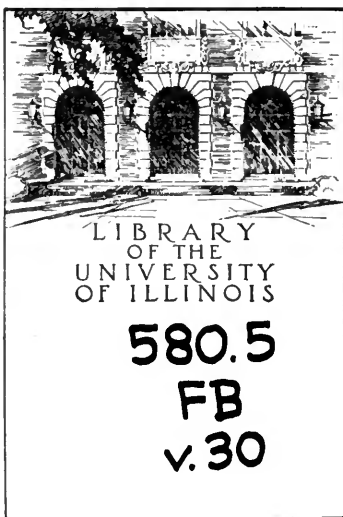


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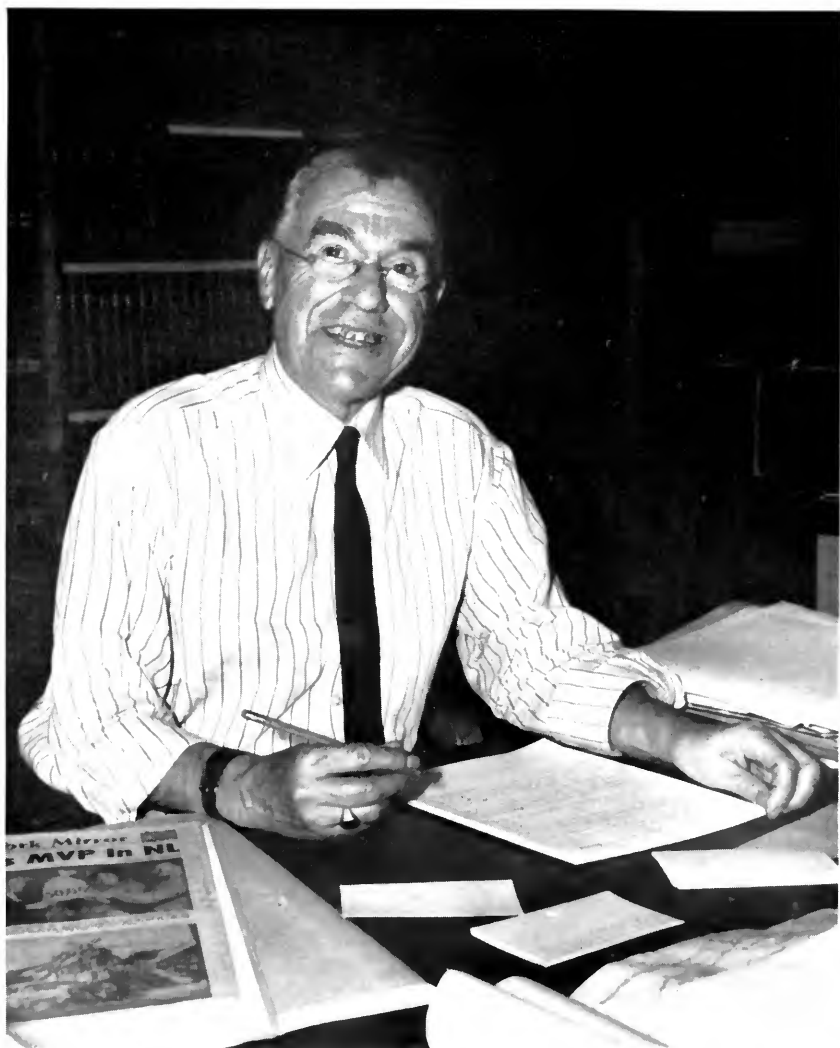
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ORCHIDS OF PERU

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CHARLES SCHWEINFURTH

FIELDIANA: BOTANY

A Continuation of the

BOTANICAL SERIES

of

FIELD MUSEUM OF NATURAL HISTORY

VOLUME 30



CHICAGO, U.S.A.

1958-1961

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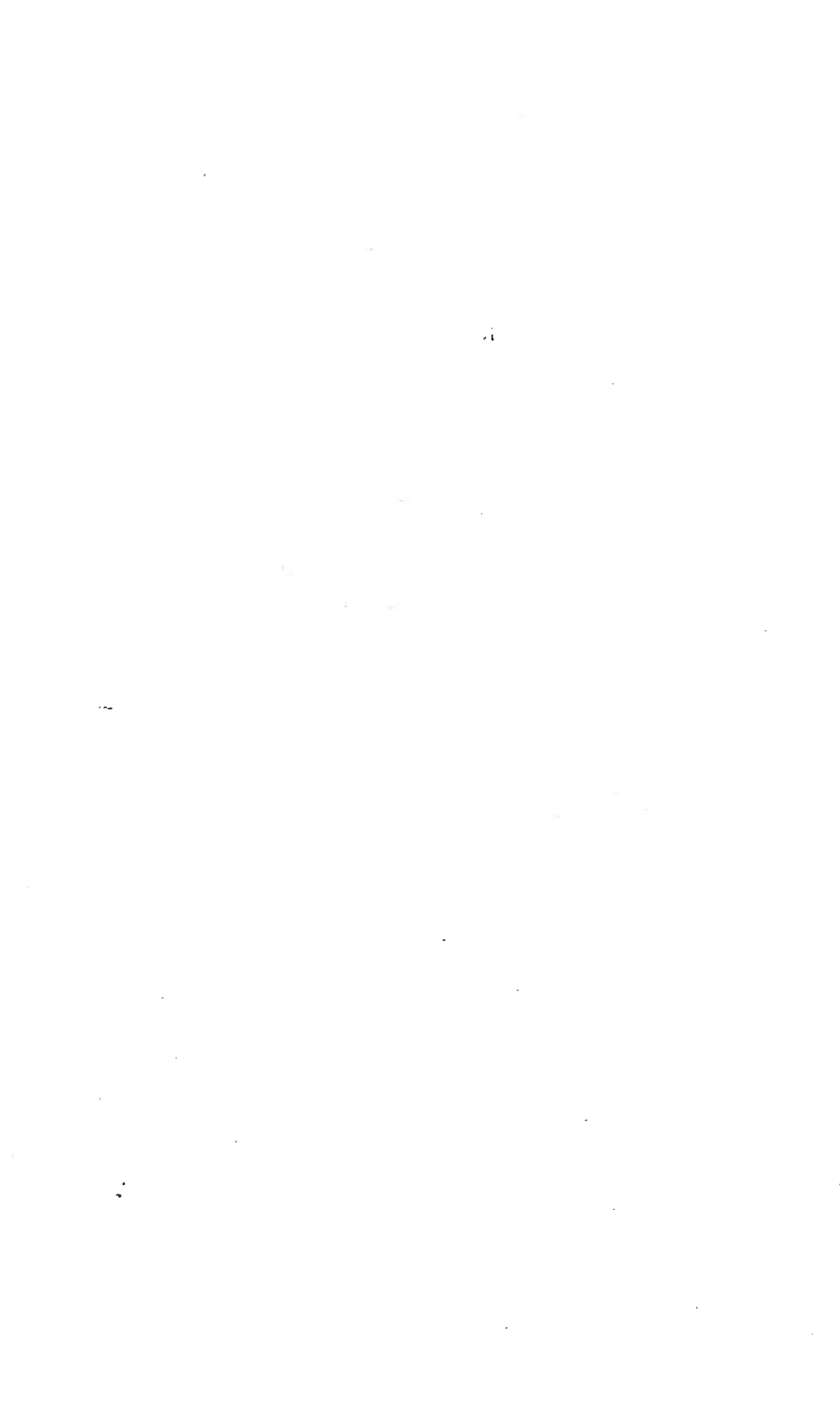
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CHARLES SCHWEINFURTH

*Research Fellow, Ames Orchid Herbarium
Botanical Museum of Harvard University*

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Orchids of Peru

TRICHOPILIA Lindl.

A rather small genus of American epiphytes extending from Mexico through Central America and the West Indies to Brazil and Bolivia.

Rhizome abbreviated. Pseudobulbs commonly conspicuous and caespitose, more or less ancipitous, 1-leaved. Leaves fleshy or coriaceous, linear and subterete or more commonly rather broad and flat. Scapes lateral, basal, usually short, few-sheathed below, loosely 1- to (rarely) 7-flowered above. Flowers showy and often large, with spreading, often twisted, sepals and petals. Sepals subequal, narrow, usually free, the lateral ones rarely somewhat connate. Petals very similar to the dorsal sepal. Lip varying from sessile to deeply adnate to the column, simple to more or less distinctly 3- or 4-lobed, concave and commonly surrounding the column below; disc smooth, carinate or rarely callose. Column more or less elongate, commonly dilated above, terminated by an ample, membranaceous, entire to 3-lobed and fimbriate clinandrium. Anther opercular, incumbent, 1-celled. Pollinia 2.

- A1. Leaves fleshy, linear-ligulate, commonly subterete; pseudobulbs inconspicuous to small, up to 2.5 cm. long; flowers relatively small, sepals 2.6 cm. or less long.....*T. subulata* (*T. hymenantha*)
- A2. Leaves chartaceous to coriaceous, always flat; pseudobulbs conspicuous, 4.5 cm. or more long..... I
 - Ia. Flowers small, sepals 2.5 cm. or less long; lip entire, obtusely angled in front, bicarinate below.....*T. peruviana*
 - Ib. Flowers relatively large, sepals about 3 cm. or more long; lip commonly more or less markedly 3-lobed, not obtusely angled in front..... 1
 - 1a. Leaves definitely petioled; sepals broadly lanceolate, about 15 mm. wide, greenish mottled with chocolate; lip 3-carinate.....*T. brevis*
 - 1b. Leaves sessile, at most with a narrowed, conduplicate base; sepals linear-lanceolate or linear, 7.5 mm. or less wide, not mottled..... 2
 - 2a. Pseudobulbs linear-cylindric, about 10 mm. or less in diameter in the dried specimen; leaf narrow, about 2 cm. wide..... 3
 - 2b. Pseudobulbs oblong-cylindric to ellipsoid or ovoid, 25 mm. or more in diameter; leaf relatively broad, 2.6 cm. or more wide; base of the lip without semielliptic calli, merely unicarinate..... 4
 - 3a. Flower large, sepals 4.3 cm. or more long; lateral sepals connate below; lip distinctly surpassing the sepals, disc with a pair of semielliptic, fleshy calli near the base.....*T. juninensis*
 - 3b. Flower relatively small, sepals 3.3 cm. or less long; lateral sepals entirely free; lip a little shorter than the lateral sepals, disc without a pair of semielliptic calli below.....*T. gracilis*

- 4a. Median keel uniform, not dilated above. *T. fragrans*
4b. Median keel abruptly dilated and cut off in front.
T. fragrans var. *grata* (*T. grata*)

Trichopilia brevis Rolfe, *Lindenia* 7: 91, t. 332. 1892.

Pseudobulbs aggregated, elongate-conic, 8–12 cm. long, unifoliate. Leaf petioled; lamina lanceolate-elliptic or oblong-elliptic, acute, cuneate at the base, 10–16 cm. or more long, 4–5 cm. wide, coriaceous. Scapes lateral, basal, pendent, loosely 2- to 3-flowered above. Flowers large and showy, with spreading segments. Sepals and petals yellowish green blotched with chocolate. Sepals broadly lanceolate or elliptic-lanceolate, acute, with somewhat revolute sides, about 4 cm. long and 1.5 cm. wide. Petals rather similar to the sepals, lightly oblique. Lip white, subtrilobed above, very broad, nearly equaling the sepals in length, up to 4.8 cm. wide; lateral lobes erect and surrounding the column, broadly rounded, undulate; mid-lobe very broadly rounded, retuse, crisped-undulate, about 2.5 cm. wide; disc with 3 yellow keels in the center of the lower half. Column short, subclavate, about 1.3 cm. long, biauriculate above, with a membranaceous, serrulate clinandrium.

