caparo, October 13, 1908, Broadway 2900 (*Herb. Ames* 11731); Tamana forests, February 18, 1915, Broadway s.n. (*Herb. Trin.* 8828); Cumaca, March 7, 1955, Downs & Aitken 27 (*Herb. Ames* 67317); Purdie s.n. (ex Cogniaux).

66. *MACRADENIA* R. Br.

Small, epiphytic plants. Pseudobulb cylindrical, monophyllous. Leaves fleshy or coriaceous. Inflorescence from base of pseudobulb, erect to pendulous, laxly racemose. Flowers small to medium-sized; pedicels very slender. Bracts small. Sepals free, more or less spreading, equal. Petals similar to sepals but often smaller. Lip continuous with base of column, deeply 3-lobed; lateral lobes erect, embracing column; mid-lobe short, spreading. Column footless, wingless, ventrally sulcate. Anther produced into a long, membranaceous appendage embracing rostellum. Capsule ellipsoid, usually 3-angled.

Macradenia: Greek, 'long gland', in reference to the long appendage produced on the anther.

About 12 species of Florida, Mexico, Middle America, West Indies, northern half of South America.

Macradenia lutescens R. Br. in *Bot. Reg.* 8 (1822) t. 612.

Up to about 23 cm. Pseudobulbs narrowly oblong-cylindrical, 2-4 cm long. Leaves coriaceous, narrowly elliptic-lanceolate, acute, petiolate, 8-15 cm long, 1.5-2.5 cm wide; petiole up to 2.5 cm long. Inflorescence usually simple, laxly many-flowered, shorter than leaves. Flowers yellowish green; lip white with purple spots; sepals brownish purple within; pedicels (with ovary) about 10 mm long. Bracts ovate-lanceolate, 6 mm long. Sepals elliptic-oblong acute, about 10 mm long, 3.5 mm wide. Petals oblong, acute, 10 mm long, 3 mm wide. Lip ovate, as long as sepals or shorter; lateral lobes erect, round; mid-lobe elongate-lanceolate, acute, 5 mm long; disk 1-keeled. Column clavate.

Flowers: December-January.

Florida, Cuba, Trinidad, Colombia.

TRINIDAD: February 7, 1931, Broadway s.n. (*Herb. Ames* 67862); Hort. Griffin (ex R. Brown).

67. *DICHAEA* Lindl.

Epiphytic herbs, non-pseudobulbose, with leafy, erect or pendent stems, in clumps. Leaves numerous, distichous, spreading or ascending, membranaceous to subcoriaceous. Inflorescence axillary, solitary, 1-flowered. Flowers small, each subtended by several scarious bracts and a linear bracteole. Sepals subequal, free, spreading; laterals oblique, forming an obscure chin with column-foot. Petals similar to sepals but smaller. Lip fleshy, often clawed, entire or lobed, continuous with base of column. Column erect, semi-terete, wingless, with short foot. Capsule ovoid or oblong, muricate or smooth.

Dichaea: Greek, 'twofold', referring to the conspicuously distichous leaves.

About 35 species of tropical and sub-tropical America.

1. Leaves persistent, not articulated to sheaths
 2. Leaves relatively large, distant (0.8 to 1 cm or more apart), glabrous; margins entire3. *Dichaea muricata*
 - 2A. Leaves very small, close (less than 4 mm apart), echinulate on both surfaces; margins denticulate-ciliate 2. *Dichaea hystericina*
- 1A. Leaves articulated to sheaths, more or less drooping
 3. Leaves very narrowly linear. Petals lanceolate. Lip conspicuously keeled1. *Dichaea graminoides*
 - 3A. Leaves oblong-ligulate. Petals ovate or oblong. Lip without keel
 4. Leaves apiculate. Lateral sepals ovate, 5-5.5 mm long. Lip anchor-shaped; lateral lobes linear5. *Dichaea Rendlei*

4A. Leaves not apiculate.

Lateral sepals broadly lanceolate, 7-8 mm long.

Petals 7-8 mm long. Lip triangular-sagittate; lateral

lobes triangular-falcate4. *Dichaea picta*

1. *Dichaea graminoides* (Sw.) Lindl. *Gen. and Sp. Orch. Pl.* (1833) 209.