Peru: Habitat and collector not recorded; introduced by L'Horticulture Internationale at Brussels.

Trichopilia fragrans (Lindl.) Reichb. f. *Hamb. Gartenz.* 14: 229. 1858; Reichb. f. *Saund. Refug. Bot.* 2: t. 127. 1882; Cogn. & Goos. *Dict. Icon. Orch. Trichopilia* t. 3. 1898. *Pilumna fragrans* Lindl. *Bot. Reg.* 30, Misc. 74. 1844.

Plant variable. Pseudobulbs often aggregated, strongly complanate, oblong-cylindric to ellipsoid or ovoid, unifoliate, 4.5–12 cm. long, invested below by several distichous, deeply imbricating, evanescent sheaths. Leaf oval to elliptic or elliptic-oblong, rarely oblong-ligulate, acute, more or less narrowed to a conduplicate base, chartaceous, 11–30 cm. long, 2.7–7.6 cm. wide. Scape lateral, basal, shorter than the leaf, erect to pendent; peduncle bearing 2–4 close, tubular sheaths which are remote above; raceme very loose, bearing 1–4 (commonly 2 or 3) flowers. Flowers rather large, fragrant, with spreading segments. Sepals green, white or whitish green, with more or less undulate margins. Dorsal sepal linear-lanceolate or linear-elliptic, acuminate, up to 4.5 (6) cm. long and 7.5 mm. wide. Lateral sepals similar but slightly smaller, oblique, entirely free. Petals very similar to the dorsal sepal but commonly a little broader. Lip rhombic-obovate in outline, lightly 3-lobed above the middle, long-cuneate at the base, with the center strongly adnate to the column, white with a yellow spot near the base, 2.5–4 cm. long, 1.6–3 cm. wide where broadest; lateral lobes shallowly semiobovate and broadly rounded in front, erect, undulate; mid-lobe semiorbicular, retuse and lightly apiculate; disc with a more or less conspicuous, low, uniform, central keel on the basal half. Column straight, more or less dilated above and round-auriculate on each side, 1.5–2.1 cm. long, with a conspicuous, 3-lobulate, lacerate clinandrium.

Cuzco: Prov. of Calca, Lares Valley above Huallhuayoj, 2200–2400 meters, on rocks, *Weberbauer 7903*.—Junín: Chanchamayo Valley, 1500 meters, *Schunke 1294*. Also Hispaniola, Colombia (type of *Pilumna fragrans*), and Venezuela.

Trichopilia fragrans (Lindl.) Reichb. f. var. **grata** (Reichb. f.)

C. Schweinf. Bot. Mus. Leaflet. Harvard Univ. 12: 193. 1946. *Trichopilia grata* Reichb. f. Gard. Chron. (1868) 1338.

This concept differs from the type in having the keel on the lip dilated and abruptly cut off in front. Like the type, it has fragrant flowers, the sepals and petals green and the lip white with yellow blotches on either side of the basal keel.

Peru(?): Habitat and collector not recorded; introduced by Messrs. Veitch (type of *T. grata*).—Cuzco: Prov. of Quispicanchis, Marcapata Valley, "evergreen hard-leaved bushwood consisting of shrubs and trees," 1800 meters, *Weberbauer 7840*.—Junín: Río Mantaro, *Weberbauer 6582*.

Trichopilia gracilis C. Schweinf. Bot. Mus. Leaflet. Harvard

Univ. 15: 168, t. 56. 1952. Figure 161.

Plant epiphytic, medium-sized for the genus, about 29.5 cm. or less high. Rhizome abbreviated. Pseudobulbs caespitose, numerous, linear-cylindric, apparently compressed, unifoliate at the apex, 5–11 cm. high, up to 9 mm. in diameter, striate-sulcate, concealed at the base by a few firm, evanescent sheaths. Leaf linear-oblong to elliptic-oblong, subcoriaceous, acute, shortly narrowed below to a sessile or shortly petioled, complicate or conduplicate base, 11.7–18 cm. long, 1.4–2.1 cm. wide. Inflorescence basal, suberect, very loosely 2- to 3-flowered above, shorter than the leaf or rarely (including the terminal flower) subequaling the leaf; peduncle slender, about 6.5–15 cm. long, with 3 close, tubular, separated sheaths; floral bracts closely clasping and much shorter than the pedicellate ovary. Pedicellate ovary up to 4.5 cm. long. Flowers rather small for the genus, campanulate, white with orange on the throat of the lip. Sepals rather fleshy, longitudinally concave. Dorsal sepal linear or lanceolate-linear, acuminate, about 3 cm. long and 4 mm. wide when expanded. Lateral sepals free, obliquely linear or lanceolate-linear, lightly decurved, long-acuminate with a conduplicate apex, about equaling the dorsal sepal but narrower. Petals obliquely lanceolate-linear, more or less lightly decurved, acuminate with a subconduplicate apex, slightly shorter than the dorsal sepal. Lip a little shorter than the sepals, with the lower portion convolute around the column in natural position, when expanded oblong-obovate, broadly rounded in front, lightly contracted on each side above the middle (thus subtrilobed), cuneate below, with the central line below adnate to the lower half of the column, about 2.5–2.8 cm. long and 1.6–1.8 cm. wide near the apex; disc with a short, more or less distinct, fleshy keel below the middle. Column short, about 9 mm. high at the back, stout, slightly dilated upward, terminating in an erect, somewhat bilobed, denticulate clinandrium.

Junín: Prov. of Tarma, Agua Dulce, 1800 meters, epiphyte in forest, pseudobulbs, leaves and peduncle dark green, *Woytkowski 35473* (type). Same locality, 1900 meters, epiphyte in shady forest, mid-nerve of the leaf yellowish, lip with 7 orange spots in the center, *Woytkowski 35428*.

TRICHOPILIA
gracilis
C. Schweinf.



FIG. 161. *Trichopilia gracilis* C. Schweinf. 1, plant; $\times \frac{1}{2}$. 2, flower expanded; $\times 1$. 3, lip and column from side; $\times 1$.

Trichopilia juninensis C. Schweinf. Am. Orch. Soc. Bull. 13: 424, t., 1945. Figure 162.

Plant slender for the genus. Rhizome apparently abbreviated. Pseudobulb strongly ancipitous, linear-cylindric, unifoliate, more or less arcuate in the dried specimen, about 7.5 cm. long, up to 10 mm. in diameter, clothed below with several distichous, imbricating, evanescent sheaths. Leaf oblong, acute, shortly narrowed to a petiole-like, conduplicate base, about 15 cm. long and 1.9 cm. wide, chartaceous. Scape lateral, basal, short, arcuate or spreading, very loosely 2-flowered above; peduncle about 6 cm. long, provided with 3 separated, closely clasping, tubular sheaths. Flowers large, white, with spreading, somewhat twisted segments. Dorsal sepal linear, acute or short-acuminate, about 4.3 cm. long and 4.8 mm. wide in the middle. Lateral sepals narrowly linear, complicate-acute, slightly longer than the dorsal sepal, carinate without, connate below for about 1.8 cm. Petals similar to the dorsal sepal but slightly wider, linear, lightly curved near base, complicate-acute. Lip obovate in outline when expanded, distinctly exceeding the sepals, retuse in front, adnate to the column below for about 8.5 mm., about 5.7 cm. in greatest length, lightly 4-lobed above the middle, about 3-3.5 cm. wide across the lateral lobes; lateral lobes semiobovate from a long-narrowed base; mid-lobe transversely oval or reniform, about 1.2 cm. long on each side of the retuse apex and about 2.7 cm. wide; disc below with a low central keel which is surrounded by a pair of narrow, semielliptic, fleshy calli. Column rather small, abruptly dilated above, about 2 cm. long, including the deeply trilobulate, lacerate wing.

Junín: Chanchamayo Valley, 1500 meters, *Schunke 1299* (type). Same locality and altitude, *Schunke 523*.

Trichopilia peruviana Kränzl. Oesterr. Gartenz. 10: 11. 1915.

Rhizome short. Pseudobulbs ancipitous, linear-cylindric or linear-oblong, unifoliate, up to 10 cm. long and 2 cm. wide. Leaves lanceolate, acute or acuminate, shortly complicate at the rounded base, up to 15 cm. long and 4 cm. wide, coriaceous. Inflorescences 2- or more-flowered above; peduncle clothed with small, short, acute, scarios sheaths. Flowers white. Sepals lanceolate, acuminate, straight or very slightly twisted, 2.5 cm. long, 4-5 mm. wide. Petals oblong-lanceolate, acute, equally long but nearly twice as wide as the sepals. Lip simple, cuneate-obovate, obtuse-angled in front, lightly emarginate in the middle [?of each side], equally as long as the other segments, 1.5 cm. wide in front; disc very minutely velutinous, with 2 rather obscure yellowish calli extending from the base to beyond the middle. Column about half as long as the lip, the margin of the clinandrium 3-partite and minutely denticulate.

Peru: Habitat and collector not recorded; imported by P. Wolter of Magdeburg (type).—Junín, fide Schlechter, Fedde Repert. Beih. 9: 169. 1921.

No material of this concept was seen.

Trichopilia subulata (Sw.) Reichb. f. Flora 48: 278. 1865; Cogn. Urban Symb. Antill. 6: 628. 1910. *Epidendrum subulatum*

TRICHOPILIA

juninensis C. Schweinf.

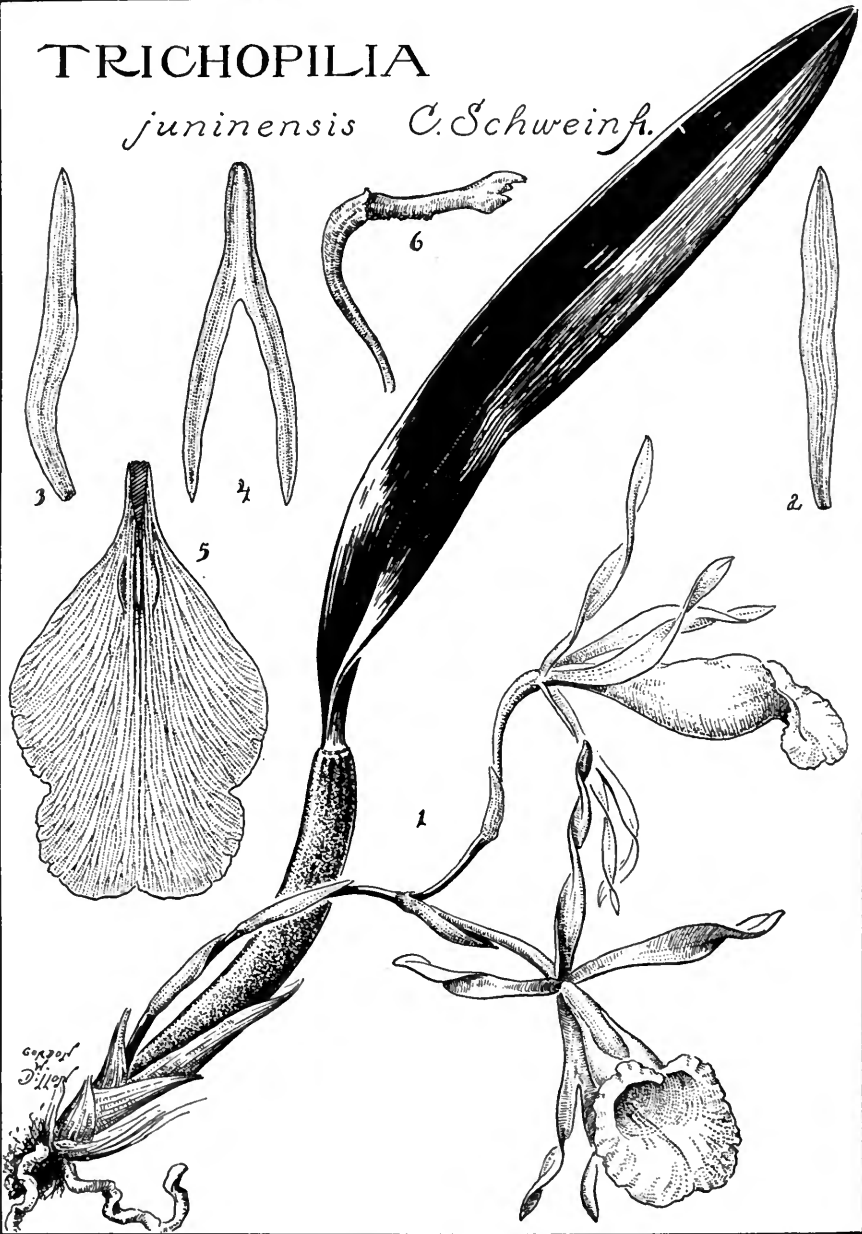


FIG. 162. *Trichopilia juninensis* C. Schweinf. 1, plant; $\times \frac{1}{6}$. 2, dorsal sepal; $\times 1$. 3, petal; $\times 1$. 4, lateral sepals; $\times 1$. 5, lip expanded; $\times 1$. 6, column from side; $\times 1$.

Sw. Prodr. Veg. Ind. Occ. 123. 1788. *Cymbidium subulatum* Sw. Fl. Ind. Occ. 3: 1473. 1806. *Trichopilia hymenantha* Reichb. f. Bonpl. 2: 90. 1854; Reichb. f. Xen. Orch. 1: 15, t. 7, figs. I, 1-11. 1854; Hook. f. Bot. Mag. 98: t. 5949. 1872. *Leucohyle Warscewiczii* Kl. Ind. Sem. Hort. Berol. App. 1854.

Plant slender, variable. Rhizome abbreviated. Pseudobulbs aggregated, small and inconspicuous, linear-cylindric, lightly compressed, 8-25 mm. long, unifoliate. Leaves fleshy, linear or subterete, channelled, acuminate and often mucronate, 10.8-22.9 cm. long, up to 10 mm. wide. Scapes lateral, basal, short, lax to pendent, loosely several-flowered nearly to the base, up to 15 cm. long. Flowers small, with spreading segments. Sepals and petals white to pale yellow, lip white with red or purplish spots. Dorsal sepal lanceolate, linear-lanceolate or elliptic-linear, acuminate, 1.6-2.6 cm. long, 3-4 mm. wide near the middle. Lateral sepals entirely free, obliquely linear-lanceolate, acuminate, dorsally carinate, with a more or less prominent subapical mucro, about as long and broad as the dorsal sepal or narrower. Petals similar to the dorsal sepal, more or less oblique. Lip suborbicular and obscurely 4-lobed or round-obovate, concave with the sides of the lower part surrounding the column, abruptly acute or obtuse and apiculate, the margins irregularly denticulate to lacerate, 1.5-2 cm. long, 1.4-1.8 cm. wide; disc provided at the base with a small, subquadrate, depressed callus or with a pair of small, converging calli. Column short, stout, clavate, lightly recurved above, 6-9 mm. long including the wing, terminating in a relatively large, cucullate, suborbicular-obovate, denticulate wing with a small subulate process on each side below.

Peru: Habitat not recorded, *Warscewicz s.n.* (type of *Leucohyle Warscewiczii*). Also the West Indies (type of *Epidendrum subulatum*), Panama and Colombia (*T. hymenantha*).

COCHLIODA Lindl.

Small or medium-sized South American epiphytes apparently restricted to Ecuador, Peru and Bolivia.

Rhizome abbreviated. Stems very short, thickened into compressed, 1- or 2-leaved pseudobulbs. Leaves linear or oblong to lorate. Scapes 1 or 2, lateral, basal, erect, arcuate or pendent, loosely racemose (sometimes paniculate) above. Floral bracts large or more commonly small and inconspicuous. Flowers small or medium-sized, scarlet to rose-red, with spreading segments. Sepals subequal, free. Petals broader than the sepals, somewhat oblique. Lip with an erect claw which is more or less adnate to the column and with a spreading lamina; lamina 3-lobed, with the lateral lobes rounded or oblong and often reflexed; mid-lobe porrect, entire or dilated above and retuse to bilobed in front. Column erect and more or less incurved, slender, often auricled above, with 2 stigmatic orifices. Anther terminal, opercular, incumbent. Pollinia 2.

- A1. Mid-lobe of the lip oblong or cuneate, not markedly dilated in front. . *C. rosea*
 A2. Mid-lobe of the lip markedly dilated above and retuse to bilobed in front. . . I

- Ia. Floral bracts conspicuous, about equaling the pedicellate ovary. *C. densiflora*
 Ib. Floral bracts small and inconspicuous, much shorter than the pedicellate ovary.....1
 1a. Pseudobulbs 2-leaved; flowers rose-purple.....*C. vulcanica*
 1b. Pseudobulbs 1-leaved; flowers scarlet.....2
 2a. Lateral sepals elliptic-lanceolate; petals broad, oval.....*C. Noezliana*
 2b. Lateral sepals oblanceolate-oblong; petals oblong-elliptic.....*C. Beyrodtiana*

Cochlioda Beyrodtiana Schltr. Orchis 13: 5. 1919.

Plant medium-sized. Pseudobulbs aggregated, ellipsoid to broadly ovoid, compressed, unifoliate, 3-4 cm. high. Leaves narrowly lorate, subobtuse, 10-15 cm. long, 1.7-2 cm. wide. Scape erect, up to 20 cm. high; peduncle slender, with several (5-7) small, tubular, remote sheaths; raceme about 8 cm. long, very loose, 7- to 10-flowered. Floral bracts small, ovate-lanceolate, acuminate, concave, about one third as long as the pedicellate ovary. Flowers bright scarlet, with widely spreading segments. Dorsal sepal lanceolate or oblanceolate, acute, about 1.5 cm. long. Lateral sepals about equally long but apparently more or less narrower, oblique. Petals obliquely oblong-elliptic, acute, about as long as the sepals, wider than the dorsal sepal. Lip about 1.5 cm. long, with a short cuneate claw, 3-lobed in the middle where about 1.2 cm. wide; lateral lobes obliquely oblong, obtuse; mid-lobe reniform, shortly clawed below, bilobulate in front; disc with 4 parallel, minutely puberulent keels extending to the base of the midlobe. Column slender for the genus, about 1.5 cm. or less high, with a pair of semiquadrate auricles.

Peru: Habitat and collector not recorded. Plant appeared in the nursery of Herr Beyrodt in Marienfeld near Berlin.

Cochlioda densiflora Lindl. Fol. Orch. *Cochlioda* 1853; Schltr. Orchis 13: 3. 1919. *Mesospinidium densiflorum* Reichb. f. Gard. Chron. (1872) 393.

Plant about 21 cm. high, stout. Pseudobulb complanate-oval or oblong-oval, about 5 cm. high, unifoliate, surrounded at the base by 2 pairs of distichous sheaths of which the longer upper ones are leaf-bearing. Leaf on the pseudobulb oblong, obtuse, narrowed below to an indistinct, conduplicate petiole, about 14 cm. long and 1.8 cm. wide, coriaceous, with the mid-nerve prominent beneath. Scape suberect, lateral, basal in the axil of a leaf-bearing sheath, slightly surpassing the leaf; peduncle about 12.7 cm. long, entirely concealed by several close, tubular sheaths; raceme subdense, about 9-flowered. Floral bracts large and prominent, spreading, ovate-lanceolate, cucullate, about as long as the pedicellate ovary. Flowers rather large, apparently white to cream-color, with widely spreading segments. Dorsal sepal ovate-elliptic or "roundish," acute, nearly 1.5 cm. long. Lateral sepals much narrower, spatulate-oblong or oblanceolate, oblique, acute, "nearly parallel," apparently a little longer than the dorsal sepal. Petals very similar to the dorsal sepal, oblique. Lip adnate to the column up to the middle of the latter, deeply 3-lobed, ovate in outline, distinctly shorter than the lateral sepals; lateral lobes "roundish" or semioval, spreading; mid-lobe "linear-oblong" or subquadrate, abruptly dilated and bilobed in front; disc at the base with a pair of linear, fleshy

calli which terminate in a "bivalve gland." Column elongate, arcuate, biauriculate at the apex.

Peru: Habitat unrecorded, *Mathews s.n.*

Cochlioda Noezliana (Hort. ex Gard. Chron.) Rolfe, *Lindenia* 6: 55, t. 266. 1891; Hook. f. *Bot. Mag.* 122: t. 7474. 1896; Cogn. & Goos. *Dict. Icon. Orch. Cochlioda* t. 2. 1899; Schltr. *Orchis* 13: 4. 1919. *Odontoglossum Noezlianum* Hort. ex Gard. Chron. ser. 3, 8: 570, 602. 1890.

Plant rather large and showy, with an abbreviated rhizome. Pseudobulbs clustered, complanate-ovoid to broadly ellipsoid, unifoliate, 3–5 cm. high, surrounded at the base by 1 or 2 pairs of distichous, leaf-bearing sheaths. Leaves oblong to linear-oblong, obtuse to acuminate, cuneate, narrowed to a subpetiolate, channelled base, 7.6–25 cm. long, 2–2.5 cm. wide. Scape erect to arcuate or pendent, up to 40 cm. long; peduncle with numerous short, clasping, subremote, tubular sheaths; flower cluster racemose or somewhat paniculate, lax, few- to many-flowered. Floral bracts oblong-lanceolate or ovate, acute or acuminate, commonly equaling one third or one fourth of the pedicellate ovary. Flowers bright scarlet with yellow on the lip, with spreading segments, 2.5–4 cm. across. Dorsal sepal oblong-elliptic, abruptly acute, about 1.6–2 cm. long, 5–8 mm. wide. Lateral sepals lanceolate-elliptic, acute and apiculate at the tip, slightly longer but markedly narrower than the dorsal sepal, somewhat oblique. Petals ovate-elliptic or oval, acute, slightly oblique, about as long as the dorsal sepal but somewhat broader, with irregular crenulate margins. Lip adnate to the column nearly to the apex of the latter, deeply 3-lobed above the middle, cuneate at the base, about 1.7–2 cm. long and broad when expanded, rotund-ovate in outline; lateral lobes obliquely quadrate-suborbicular, spreading; mid-lobe subequal, decurved, orbiculate, from a broad cuneate base dilated above with a lightly retuse apex and undulate upper margins; disc below with a broad, transverse, 4-lobulate callus or with 4 short, parallel, fleshy keels. Column long and slender, with a trilobed apex, 1.3–1.5 cm. long at the back.

Peru: Habitat and collector not recorded; introduced by M. Noezli (type).—Cuzco, Puno, fide Schlechter, *Fedde Repert. Beih.* 9: 168. 1921. Also Bolivia.

Cochlioda rosea (Lindl.) Benth. *Journ. Linn. Soc.* 18: 327. 1881; Cogn. & Goos. *Dict. Icon. Orch. Cochlioda* t. 3. 1899; Schltr. *Orchis* 13: 7. 1919. *Odontoglossum roseum* Lindl. Benth. *Pl. Hartw.* 151. 1844; Hook. f. *Bot. Mag.* 100: t. 6084. 1874. *Mesospinidium roseum* Reichb. f. *Gard. Chron.* (1872) 393.