Epidendrum graminoides Sw. *Prodr.* (1788) 125.

Small, caespitose. Stems erect, 10-30 cm (usually about 15 cm) long, slender, strongly compressed. Leaves caducous, dense, soft, spreading, linear, acute-apiculate, 3-4 cm long, 2-3 mm wide. Inflorescence 1-2 cm long; peduncle hair-like. Bract broadly ovate, cucullate, apiculate, 2-3 mm long. Sepals ovate-lanceolate, acuminate; dorsal 5 mm long, 2 mm wide; laterals 6 mm long, 2-2.5 mm wide. Petals lanceolate, acute, 5 mm long, 1.5 mm wide. Lip fleshy, 5.5 mm long, broadly clawed, blade sagittate, 4.5 mm wide, keeled; lateral lobes spreading, falcate-triangular, acute; mid-lobe broadly triangular, apiculate. Column 2.5 mm long with rather long infrastigmatic ligule. Capsule smooth, oblong, 15 mm long.

Flowers: August-December.

West Indies, tropical South America.

TOBAGO: Caledonia, Broadway 3119 (ex Cogniaux).

2. *Dichaea hystricina* Rehb. f. in *Flora* 48 (1865) 279.

Small, densely caespitose, sometimes in large clumps. Stems pendent, up to 10-16 cm long, compressed, slender, flexuous. Leaves 2-3 mm apart, thin, linear-ligulate, recurved, acuminate, sparsely echinulate on both surfaces, denticulate-ciliate, 6-10 mm long, 2-3 mm wide. Inflorescence about 15 mm long. Bract minute, ovate, amplexicaul, 1 mm long. Sepals linear-ligulate, acuminate, dorsally slightly warty, 6-7 mm long, 1.5-2.5 mm wide. Petals narrowly lanceolate, subacute, 5-6 mm long, 2 mm wide. Lip 4.5-5 mm long, incurved, clawed; claw 1 mm long, linear, basally 2-auriculate; lamina broadly triangular-sagittate, cuneate, abruptly acute; lateral lobes linear-lanceolate, falcate, 2-2.5 mm

long; disk at base with 3-toothed callus. Column 2-3.5 mm long. Capsule narrowly obovoid, 8 mm long, densely muricate, red-brown.

Flowers: April

Cuba, Guadeloupe, Dominica, Grenada, Guatemala, Honduras, Costa Rica.

TRINIDAD: Oropouche, April, 1896, Alexander s.n. (*Herb. Trin.* 6095).

3. *Dichaea muricata* (Sw.) Lindl. *Gen. and Sp. Orch. Pl.* (1833) 209.

Cymbidium muricatum Sw. in *Nov. Act. Upsal.* 6 (1799) 71; *Fl. Ind. Occ.* 3 (1799) 1454.

Densely caespitose in large clumps. Stems pendent, 30-50 cm long, compressed, concealed by leaf-sheaths. Leaves rigidly membranaceous, spreading or slightly reflexed, 0.8-1 cm or more apart, oblong or elliptic-oblong, rounded or subrotund and apiculate, clasping, entire, dorsally keeled beneath along median nerve, 1.5-2 cm long, 4-8 mm wide, glabrous. Inflorescence 2-3 cm long. Flower tan or orange and purplish. Sepals spreading, orange, lanceolate, acuminate, 7-10 mm long, 2.5-4.5 mm wide; laterals falcate. Petals purplish-spotted, linear-ligulate, acuminate, 5.5-8 mm long, 1.5-2 mm wide. Lip pale purplish, erect, sessile, anchor-shaped, basally narrow-cuneate, broadly rounded and apiculate, 5-8 mm long, 5 mm wide, granular-papillose; lateral lobes narrowly lanceolate, acute, retrorsely curved and upturned. Column short, fleshy, ventrally with a hairy ligule below middle. Capsule ellipsoid-obovoid, densely muricate, 1-2 cm long.

Flowers: January.

West Indies, Guatemala, Middle America, South America south to Brazil.

TOBAGO: (ex Broadway, 1918).