Plant small to medium-sized. Rhizome abbreviated. Pseudobulbs aggregated, ovoid to broadly ellipsoid, strongly complanate, unifoliate or bifoliate, 3–5 cm. high, surrounded at the base by 2 pairs of distichous sheaths of which the larger upper ones are leaf-bearing. Leaves variable, elliptic-oblong to linear, acute to obtuse, cuneate-narrowed to a conduplicate, subpetiolate base, 5.8–20 cm. long,

1–2.5 cm. wide, with the mid-nerve conspicuous beneath. Scapes lateral, basal in the axil of a sheath, erect to flexuous or arcuate, 13–40 cm. long; peduncle with several more or less remote, short, tubular, evanescent sheaths. Flower cluster racemose to sometimes paniculate, loosely 5- to 20-flowered. Floral bracts ovate to lanceolate, acute, concave, half as long as the slender pedicellate ovary or less. Flowers rose-red, with spreading segments, 2–3.5 cm. in diameter. Dorsal sepal narrowly elliptic-lanceolate, acute, prominently apiculate, about 11 mm. long, up to 4 mm. wide. Lateral sepals similar, obliquely elliptic-lanceolate, slightly longer and markedly narrower than the dorsal sepal. Petals lanceolate-elliptic, acute, about as long as the dorsal sepal but more or less broader. Lip about as long as the petals, adnate to the lower third of the column, about 9.5–16 mm. long, sharply 3-lobed below or near the middle, ovate in outline; lateral lobes short, very obliquely ovate or rhombic from a cuneate base; mid-lobe much larger, porrect, linear-oblong, linear-lanceolate or cuneate, obtuse or truncate and not or very slightly dilated (but not bilobed) at the apex; disc with 1 or 2 pairs of short fleshy keels near the base. Column stout, with a 3-lobed apex, about 6.5 mm. high at the back.

Cajamarca, fide Schlechter, Fedde Repert. Beih. 9: 168. 1921. Ecuador (type of *Odontoglossum roseum*).

Cochlioda vulcanica (Reichb. f.) Benth. & Hook. f. ex Veitch Man. Orch. Pl. 9: 189. 1893;¹ Cogn. & Goos. Dict. Icon. Orch. Cochlioda t. 1. 1898; Cogn. Martius Fl. Bras. 3, pt. 6: 209, t. 44, fig. 2. 1905; Schltr. Orchis 13: 6. 1919. *Mesospinidium vulcanicum* Reichb. f. Gard. Chron. (1872) 393; Hook. f. Bot. Mag. 98: t. 6001. 1872.

Plant medium-sized, with an abbreviated rhizome. Pseudobulbs aggregated, narrowly ovoid, strongly compressed, 2.5–6 cm. long, bifoliate, surrounded in youth by several pairs of distichous, leaf-bearing sheaths. Leaves elliptic-oblong to narrowly oblong-ligulate, abruptly acute or subobtuse, attenuate below to a subpetioled conduplicate base, 7.6–15 cm. long, 1.3–3.5 cm. wide, coriaceous, with the mid-nerve carinate beneath. Scape lateral, basal in the axil of a sheath, suberect to nodding, 20–40 cm. long; peduncle provided with several clasping, short, subremote sheaths; raceme rather laxly several- to many-flowered. Floral bracts narrowly triangular, concave, short-acuminate, much shorter than the pedicellate ovary. Flowers rose-purple, with spreading segments. Dorsal sepal elliptic-lanceolate, acute, about 1.6 cm. long and 5 mm. wide. Lateral sepals markedly longer and narrower than the dorsal sepal, obliquely oblong-lanceolate or oblong-oblong-olate, dorsally carinate. Petals similar to and as long as the dorsal sepal but markedly broader, lightly oblique, acute. Lip adnate to the column up to the middle of the latter, about 1.8–2.2 cm. long when expanded, rather deeply 3-lobed near the middle, rhombic-ovate in outline; lateral lobes recurved, triangular-semiobovate, spreading from a cuneate base; mid-lobe reflexed, much longer, with an oblong claw, dilated and retuse in front; disc at the base of the mid-lobe with 2 pairs of short, oblong, fleshy keels of which the middle ones are longer. Column rather slender, lightly clavate above, 1.2–1.5 cm. long, denticulate at the apex.

¹ This orchid was not included by Schlechter among the Peruvian species, but it was designated from that country by Cogniaux in Martius Fl. Bras. 3, pt. 6: 212. 1905.

Peru: Eastern part, source of the Marañon River, *Spruce s.n.*
Also Ecuador (type).

NEODRYAS Reichb. f.

A small genus of American epiphytes apparently confined to the Andean regions of Bolivia and Peru.

Plants medium-sized with an abbreviated or creeping rhizome. Pseudobulbs more or less aggregated, ovoid to pyriform-cylindric, unifoliolate, surrounded below by one to several pairs of distichous, imbricating sheaths of which the upper ones are leaf-bearing. Leaves elliptic to ligulate, acute or subacute, strongly narrowed below to a more or less petioled, channelled base, subcoriaceous. Scapes lateral, basal in the axil of sheaths, commonly surpassing the leaves, crowned by a raceme or panicle which is loose and few-branched to dense and compact. Flowers small, apparently campanulate, with very small bracts. Sepals about equally long, strongly concave, the lateral ones deeply connate. Petals much broader than the dorsal sepal. Lip slightly shorter than the sepals, continuous with the column commonly by an incurved, claw-like basal portion, simple to 3-lobed; lateral lobes (if present) shallowly auriculiform; mid-lobe larger, spreading; disc callose at the base of the lamina. Column very short and stout, footless, winged on each side above. Anther terminal, opercular, incumbent. Pollinia 2, at length 2-parted.

- A1. Lip definitely 3-lobed, with a 7-lobed callus at the base. *N. densiflora*
 A2. Lip simple, without a 7-lobed callus at the base; disc of the lip with a more or less prominent callus which is dilated and lobulate above. I
 Ia. Anterior part of the lip broader than long, truncate to lightly retuse and sometimes apiculate in front.
 N. rhodoneura (*N. Mandonii*, *N. latilabia*, *N. reniformis*)
 Ib. Anterior part of the lip commonly longer than broad, acute (rarely subacute).
 N. Weberbaueriana

Neodryas densiflora Reichb. f. Gard. Chron. n. ser. 3: 492. 1875.

Rhizome apparently abbreviated. Pseudobulbs approximate, ancipitous, pyriform-cylindric ("ligulate"), unifoliolate, shining, about 4.5 cm. high, surrounded at the base by one or more pairs of distichous, mostly leaf-bearing sheaths. Leaves elliptic-oblong ("cuneate oblong"), acute, narrowed to a conduplicate, sometimes petioled base, up to 19 cm. long and 3.3 cm. wide. Scapes much surpassing the leaves, lateral, basal, in the axil of sheaths, about 30 cm. long, arcuate above; peduncle long, slender, with 3 or 4 remote, small, infundibuliform-cylindric sheaths; inflorescence about 6.7 cm. or less long, paniculate, with numerous lateral, short, strict, densely many-flowered branches. Flowers small, campanulate, purple, apparently 5-6 mm. long. Dorsal sepal oblong-ovate ("oblong"), acute. Lateral sepals connate into an ovate-elliptic, sharply bidentate lamina. Petals suborbicular-ovate, very abruptly acute or broad-apiculate, wider than the sepals. Lip apparently shorter than the other segments, suborbicular in outline, 3-lobed near the base; lateral lobes small, auriculate-semiorbicular; mid-lobe much larger, transversely broad-oval, abruptly apiculate; disc with a broad, 7-lobed callus at the base between the lateral lobes. Column very short and stout, with a pair of project, auriculate wings above.

Peru: Habitat not recorded, *Davis s.n.*

Description drawn from a record of the type from the Reichenbach Herbarium. No example of the species was available.

Neodryas rhodoneura Reichb. f. Bot. Zeit. 10: 835. 1852; Xen. Orch. 1: 38, t. 16, fig. II, 12-25. 1854. *Neodryas Mandonii* Reichb. f. Xen. Orch. 3: 21. 1878. *Neodryas latilabia* Smith & Harris, Contrib. Gray Herb. Harvard Univ. 117: 39, figs. a-c. 1937. *Neodryas reniformis* Smith & Harris, Contrib. Gray Herb. Harvard Univ. 117: 39, figs. d-g. 1937.

Plant variable both vegetatively and in floral details, growing on trees or rocks. Rhizome more or less creeping. Pseudobulbs complanate, ovoid (rarely) to narrowly ellipsoid or pyriform-cylindric, unifoliate, 2.5-6 cm. long, invested below by 2 or more pairs of distichous, imbricating sheaths of which the upper ones are leaf-bearing. Leaf on the pseudobulbs petioled; lamina oblong or ligulate to elliptic-oblong, acute or subacute, more or less long-cuneate at the base, up to 28 cm. long and 3.6 cm. wide (often much smaller); petiole to about 7 cm. long, deeply channelled. Scapes lateral, basal, in the axil of an upper sheath, more or less exceeding the leaves, 13-40 cm. or more long; peduncle slender, with 2 to 4 remote, short, tubular, appressed and evanescent sheaths; inflorescence paniculate (very rarely racemose), with more or less numerous, subdensely several-flowered, appressed branches, the rachis commonly 5-15 cm. long. Flowers small, campanulate, purple to pink and white or rarely red-orange. Dorsal sepal strongly concave-cucullate, ovate-elliptic, acute, with the mid-nerve somewhat carinate on the back, about 6.4 mm. long, 3.8 mm. wide when expanded. Lateral sepals about equally long, connate into a deeply concave, oval lamina which is bicarinate without, somewhat broader than the dorsal sepal and bidentate at the apex, forming a pair of rounded, often shortly apiculate lobes. Petals suborbicular-ovate, apiculate, somewhat shorter than the sepals and markedly broader than the dorsal sepal. Lip slightly shorter than the sepals, simple, abruptly deflexed above, somewhat sigmoid when viewed from the side; basal portion incurved, claw-like, short, sometimes more or less angulate or rounded on each side; anterior portion when expanded reniform-ovate, broader than long, more or less cordate at the base, truncate or lightly retuse and sometimes apiculate in front, with the sides more or less undulate and thus apparently lobulate; disc below (through the claw-like base) with an oblong-cuneate central callus which is abruptly dilated (at the base of the anterior portion) into a 4-lobulate callus. Column very short and stout, about 3 mm. or less long at the back, with a pair of porrect, oblong-ovate, sometimes bidentate wings above and just below, with a pair of short, triangular lobes which are joined in front.

Apurimac: Abancai, Quebrada de Quera, 3050 meters, *Vargas 1993*.—Cuzco: Bosques de Choque-Chusco to Mollepata, 3400 meters, *Vargas 1163*. Prov. of Paucartambo, slopes of Pillahuata, 3000 meters, epiphyte in "ceja de la montaña," *Vargas 3663*. Also Bolivia (types of *Neodryas rhodoneura*, *N. Mandonii*, *N. latilabia* and *N. reniformis*).

Neodryas Weberbaueriana (Kränzl.) Schltr. Orchis 12: 90. 1918. *Cochlioda Weberbaueriana* Kränzl. Engler Bot. Jahrb. 54, Beibl. 117: 31. 1916.

Plant variable, epiphytic. Rhizome creeping, more or less abbreviated. Pseudobulbs congested, ovoid to cylindrical and narrowed above, compressed, unifoliate, up to 4 cm. long, invested below by 2 or 3 pairs of distichous, imbricating sheaths of which one or two of the uppermost are leaf-bearing. Leaf on the pseudobulbs much larger and petioled; lamina linear-oblancheolate to oblong or elliptic-oblong, acute and apiculate, more or less long-cuneate below, 5.5–25 cm. long, 9–17 mm. wide; petiole 1–8 cm. long, mostly slender, deeply channelled. Scapes lateral, basal, in the axil of the uppermost sheath, lax especially above, generally somewhat exceeding the leaves but rarely much shorter; peduncle up to 14.5 cm. long, slender, laterally flattened, bearing 2 or 3 remote, very small, tubular, appressed sheaths; flower-cluster racemose or loosely paniculate with 2 or 3 branches, several- to many-flowered, commonly loose below, more or less dense above. Flowers small, campanulate, orange to dark orange-red, on rather long, slender pedicels. Dorsal sepal strongly concave, lanceolate-elliptic to oval-ovate ("oblong"), acute to obtuse, about 7.8–9 mm. long, 4–5.2 mm. wide when expanded. Lateral sepals connate, forming an elliptic or suborbicular lamina which is bicarinate without, nearly as long as the dorsal sepal but markedly wider, bilobed above with rounded or ovate and obtuse to apiculate lobules. Petals broadly ovate to suborbicular, abruptly acute to short-acuminate, slightly shorter than the sepals and about as wide as, or wider than, the lamina of the lateral sepals. Lip strongly sigmoid in natural position, erect at the base, strongly recurved above with the sides of the anterior portion erect and conduplicate when viewed from the side, simple, markedly shorter than the other segments in natural position, obovate-oblong and pandurate in outline when expanded, with the middle portion narrowest, about 6.8 mm. or less long, acute or subacute; disc with a fleshy, spatulate callus (lightly bilobed at the apex) extending from the base to above the middle. Column very short and stout, about 3 mm. high at the back, with an apical pair of porrect, short, triangular or rounded auricles and with a pair of ovate-rounded auricles (joined in front) just below the apical pair.

Huancavelica: Prov. of Tayacaja, Ampurco woods, on trail between Salcabamba and Surcubamba, 2900 meters, common in fog zone forest, flowers waxy, *Stork & Horton 10428*. Montepungo, 5 km. east of Surcubamba, 3000 meters, flowers waxy, *Stork & Horton 10370*.—Huánuco: Yanano, about 1800 meters, on trees, *Macbride 3666* (a smaller and stouter form than typical).—Junín: Prov. of Huancayo, on the left side of the valley of Río Mantaro, above Huachicna, 3100 meters, in sclerophyllous vegetation, *Weberbauer 6549* (type of *Cochlioda Weberbaueriana*).

ODONTOGLOSSUM HBK.

A large genus of tropical American orchids, chiefly epiphytic, extending from Mexico through Central America, locally in the West

Indies and south to Peru and Bolivia, the center of distribution being Colombia.

Plants variable, small and inconspicuous to very large and showy with an abbreviated or creeping rhizome. Pseudobulbs commonly conspicuous, 1- to 3-leaved at the apex, surrounded at the base by one to several pairs of distichous, imbricating, commonly leaf-bearing sheaths. Leaves usually narrow and elongate. Scapes lateral, basal, stout, commonly equaling or surpassing the leaves, racemose, simple-paniculate or compound-paniculate. Floral bracts minute to conspicuous and subequaling the pedicellate ovary, concave. Flowers very small to large and showy, with spreading segments. Sepals subequal, commonly lanceolate or oblong to broadly obovate, free or the lateral sepals rarely connate below. Petals similar to the sepals, commonly shorter and either narrower or broader. Lip simple or 3-lobed, with the basal portion (often narrow and claw-like) erect and commonly parallel with the column and the anterior part more or less sharply reflexed, the margins entire to lacerate or fimbriate; lateral lobes short, erect; mid-lobe entire or emarginate, narrow or very broad; disc below commonly carinate, callose or crested, sometimes with conspicuous tubercles or radiate keels. Column very short to rather elongate, naked or with a pair of simple to lobed or lacerate wings above. Anther terminal, opercular, incumbent, 1-celled or imperfectly 2-celled. Pollinia 2, ovoid, affixed to a narrow stipe.

- A1. Inflorescence racemose or rarely with a short branch at the base. 1
 A2. Inflorescence paniculate, rarely with but a single short branch (in the specimens seen) 21
- Ia. Sepals and petals strongly crisped-undulate. 1
 Ib. Sepals and petals not strongly crisped-undulate, much longer than broad. . . 3
- 1a. Lip with a prominent, free, auricled claw at the base; sepals and petals subacute to acute. *O. Harryanum*¹
 1b. Lip without a prominent, free claw at the base; sepals and petals obtuse to lightly retuse. 2
- 2a. Dorsal sepal oblong, much longer than broad; pseudobulb "linear."
O. brevifolium var. *Weberbauerianum* (*O. Weberbauerianum*)
 2b. Dorsal sepal not oblong (obovate or oblong-obovate), a little longer than broad. *O. brevifolium* (*O. chiriquense*, *O. coronarium*, *O. brachypterum*)
- 3a. Margins of the anterior portion of the lamina of the lip entire or nearly so. . . 4
 3b. Margins of the anterior portion of the lamina of the lip denticulate to lacerate-dentate (rarely undulate-crenate; cf. *O. epidendroides* HBK.) 14
- 4a. Lamina of the lip long-narrowed above (very acuminate). 5
 4b. Lamina of the lip not long-narrowed above, obtuse or retuse to apiculate or acute. 7
- 5a. Disc of the lip with 2 sigmoid, upcurved horns. *O. cirrhosum*
 5b. Disc of the lip with 4 crests or numerous filaments. 6
- 6a. Lip with 4 dentate-lacerate crests near the base; wings of the column more or less lacerate. *O. praestans*
 6b. Lip with numerous slender, more or less branched filaments; wings of the column subentire (subdenticulate above). *O. Hennisii*

¹ In *O. Harryanum* the sepals and petals are merely more or less undulate, but, in order to avoid possible misunderstanding, this concept is included in both branches of the key.

- 7a. Lip distinctly 3-lobed (not pandurate), with the mid-lobe markedly narrower than the basal portion. 8
- 7b. Lip simple or pandurate, if 3-lobulate the apical portion (mid-lobe) nearly as broad as or broader than the basal portion. 10
- 8a. Flowers large, sepals about 2.5 cm. or more long; sepals lanceolate or oblong-elliptic, more or less acuminate; disc of the lip with a digitately lobed callus. *O. digitatum*
- 8b. Flowers small; sepals and petals oblong-cuneate to broadly obovate, rounded to abruptly acute at the apex; disc of the lip with a pair of entire keels or subentire calli. 9
- 9a. Raceme few-flowered; flowers sulphur-colored; lateral sepals carinate below; disc of the lip with a pair of elongate, fleshy calli. *O. anthoxanthum*
- 9b. Raceme many- (10- or more-) flowered; flowers with 2 broad, brown bands on a yellowish ground; lateral sepals not carinate below; disc of the lip with a pair of fleshy, ellipsoid calli. *O. tigroides*
- 10a. Flowers relatively large, sepals about 3.3 cm. or more long. 11
- 10b. Flowers medium-sized to small, sepals about 2 cm. or less long; lamina of the lip not pandurate. 12
- 11a. Lamina of the lip pandurate. *O. Harryanum*
- 11b. Lamina of the lip oblong or elliptic-oblong, not pandurate. *O. epidendroides*
- 12a. Lower, erect portion of the lip broader than the anterior portion (thus no evident claw); disc with a sulcate callus or a pair of simple elongate calli which are free at the apex. *O. graminifolium*
- 12b. Lower, erect portion of the lip much narrower than the anterior part (thus markedly clawed); disc without a pair of simple calli. 13
- 13a. Flowers small, dorsal sepal 7.5 mm. or less long; petals narrowed below. *O. pusillum*
- 13b. Flowers medium-sized, dorsal sepal about 15 mm. or more long; petals much broader below. *O. crocatum*
- 14a. Wings on the column lacerate or pectinate. 15
- 14b. Wings on the column entire or crenulate, at least not lacerate-dentate. 17
- 15a. Flowers relatively large, sepals 4 cm. or more long (rarely smaller); basal callus consisting of a large multipectinate crest. *O. Hallii*
- 15b. Flowers smaller, sepals 3.5 cm. or less long; basal callus consisting of radiating processes. 16
- 16a. Lip rounded and apiculate in front; basal callus with the 4 middle keels much larger and longer than the others and spiny-produced. *O. tripudians*
- 16b. Lip acute or acuminate; basal callus consisting of similar keels. *O. cristatum*
- 17a. Lamina of the lip ovate-lanceolate, lacerate-dentate. *O. lacerum*
- 17b. Lamina of the lip oblong or subquadrate-ovate to pandurate, sometimes broader near the apex, denticulate or crenate. 18
- 18a. Margins of the lip undulate-crenate; lamina obtuse; disc with a 3-tuberculate callus at the base. *O. epidendroides*
- 18b. Margins of the lip denticulate; lamina subacute to acute; disc without a 3-tuberculate callus. 19
- 19a. Lamina of the lip "oval-oblong" or subquadrate-ovate, not contracted on each side. *O. juninense*
- 19b. Lamina of the lip pandurate or dilated at the apex (i.e., contracted on each side). 20

- 20a. Sepals and petals acuminate; basal crest consisting of numerous filiform or setaceous calli; column-wings rhombic. *O. subuligerum*
- 20b. Sepals and petals acute; basal crest bidentate in front with a tooth or apicule on each side; column wings obsolete, crenulate. *O. Hrubyanum*
- 21a. Wings of the column very prominent and spreading, setose or elongate-falcate; sepals and petals long-acuminate. 22
- 21b. Wings of the column not long and prominent, often deflexed or wanting. 24
- 22a. Lip abruptly 3-lobed in the middle; column with a trifold hood at the apex. *O. multistellare*
- 22b. Lip simple or lightly 3-lobulate. 23
- 23a. Sepals and petals white spotted with brown; lip with a pair of diverging horns; column without angles below. *O. cirrhosum*
- 23b. Sepals and petals yellow spotted with brown or purple; lip with four dentate keels; column with a pair of angles below. *O. praestans*
- 24a. Lip pandurate, or with the anterior portion broader than the basal part. 25
- 24b. Lip not pandurate, the anterior portion not broader than the basal part. 29
- 25a. Lamina of the lip broadly obovate; column with apical wings. *O. mystacinum* (*Cyrtochilum mystacinum*, *Odontoglossum rigidum*)
- 25b. Lamina of the lip not broadly obovate; column without noticeable apical wings. 26
- 26a. Flowers relatively large, sepals 1.6 cm. or more long. 27
- 26b. Flowers small, sepals about 8.8 mm. or less long. 28
- 27a. Lip sharply acute or acuminate; basal crests dentate below, 2-toothed above. *O. ringens*
- 27b. Lip very shortly acute; basal crests divided into 3 subequal teeth above. *O. fractiflexum*¹
- 28a. Sepals and petals spatulate or oblong-spatulate; lip very slightly constricted in the middle and very little broader above the middle. *O. obscurum*
- 28b. Sepals and petals oblong-oblongate; lip much constricted in the middle and markedly broader above the middle. *O. pusillum*
- 29a. Outline of the lip 3-lobed, often indistinctly so. 30
- 29b. Outline of the lip simple. 42
- 30a. Base of the lip with a linear, sulcate callus or 2 prominent keels. 31
- 30b. Base of the lip without a linear, sulcate callus or 2 prominent keels. 36
- 31a. Lip obscurely lobulate. 32
- 31b. Lip distinctly 3-lobed or with a conspicuous linear-oblong or lanceolate anterior lobule. 34
- 32a. Flowers small, sepals about 8-10 mm. long; disc of the lip with one sulcate keel or 2 approximate keels ending in diverging lamellae. *O. longipes*
- 32b. Flowers medium-sized to large, sepals 15 mm. or more long. 33
- 33a. Leaves flat in the dried specimen, acute or acuminate. *O. aureo-purpureum*
- 33b. Leaves strongly revolute in the dried specimen, obtuse. *O. revolutum*
- 34a. Flowers large, sepals and petals about 15 mm. or more long; lip contracted into a linear-oblong or lanceolate lobule above. *O. revolutum*
- 34b. Flowers small, sepals and petals about 13 mm. or less long; lip not contracted into a linear-oblong lobule above. 35

¹When specimens of this concept are available, it may not prove to be specifically separable from *O. ringens*.