TRINIDAD: Heights of Aripo, January 10-26, 1922, Broadway s.n. (*Herb. Trin.* 9887); Nestor Village, February 12, 1955, Down & Aitken 22 (*Herb. Ames* 67321, 67322); Melajo Forest, Sangre Grande, July 27, 1955, Aitken s.n. (*Herb. Trin.* 95).

4. *Dichaea picta* Rehb. f. in Saunders *Ref. Bot.* 2 (1870) t. 84. *Epithelia picta* (Rehb.) Schltr. in *Orchis* 8 (1914) 101.

Very densely caespitose. Stems erect, up to 14 cm long, compressed, slender. Leaves fleshy, erect-spreading, about 5 mm

apart, linear-lanceolate or narrowly oblong, acute, oblique, 1.5–2.5 cm long, 3–4 mm wide, glaucous. Inflorescence nearly as long as leaves, basally included in a minute sheath, apically with a cyathiform bract 2–3 mm long. Flowers light green with purplish dots. Sepals lanceolate-ovate, short-acuminate; dorsal 7–8 mm long; laterals longer. Petals ovate-lanceolate, acute, as long as dorsal sepal. Lip fleshy, as long as lateral sepals, long-clawed, without a crest, broadly triangular-sagittate; lateral lobes retrorse, narrowly triangular-falcate, acute. Column constricted at base, shorter than sepals, with short, infrastigmatic ligule.

Flowers: January–April; September.

Trinidad, British Guiana.

TRINIDAD: (*Herb. Trin.* 405); Crueger s.n. (*Herb. Kew*); Bradford s.n.; February 1846 (*Herb. Kew ex Herb. Hance* 5307); Fendler 782, November (?) 7, 1881 (*Herb. Kew*); Maraval, February 4, 1911, Broadway 4131 (*Herb. Kew*); Aripo Savannah, February 13, 1915, Freeman s.n. (*Herb. Trin.* 8048); El Tucuche, January 17, 1924, Hill, Williams et al. s.n. (*Herb. Trin.* 10705); Caroni, April 30, 1935, Freeman, Williams et al. s.n. (*Herb. Trin.* 11021); Maraval, January 14, 1926, Broadway 6270 (*Herb. Kew*); Maraval, March 1926, Broadway s.n. (*Herb. Kew*); Saut d'Eau, north coast, December 14, 1930, Broadway 7438 (*Herb. Ames* 37199).

5. *Dichaea Rendlei* Gleason in *Bull. Torr. Bot. Club* 54 (1927) 604.

Dichaea trinitensis Gleason in *Bull. Torr. Bot. Club* 54 (1927) 605.

Stems several, 10–17 cm tall. Leaf-sheaths carinate, 8 mm long. Leaves linear-oblong, 18–25 mm long, 2–3 mm wide, obtuse and apiculate. Inflorescence 4–5 mm longer than leaf-sheaths. Lower bractlet obliquely ocreate, campanulate, 2.1 mm long; upper bractlet linear, 1.8 mm long. Dorsal sepal ovate, 4.2 mm long, 2.5 mm wide, obtuse; laterals ovate, 5.3 mm long, 2.6 mm wide, subacuminate. Petals similar, 4 mm long, 2.1 mm wide, obtuse or subacute. Lip 5 mm long; lamina broadly anchor-shaped, rounded or subacute, 5.3 mm wide; claw dilated; lateral lobes linear, 1 mm long. Capsule smooth.

Flowers: April-September.

British Guiana, Guadeloupe, Trinidad.

TRINIDAD: Aripo, April 16, 1908, Broadway 2330 (*Herb. Ames* 10668); September 3, 1919, Broadway s.n. (*Herb. N.Y.*, Type of *D. trinitensis*); Mora Forest, September 3, 1925, Williams s.n. (*Herb. Trin.* 11347; *Herb. Ames* 66928).

68. CAMPYLOGENTRUM Benth.

Epiphytic, stemless or leafy-stemmed herbs without pseudobulbs, with clusters of thickened chlorophyll-bearing roots. Leaves, when present, distichous, coriaceous, oblong to long-elliptic. Inflorescence short, usually densely-flowered, axillary or radical, racemose. Flowers minute, usually distichous. Sepals free, subequal, connivent or slightly spreading at apex. Petals similar to sepals, usually smaller. Lip sessile at base of column, basally spurred, simple or 3-lobed, concave, subequal to petals. Column short, wingless, footless. Capsule small, ovoid or narrowly oblong, beakless.

Campylocentrum: Greek, 'curved point', in reference apparently to the long, slender and sharply curved spur in some species.

Some 30 species from Florida, West Indies, Mexico, Middle America, South America south to Brazil and Paraguay.

1. Stems rather elongated, with conspicuous leaves2. *Campylocentrum micranthum*
- 1A. Stems abbreviated or none, leafless or with leaves reduced to tiny bract-like structures.
 2. Roots fleshy. Lip entire.....3. *Campylocentrum pachyrrhizum*
 - 2A. Roots slender. Lip more or less 3-lobed1. *Campylocentrum fasciola*

1. *Campylocentrum fasciola* (Lindl.) Cogn. in Martius *Fl. Bras.* 3, pt. 6 (1906) 520, t. 106, fig. 1.

Angraecum fasciola Lindl. in *Bot. Reg.* 26 (1840) sub. t. 68.

Stemless and leafless, with elongated, densely fasciculate roots. Inflorescences clustered, erect-spreading, densely many-flowered; rhachis subfiliform, 2-6 cm long. Bracts about 1.5 mm long, clasping. Flowers very minute, yellowish or brownish white, segments connivent in lower half. Sepals narrowly ovate, acute or obtuse, apiculate, 1-nerved, 1.5-1.8 mm long, about 0.8 mm wide. Petals ovate-oblong, subacute, 1-nerved, 1.3-4.5 mm long, about 0.7 mm wide. Lip rhombic-ovate, lightly 3-lobed, lateral lobes rounded; mid-lobe widely triangular-acute, 3 mm long; spur linear-subclavate, obtuse, 1-2 mm long. Capsule oblong-cylindric trigonous, 4-5 mm long.

Flowers : January-April.

Middle America, northern South America, West Indies.

TRINIDAD : January 22, 1846, Bradford s.n. (*Herb. Trin.* 1527); Agua Santa, Arima, April 1908, Broadway 2902 (*Herb. Ames* 11487); Caparo, March 27, 1908, Broadway s.n. (*Herb. Ames* 10649); Maraval, April 12, 1911, Broadway s.n. (*Herb. Ames* 22023); Spring Estate, Tamana Road, March 9, 1923, Cheesman 103 (*Herb. Trin.* 13277); Talparo, March 7, 1961, Downs & Aitken (TRVL) 338 (*Herb. Ames* Alc. Coll.).

2. *Campylocentrum micranthum* (Lindl.) Rolfe in *Orch. Rev.* 11 (1903) 245.

Angraecum micranthum Lindl. in *Bot. Reg.* 21 (1835) t. 1772.

Pendent, with flexuous, monopodial stems usually about 40 cm long, covered by leaf-sheaths. Leaves coriaceous, elliptic-oblong, obtuse to obliquely notched at apex, articulated, later deciduous below, 4-12 cm long, 1.5- (rarely) 2.5 cm wide, with apically toothed sheaths. Inflorescence spreading, densely many-flowered, lateral on stem below insertion of roots, 3-4 cm long. Bracts 1-2 mm long, denticulate along margins. Flowers white or yellow-green. Sepals subequal, linear-lanceolate, acute, connivent, apically rather spreading, 3-5 mm long, 0.8 mm wide. Petals similar to sepals but smaller, 4 mm long, 0.8 mm wide, 3-nerved. Lip 3-lobed.

lanceolate in outline, 3-4.4 mm long, 1.5 mm wide in lower part when spread open; lateral lobes embracing column; mid-lobe linear-lanceolate, 2.5 mm long; spur curved-porrect, 2-4 mm long. Column 1 mm long. Capsule narrowly oblong-cylindric, 9-12 mm long.

Flowers: October-May.

Mexico, Middle America, northern South America, West Indies.

TOBAGO: Easterfield Road, February 25, 1926, Freeman 11523 (*Herb. Trin.* s.n.); between Adelphi and Belmont, Broadway 2478 (ex Cogniaux).