- 35a. Lateral lobes of the lip semiorbicular; mid-lobe lanceolate-triangular.
O. myrianthum
- 35b. Lateral lobes of the lip rhombic, antrorse; mid-lobe of the lip trapezoid.
O. melanthes
- 36a. Flowers very small, lateral sepals about 5 mm. or less long. 37
- 36b. Flowers larger, lateral sepals 10 mm. or more long. 38
- 37a. Leaves oblong or elliptic-oblong, 6 cm. or less long; panicle short, few-branched, about 5 cm. or less high; dorsal sepal suborbicular. . *O. microthyrsus*
- 37b. Leaves linear or oblong-linear, 14.5 cm. or more long; panicle elongate, many-branched, about 57 cm. long; dorsal sepal obovate-oblong.
O. depauperatum
- 38a. Apex of the lip broad, retuse or subtruncate and apiculate. 39
- 38b. Apex of the lip narrow, oblong, linear-lanceolate to triangular or triangular-cuspidate 40
- 39a. Pseudobulb unifoliate; flowers relatively small, dorsal sepal 1.7 cm. or less long, orange-scarlet; lip bicallous below. *O. retusum*
- 39b. Pseudobulb bifoliate; flower large, dorsal sepal about 2.5 cm. long, pale yellow lined with brown; lip with a single digitately divided callus at the base.
O. digitatum
- 40a. Flowers small, sepals 12.8 mm. or less long; lip less than half as long as the sepals. *O. brevilibium*
- 40b. Flowers relatively large, sepals about 23 mm. or more long; lip nearly as long as the sepals. 41
- 41a. Sepals and petals acuminate; lip 3-lobed in the middle; mid-lobe triangular-cuspidate, long-acuminate. *O. multistellare*
- 41b. Sepals and petals acute; lip 3-lobed below the middle; mid-lobe linear-lanceolate, obtuse to subacute. *O. trilobum*
- 42a. Apex of the lip broad, truncate or retuse and apiculate. *O. retusum*
- 42b. Apex of the lip narrow, at most minutely bilobulate at the tip. 43
- 43a. Flowers very small, sepals 10 mm. or less long; lip simply uncarinate or bicarinate at the base. 44
- 43b. Flowers relatively large, sepals 2 cm. or more long. 47
- 44a. Petals sessile (not distinctly clawed), much broader than the sepals; keels of the lip high. *O. megalophium*
- 44b. Petals clawed or distinctly narrowed below, narrower than the dorsal sepal. 45
- 45a. Inflorescence with a few simple branches (subpaniculate); sepals 6-10 mm. long. 46
- 45b. Inflorescence with numerous, compound branches (compound paniculate); sepals minute, apparently 5 mm. long. *O. myanthum*
- 46a. Leaves over 2 cm. wide; lip bicarinate, with entire margins; column with a pair of small, falcate-oblong wings above. *O. longifolium*
- 46b. Leaves 1.2 cm. or less wide; lip uncarinate, lightly retuse in the middle of each side; column terminating in a pair of blunt, triangular teeth above.
O. obscurum
- 47a. Inflorescence very slender, subpaniculate; lip lacerate; column with a pair of subtruncate wings. *O. lacerum*
- 47b. Inflorescence broad, spreading-paniculate; lip not lacerate; column wingless. 48

- 48a. Base of the lip with a pair of membranaceous, serrate to dentate keels and with a long central keel which is flanked in front by a pair of sharp teeth or horns. *O. angustatum* (*O. bellum*, *O. Loesenerianum*, *O. tetraplasium*)
- 48b. Base of the lip with a pair of fleshy, entire keels with a successive series of 3¹ and 2 fleshy calli. *O. aureo-purpureum* (*O. compactum*, *O. Koehleri*)

Odontoglossum angustatum Lindl. Bot. Reg. 23: sub t. 1992. 1837; Fol. Orch. Odontoglossum 17, no. 48. 1852. *Odontoglossum tetraplasium* Reichb. f. Gard. Chron. n. ser. 3: 558. 1875. *Odontoglossum bellum* Schltr. Fedde Repert. Beih. 9: 108. 1921; Mansf. Fedde Repert. Beih. 57: t. 127, nr. 499. 1929. *Odontoglossum Loesenerianum* Schltr. Fedde Repert. Beih. 9: 110. 1921; Mansf. Fedde Repert. Beih. 57: t. 128, nr. 502. 1929.

Plant stout, very variable. Pseudobulbs strongly complanate, cylindric to ellipsoid or ovoid, commonly bifoliate, about 8 cm. or less long, surrounded by 1-5 pairs of distichous, imbricating, conduplicate sheaths of which the upper ones are leaf-bearing. Leaves oblanceolate or oblanceolate-oblong, acute, sessile at the gradually narrowed, conduplicate base, very variable in size, up to 42 cm. long and 4.5 cm. wide (the outer ones on each side successively smaller). Scapes lateral, basal, stout, commonly much surpassing the leaves, many-flowered, with a narrow (short-branched) or widely spreading (long-branched) panicle above. Flowers rather large with widely spreading segments, yellow (sometimes greenish or brownish) commonly with brown spots. Sepals and petals more or less long-acuminate with undulate margins. Dorsal sepal lanceolate, elliptic-lanceolate or narrowly lanceolate, concave, up to 3.5 cm. long and 8 mm. wide below, often with involute margins. Lateral sepals linear-lanceolate, more or less conduplicate, carinate, subequally long but markedly narrower than the dorsal sepal. Petals lanceolate or ovate-lanceolate, slightly oblique, markedly shorter than the dorsal sepal but wider. Lip variable, ovate to ovate-oblong or oblong (sometimes slightly narrowed on each side in the middle), short-clawed at the base, with the basal portion subparallel to the column and the anterior portion spreading, acute (rarely) to long-acuminate, about 2.7 cm. or less long and 1.1 cm. or less wide below (subequaling the petals), provided near the base with a crest consisting of a pair of relatively large, high, irregularly serrate-dentate or lacerate keels separated by a pair of smaller, fleshy, narrow calli and in front of these by an elongate, central, laterally flattened callus on either side of which are single (sometimes two) tubercles or triangular horns. Column small, straight, dilated above, wingless, about 1.2 cm. or less high at the back.

Peru: Habitat not recorded, *Davis s.n.* (type of *O. tetraplasium*).—Ayacucho: Prov. of Huanta, Choimacota Valley, 2900-3000 meters, in evergreen forest, *Weberbauer 7547*.—Cuzco: Prov. of Convención, from Quellomayo to Lucumayo, 2800 meters, *Vargas 4498*. Prov. of Paucartambo, slopes of Pillahuata, 2900 meters, "ceja de montaña," epiphytic in rain-forest, *Vargas 3664*. "Pillahuata," Cerro de Cusilluyoc, 3000-3300 meters, epiphyte in thicket, *Pen-*

¹ Often this series of three calli has a lateral tooth on each side.

nell 14137. Prov. of Urubamba, on trail from Puyupata to Sayamarca, 3600 meters, terrestrial, *Vargas 2888*. Prov. of Quispicanhis, Marcapata, 2900 meters, in "bushwood consisting of high shrubs and small trees, with many hard-leaved types," *Weberbauer 7797* (this collection is rather abnormal in lacking apparent pseudobulbs and in having somewhat dissimilar details of the basal crest).—Huánuco: Huallaga, near Chaglla, 3200 meters, *Weberbauer 6693*.—Junín: Wall of the valley of Río Mantaro above Huachica, 3100 meters, *Weberbauer 6550* (type of *O. Loesenerianum*).—Loreto: Moyobamba, *Filomeno s.n.* (type of *O. bellum*). Also Colombia and Ecuador (type of *O. angustatum*).

***Odontoglossum anthoxanthum* Reichb. f. Gard. Chron. (1869) 388.**

Vegetative portions lacking. Raceme fractiflex, few-flowered. Floral bracts triangular, acute, half as long as the pedicellate ovary. Flowers small, sulphur-colored. Dorsal sepal obovate-oblong or cuneate-oblong, abruptly acute. Lateral sepals longer, narrower, dorsally carinate. Petals obovate ("cuneato-ovatis"), apiculate, apparently similar to the dorsal sepal. Lip ovate when expanded, with the lower part parallel to the column and the anterior part spreading with an incurved apex, sharply 3-lobed in the middle, subcordate at the base; lateral lobes narrow, with an abbreviated, rounded free apex; mid-lobe triangular-ovate ("semiligulato"), apiculate; disc with a pair of stout, parallel keels diverging in front, extending from the base of the lip to the base of the mid-lobe. Column short, stout, with a pair of ligulate, upcurved, erect and acute wings above.

Peru (probably): Habitat and collector not recorded, introduced by Messrs. Backhouse & Son of York, England.

In the Ames Herbarium is a floral analysis of this species from the Reichenbach Herbarium.

***Odontoglossum aureo-purpureum* (as *auropurpureum*) Reichb. f. *Linnaea* 22: 848. 1849; Lindl. *Fol. Orch. Odontoglossum* 15, nr. 44. 1852; C. Schweinf. *Bot. Mus. Leaf. Harvard Univ.* 14: 63. 1949. *Odontoglossum compactum* Reichb. f. *Gard. Chron. n.s.* 3: 492. 1875. *Odontoglossum Koehleri* Schltr. *Fedde Repert. Beih.* 9: 109. 1921; Mansf. *Fedde Repert. Beih.* 57: t. 128, nr. 501. 1929.**

Plant very large and stout, about 2.5 meters or less tall, terrestrial or epiphytic. Pseudobulbs oblong-ovoid or cylindrical, complanate, about 6 cm. or more long, bifoliate, surrounded at the base by one or more pairs of conduplicate, leaf-bearing sheaths. Leaves oblong or linear-oblong to lorate, flat, narrowed above to an acute or acuminate apex, more or less narrowed below to a conduplicate base, about 28–70 cm. long, up to 3.2 (rarely 4.2) cm. wide (some blades very much smaller), rigid and coriaceous. Inflorescence lateral, basal, very large and stout, much surpassing the leaves, terminating in a many-flowered, much-branched panicle which

is simple or compound, loose or dense. Flowers rather large, with wide-spreading segments, yellow commonly with purple, red or brown spots. Sepals and petals more or less recurved and circinate above, with undulate margins. Dorsal sepal lanceolate (rarely ovate-lanceolate), conduplicate at the narrowed (clawed) base and the upper portion, long-acuminate, about 2–3.6 cm. long and 6–8 mm. wide when expanded. Lateral sepals linear-lanceolate (or lanceolate), acuminate, dorsally carinate, connate at the very base, about as long as the dorsal sepal (or slightly longer) but narrower. Petals obliquely lanceolate, acuminate, unguiculate-narrowed with a flat and broad base, markedly shorter and broader than the dorsal sepal. Lip lanceolate, sessile, with the lower portion erect and parallel to the column, the middle portion abruptly recurved and the acuminate upper portion more sharply recurved, the lower margins being lobulate-crenate and undulate, nearly equaling the petals when expanded, about 1.8–2.8 cm. long, up to 1 cm. wide below; disc with a prominent basal crest which consists of a pair of high, fleshy keels or a sulcate callus separated by a lower linear callus, in front of which is a series of 3 or 5 subequal, more or less lobulate calli and in front of these 2 larger, complanate-ovoid or ellipsoid calli. Column relatively small, slightly dilated above and below, about 1 cm. or less high at the back, wingless.