TRINIDAD: (*Herb. Trin.* 9884); May 18, 1895 (*Herb. Trin.* 897); Agua Santa, Arima, April 14, 1908, Broadway 2335 (*Herb. Ames* 10709); near Nestor Village, Sangre Grande, February 16, 1915, Broadway s.n. (*Herb. Trin.* 8830); Santa Cruz, November 4, 1924, Freeman s.n. (*Herb. Trin.* 10827); La Horquette Valley, Carenage, December 23, 1925, Freeman s.n. (*Herb. Trin.* 11488); Spring Estate, Tamana Road, March 9, 1938, Cheesman 101 (*Herb. Trin.* 13471); Imp. Coll. Trop. Agric. Orchard, April 2, 1949, Simmonds 340 (*Herb. Trin.* 14284); Arena Forest Station, alt. 150 ft., October 2, 1953, Ayliffe s.n. (*Herb. Trin.* 15026); Caratal, October 13, 1955 (flowered), Downs & Aitken 62 (*Herb. Ames* 67809); Bradford s.n. (ex Cogniaux).

3. *Campylocentrum pachyrrhizum* (Rchb. f.) Rolfe in *Orch. Rev.* 11 (1903) 246.

Aeranthus pachyrrhizus Rchb. f. in *Flora* 48 (1865) 279.

Leafless, with flattish, densely fasciculate roots. Stems abbreviated. Inflorescence clustered, spreading, densely many-flowered; rhachis filiform, angulate, 2-4 cm long. Bracts spatheaceous, cordate-subrotund, 3-4 mm long, 4-5 mm wide. Flowers spreading. Sepals narrowly linear-lanceolate, acuminate, 5-nerved, 5.5 mm long; dorsal 1.5 mm wide; laterals 1-1.25 mm wide. Petals narrowly linear-lanceolate, acute, 5-nerved, 5 mm long, 1 mm wide. Lip entire, narrowly triangular-lanceolate, long-acuminate, 4.5 mm long, basally 1.8 mm wide; spur pendent, cylindric, obtuse, 2 mm long, 0.75 mm in diameter. Capsule narrowly elliptic-ovoid, 7-8 mm long.

Flowers: February.

Florida, West Indies, British Guiana.

TOBAGO: Between Adelphi and Belmont, Broadway 2477 (ex Cogniaux).

TRINIDAD: Bradford (ex Cogniaux); St. Patrick's Estate, Arima Valley, February 11, 1955 (flowered), Downs & Aitken 3 (*Herb. Ames* 67330).

ADDENDUM

34. *Epidendrum yatapuense* Barb.-Rodr. in *Vel losia* (1891) 123.

Up to 22 cm long. Stems leafy, concealed by evanescent, imbricating sheaths. Leaves 2 to several, thin-coriaceous, articulated, lanceolate or elliptic-lanceolate, usually acute, sometimes slightly mucronate, basally narrowed and amplexicaul, 5-6 cm long, 1-1.5 cm wide (sometimes larger). Inflorescence a laxly few-flowered panicle up to 18 cm long (sometimes much longer); rhachis flattened, covered with several closely tubular, papyraceous sheaths. Flowers small, yellowish or greenish yellow, red-spotted. Bracts triangular, less than 1 mm long. Sepals spreading, subequal, oblong-elliptic or elliptic-lanceolate, apically slightly thickened and acute, 8-9 mm long, 2-2.3 mm wide. Petals rather fleshy, linear, slightly shorter than sepals. Lip fleshy, adnate to entire length of column, lamina 3-lobed, 7 mm long, more or less 4-4.5 mm wide, mid-lobe very thick, more or less terete, elongate-triangular, subacute, strongly recurved, 2-3 mm long; lateral lobes erect, irregularly ovate-subrhombiform, basally conspicuously cordate, 4-5 mm long, 2.2 mm wide. Column stout, dilated above, apically with 2 auricles 2 mm long.

Flowers: November.

Colombia, Peru, Bolivia, Ecuador, British Guiana, Amazonian Brazil and Trinidad.

TRINIDAD: November 1, 1865, Prestoe s.n. (*Herb. Trin.* 1971; *Herb. Ames* 67929); Maraval, November 17, 1934, Sylvester s.n. (*Herb. Trin.* 13073); December 13, 1955 (flowered), Downs & Aitken 76 (*Herb. Ames* Alc. coll. 3225).