Peru: Habitat not recorded, *Lobb, Pearce & Davis s.n.* (type of *O. compactum*).—Cuzco: Prov. of Urubamba, Puyupatamarca, 3600 meters, close to ancient ruins, *Vargas 2879*. Same locality, near Wenner Gren ruins, 3400–3600 meters, in very wet places in moss and on trees, *Metcalf 30742*.—Junín: Chanchamayo, *Köhler s.n.* (type of *O. Koehleri*). Also Colombia (type of *O. aureo-purpureum*) and Venezuela.

Odontoglossum brevifolium Lindl. Benth. Pl. Hartw. 152. 1844; Fol. Orch. *Odontoglossum* 21, no. 61. 1852; Hook. f. Bot. Mag. 125: t. 7687. 1899. *Odontoglossum chiriquense* Reichb. f. Bot. Zeit. 10: 692. 1852; P. H. Allen, Ann. Mo. Bot. Gard. 36: 158. 1949. *Odontoglossum coronarium* Lindl. Fol. Orch. *Odontoglossum* 21, no. 60. 1852; Batem. Monog. *Odontoglossum*, t. 27. 1874. *Odontoglossum brachypterum* Reichb. f. Linnaea 41: 26. 1876. *Odontoglossum coronarium* var. *chiriquense* Veitch, Man. Orch. Pl. 1: 23. 1886. *Odontoglossum coronarium* var. *miniatum* Veitch, l.c. *Odontoglossum miniatum* Hort. ex Veitch, l.c. *Odontoglossum candelabrum* Hort. Linden ex Veitch, l.c.

Plant large, stout, very variable, with a robust, creeping rhizome (often not present in the dried material) concealed by close, imbricating, scarious sheaths. Pseudobulbs more or less distant, complanate, ovoid to cylindric-ovoid (rarely suborbicular), unifoliate, about 4–11 cm. high, surrounded at the base by 2 or more pairs of distichous, imbricating sheaths of which the upper pair is commonly leaf-bearing. Leaves oval to elliptic-oblong (sometimes conduplicate in the dried specimen), retuse to subacute at the apex, more or less cuneate-narrowed into a conduplicate petiole, about 10–30 cm. long, up to 9 cm. wide. Inflorescences stout,

commonly erect but sometimes nodding above, several- to many-flowered, usually more or less surpassing the leaves, up to 60 cm. high. Flowers large and conspicuous, brown edged with yellow or yellow blotched with reddish brown; column white spotted with purple. Sepals with widely spreading segments, having crisped-undulate margins. Dorsal sepal obovate or oblong-obovate ("orbicular and clawed"), obtuse or generally retuse, about 1.6–3 cm. long, 1.6–2 cm. wide above. Lateral sepals obovate-oblong, slightly oblique, somewhat longer and narrower than the dorsal sepal. Petals obovate to elliptic-oblong, retuse or obtuse to subacute, subequal to the sepals (sometimes broader or narrower), rarely slightly indented on each side above (and thus subpandurate). Lip somewhat shorter than the other segments, 3-lobed or pandurate in outline, about 1.7–2.5 cm. long, with the basal part suberect and parallel to the column and usually conspicuously narrower than the apical part; lateral lobes (at the base) small, erect, semiovate (often subtriangular), rounded at the apex; mid-lobe relatively large, cuneate to obovate, broadly rounded, retuse or prominently bilobed at the apex, 0.5–1.5 cm. wide; disc with a small, fleshy keel, a smaller, transverse, retuse to subacute callus immediately in front and a pair of fleshy calli at the inner base of the lateral lobes. Column short, stout, about 8 mm. high at the back, with a conspicuous wing above which is more or less trilobed and denticulate (especially toward the apex).

Southern Peru: Habitat not recorded, *Pearce 48* (type of *O. brachypterum*).—Cajamarca, fide Schlechter, *Fedde Repert. Beih.* 9: 170. 1921.—Huánuco: Prov. of Huánuco, Carpish Pass, about 3000 meters, *Hodge 6283*. Same locality, terrestrial in boggy clearing, *Hodge 6276* (the flowers of this number are too old for examination).—Junín: Chanchamayo Valley, 1800 meters, *Schunke s.n.* (Herb. CNHM 571635; this collection is abnormal in having a broader pseudobulb and a rather dissimilar lip). Also Costa Rica, Panama (type of *O. chiriquense*), Colombia (type of *O. coronarium*), Ecuador (type of *O. brevifolium*), and Venezuela.

Odontoglossum brevifolium Lindl. var. **Weberbauerianum** (Kränzl.) C. Schweinf. Bot. Mus. Leaflet. Harvard Univ. 14: 64. 1949. *Oncidium Weberbauerianum* Kränzl. Engler Bot. Jahrb. 37: 389. 1906. *Cyrtochilum Weberbauerianum* Kränzl. Notizbl. Bot. Gart. Berlin 7: 95. 1917, *nomen nudum*; Engler, Pflanzenr. IV. 50, pt. 2 (Heft 80), 60, fig. 5H, a–c. 1922. *Odontoglossum Weberbauerianum* Schltr. Fedde Repert. Beih. 27: 109. 1924.

This concept differs from the species in having narrower ("linear") pseudobulbs, in having oblong (not oval or oblong-elliptic) leaves, and in having oblong sepals which appear to be much longer than wide.

Amazonas: Molinopampa, east of Chachapoyas, 2000–2300 meters, apparently epiphytic in open places in sclerophyllous vegetation, *Weberbauer 4358* (type of *Oncidium Weberbauerianum*).

No record of this taxon has been seen.

Odontoglossum brevilabium C. Schweinf. Am. Orch. Soc. Bull. 18: 578, t., 1949. Figure 163.

Plant large, epiphytic, with a stout rhizome. Pseudobulb cylindric, complanate, slender, about 14 cm. high, bearing three leaves above, surrounded on either side of the base by three spreading, imbricating, conduplicate sheaths which are successively larger upward and mostly leaf-bearing. Leaves spreading, lanceolate-oblong or ligulate, sharply acute, slightly narrowed below with a conduplicate base, with the mid-nerve sulcate above and carinate beneath, those on the pseudobulb larger, up to 42.6 cm. long and 2.5 cm. wide. Inflorescence basal in the axil of an inner sheath, paniculate above, about 57 cm. high; peduncle lightly complanate, about 32 cm. high, provided with three remote, short, infundibuliform sheaths; panicle virgate, loosely many-branched with the branches loosely forking; bracts broadly ovate, acute or acuminate, up to 12 mm. long at the base of the panicle. Flowers small, numerous, yellow, very loosely arranged on a more or less fractiflex rachis. Perianth segments widely spreading, fleshy. Sepals acuminate, longitudinally concave. Dorsal sepal narrowly oblong-oblancoate, about 10–12 mm. long and 2.2–3.2 mm. wide. Lateral sepals narrowly and obliquely elliptic-lanceolate, about as large as the dorsal sepal. Petals obliquely oblong-lanceolate, short-acuminate, distinctly shorter and somewhat narrower than the sepals. Lip strongly adnate to the column below; lamina abruptly recurved or reflexed, sharply 3-lobed above the middle, about 4 mm. long and slightly broader when expanded; lateral lobes relatively large, semiorbicular, lightly recurved; mid-lobe short, triangular, fleshy, porrect or lightly reflexed; disc in the center with a large, indistinct, papillose thickening which is slightly depressed across the middle. Column very short and stout, terminating in a large, cucullate, irregularly dentate wing, 4.9–5.5 mm. high at the back.

Junín: Prov. of Tarma, Agua Dulce, 2000 meters, on tree in low highland forest, *Woytkowski 35489*.

Odontoglossum cirrhosum Lindl. Gen. & Sp. Orch. 211. 1833; Fol. Orch. *Odontoglossum* 3, no. 5. 1852; Hook. f. Bot. Mag. 103: t. 6317. 1877; Cogn. & Goos. Dict. Icon. Orch. *Odontoglossum* t. 9. 1897. *Oncidium cirrhosum* Beer, Prakt. Stud. Orch. 284. 1854.

Plant large, with an apparently abbreviated rhizome. Pseudobulb oblong-ovoid, strongly compressed, unifoliate, 5–8 cm. high, surrounded below by about 3 pairs of distichous, imbricated, conduplicate, mostly leaf-bearing sheaths. Leaves linear-oblong to elliptic-oblong, acute, narrowed to a conduplicate base, 10–30 cm. long, about 2.8 cm. wide. Scape lateral, basal, much surpassing the leaves; peduncle with several short, clasping, infundibuliform-cylindric sheaths; inflorescence rather slender, simple or more commonly a many-branched panicle, many-flowered. Flowers large, with widely spreading segments, milk-white with brown blotches on the sepals, petals and mid-lobe of the lip, and with the basal part of the lip yellow lined with red. Dorsal sepal narrowly lanceolate, long-acuminate, terminating in a recurved, cirrhose point, about 4 cm. long and 7 mm. wide, with the margins somewhat undulate. Lateral sepals very similar, slightly longer, somewhat oblique. Petals rhombic-lanceolate, long-acuminate, markedly shorter than the sepals and almost twice as broad. Lip about two thirds as long as the petals, about 3 cm.

ODONTOGLOSSUM

brevilabium

C. Schweinf.



FIG. 163. *Odontoglossum brevilabium* C. Schweinf. 1, plant; $\times \frac{1}{2}$. 2, portion of the inflorescence; $\times \frac{1}{2}$. 3, flower from side; $\times 1\frac{1}{2}$. 4, dorsal sepal; $\times 2$. 5, petal; $\times 2$. 6, lip from above; $\times 2$.

long when expanded, with the convolute basal portion erect and clasping the column, 3-lobed near the base; lateral lobes broadly rounded, erect-spreading, denticulate; mid-lobe recurved, elongate, narrowly triangular-lanceolate, long-acuminate; disc with a pair of sigmoid-ascending horns between the lateral lobes. Column straight, dilated upward, about 1 cm. long at the back, with a pair of triangular-linear, ascending tendrils at the apex.

Ecuador (type). Peru(?), fide Schlechter, Fedde Repert. Beih. 9: 170. 1921.

Odontoglossum cristatum Lindl. Benth. Pl. Hartw. 152. 1844; Fol. Orch. *Odontoglossum* 18, no. 53. 1852; Rolfe, Bot. Mag. 145: t. 8809. 1919. *Oncidium cristatum* Beer, Prakt. Stud. Orch. 283. 1854.

Plant rather large, epiphytic, apparently with an abbreviated rhizome. Pseudobulb oblong-ellipsoid to ovoid-cylindric, rarely ovoid, compressed, 3-8 cm. long, bifoliate, surrounded below by 2 pairs of distichous, imbricated, conduplicate, leaf-bearing sheaths. Leaves lorate (rarely oblong-elliptic), more or less acute, slightly narrowed toward the conduplicate base, gently arcuate, commonly 15-22 cm. long, 1.8-2 cm. wide. Scapes basal, axillary, arcuate, exceeding the leaves, 25-33 cm. long, terminating in a laxly many-flowered raceme. Flowers rather large and showy, with widely spreading segments, yellow spotted and blotched with red. Sepals and petals very similar, elliptic-lanceolate, acuminate, 2.5-3 cm. long, about 9 mm. wide, the lateral sepals and petals slightly oblique. Lip with the claw-like basal portion erect and parallel to the column, cuneate, about 8 mm. long; lamina geniculate-reflexed, ovate or broadly pandurate-oblong, acute or acuminate, irregularly fimbriate-dentate and about 1.5 cm. long; disc at the base with a palmately many-lobed crest of which the anterior divisions are broader. Column arcuate, about 1.5 cm. high, membranaceous-margined below, with a pair of rounded, irregularly fimbriate wings above.

Cajamarca, fide Schlechter, Fedde Repert. Beih. 9: 170. 1921. Ecuador (type) and Colombia.

Odontoglossum crocatum Linden & Reichb. f.¹ Gard. Chron. (1867) 404.

Plant apparently large (only the pseudobulbs and the flowering raceme are illustrated in the Reichenbach Herbarium and only the flower is described). Pseudobulbs aggregated, strongly compressed, ovoid, ellipsoid or ovoid-oblong, 2-5.5 cm. long. Peduncles slender, with few, very small, tubular-infundibuliform, remote sheaths. Raceme loosely several- (6- to 7-) flowered, with very small bracts and elongate, arcuate, pedicellate ovaries. Flowers rather small, bright yellow, with widely spreading segments. Dorsal sepal lanceolate or ovate-lanceolate ("oblong"), "acute" or acuminate, about 1.7 cm. long and 7 mm. wide. Lateral sepals similar, semiconnate, slightly oblique. Petals very similar to the sepals

¹ This species is very close to *O. mystacinum* (Lindl.) Lindl., and when actual material is available, it may prove to be conspecific. For the present, *O. crocatum* appears to be separable by having a simple, not paniculate inflorescence; by having the lateral sepals semiconnate, not mostly free; and by having the wings of the column linear and serrate on the lower margin, rather than broad and multifid.

and subequal, rounded ("subcordate") at the base. Lip much larger than the other segments, nearly 2 cm. long and 1.5 cm. wide; claw short, narrow, subparallel to the column; lamina broadly obovate with an abrupt, subquadrate basal portion or "cordate-pandurate," prominently apiculate; disc at the base with abrupt keels in front of which are 2 series of papillae ("apicules") on each side. Column very small, about 6 mm. high, with a pair of wings which are linear and serrulate below.

"Peru," fide Schlechter, Fedde Repert. Beih. 9: 170. 1921. Introduced by M. Linden.

In the Ames Herbarium is a drawing of this species from the Reichenbach Herbarium.

Odontoglossum depauperatum Kränzl. Engler, Bot. Jahrb. 37: 391. 1906. *Cyrtochilum depauperatum* Kränzl. Notizbl. Bot. Gart. Berl. 7: 98. 1917, *nomen nudum*, in key; Kränzl. Engler, Pflanzenr. IV. 50 (Heft 80), 75, fig. 8D, a-c. 1922.

Plant large, slender, epiphytic, apparently with an abbreviated rhizome. Pseudobulbs aggregated, ellipsoid-cylindric ("linear"), unifoliate, up to 4 cm. long, surrounded below by 4 or 5 pairs of distichous, imbricating, conduplicate, mostly leaf-bearing sheaths. Leaves linear or oblong-linear, acute or short-acuminate, narrowed below to a conduplicate base (the lamina on the pseudobulb with an elongate, narrow, basal portion), up to 20 cm. long and 1.5 cm. wide. Scape lateral, axillary, very long, much surpassing the leaves, over 94 cm. in length; peduncle with few, very short, tubular-infundibuliform sheaths; panicle elongate, about 57 cm. long, very loosely paniculate, with many short, distichous, simple or compound branches which are several- to many-flowered, the floral axes being lightly fractiflex. Flowers very small, with widely spreading or reflexed segments, pale dull yellowish spotted with brown. Sepals obovate-oblong, short-clawed, shortly acute, about 4.5 mm. long and 1.5 mm. wide, the lateral sepals more or less oblique, carinate without. Petals about equally long with the sepals but markedly broader, subspatulate, about 2.5 mm. wide. Lip sessile, 3-lobed, about 3.5 mm. long and scarcely 2 mm. wide at the base; lateral lobes semiorbicular, membranaceous, reflexed; mid-lobe linear, excavated (cymbiform), obtuse; disc having a fleshy, somewhat wrinkled callus at the base with 2 globose warts in front. Column very short, with rather broad, acute wings.

Amazonas: East of Chachapoyas, between Tambo Ragazán and Almirante, 2700-2800 meters, in dense woods consisting of high trees and low shrubs, *Weberbauer 4443*.

In the Ames Herbarium there is a photograph of the type.

Odontoglossum digitatum C. Schweinf. Am. Orch. Soc. Bull. 14: 208, t., 1945. Figure 164.

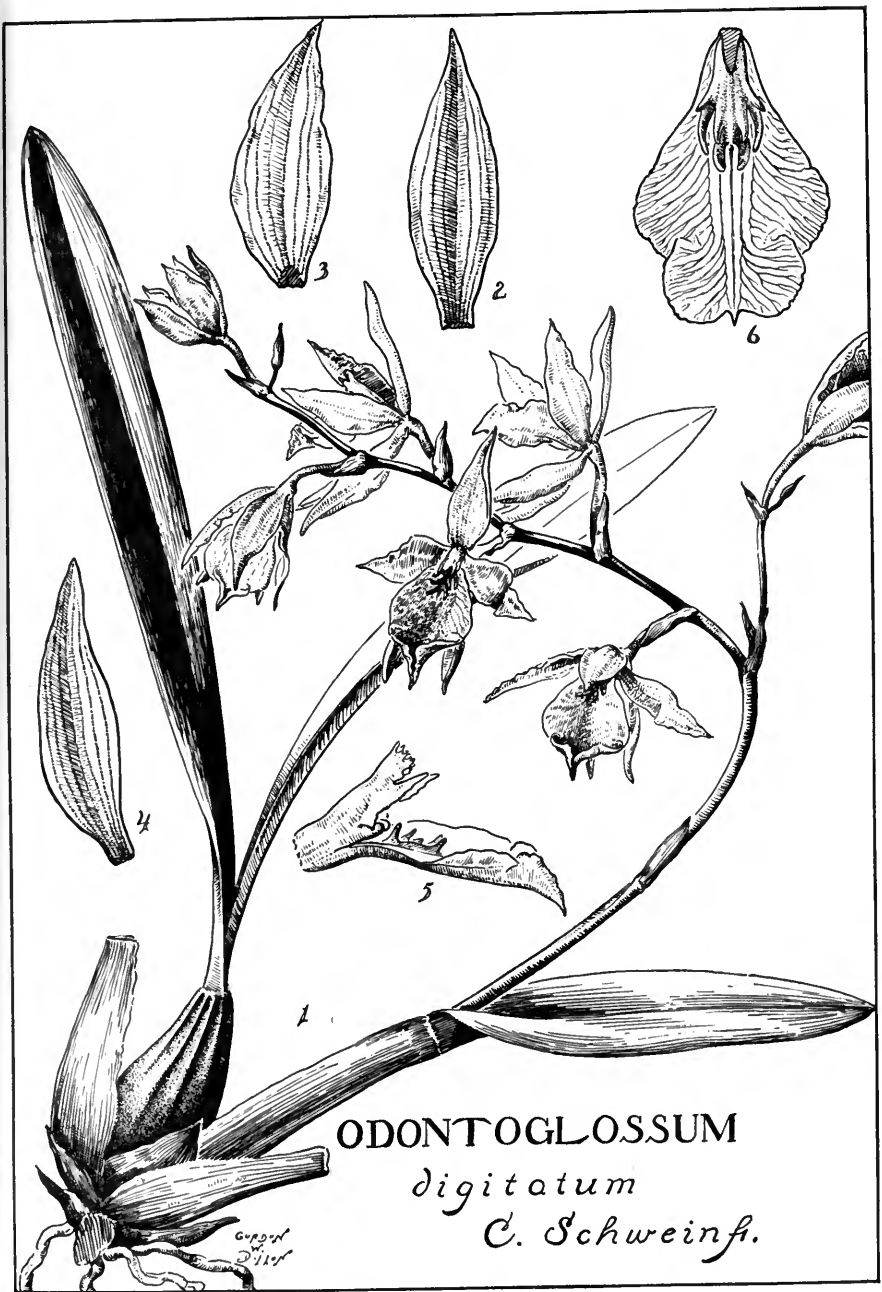
Plant epiphytic, medium-sized, apparently with an abbreviated rhizome. Pseudobulb complanate-ovoid or pyriform, bifoliate, about 4.6 cm. high, surrounded below by 3 pairs of distichous, imbricated, conduplicate sheaths of which the two

uppermost bear relatively small, oblong, sessile leaf-blades. Leaves (on the pseudobulb) oblong or oblong-oblancheolate, acute, more or less long-narrowed to a slender, conduplicate base, 16–17.8 cm. long, up to 2 cm. wide. Scape lateral, basal in the axil of the uppermost sheath, arcuate above; peduncle stout, apparently complanate, about 17 cm. high, with a single close, tubular sheath above; flower-cluster very loosely 8-flowered, simply racemose except for a short, lateral, 2-flowered branch at the base, lightly fractiflex. Flowers medium-sized for the genus, pale yellow with brown lines. Perianth segments spreading. Dorsal sepal oblong-elliptic or elliptic-lanceolate, concave, acute or subacuminate, about 2.6 cm. long and 9 mm. wide. Lateral sepals mostly free (connate only near the base), elliptic-oblong, lightly oblique, acute or subacuminate, slightly longer and narrower than the dorsal sepal. Petals lanceolate-elliptic, acuminate, mucronate, lightly oblique, a little shorter and sometimes narrower than the dorsal sepal. Lip somewhat shorter than the sepals, with the sides of the anterior part incurved in natural position, rhombic-obovate in outline from a slender, cuneate base, about 2.4 cm. long and 1.8 cm. wide, sharply 3-lobed (with overlapping lobules) near the apex, truncate-retuse and sharply mucronate at the tip; anterior portion (mid-lobe) transversely oval-oblong, about 6.2 mm. long and nearly 1.3 cm. wide when expanded; disc with a fleshy callus (extending from the base nearly to the middle), 4-lobed or 3-lobed near the middle with the mid-lobe deeply bilobed, each of the 4 lobules digitately 2-divided. Column short, stout, lightly recurved, terminating in a large, 3-lobed clinandrium of which the middle lobule is broad and lacerate-dentate and the lateral lobules triangular-lanceolate, about 11.8 mm. high at the back including the deep clinandrium.

Cuzco: Prov. of Paucartambo, Pillahuata, 3200 meters, in rain-forest, Vargas 3040.

Odontoglossum epidendroides HBK. Nov. Gen. et Sp. 1: 351, t. 85. 1816; Reichb. f. Xen. Orch. 1: 59, t. 22, fig. II, 1, 2. 1854; Cogn. Martius Fl. Bras. 3, pt. 6: 254. 1905. *Oncidium epidendroides* Beer, Prakt. Stud. Orch. 285. 1854.

Plant large, epiphytic. Pseudobulb oblong-ovoid or ellipsoid, strongly compressed, bifoliate, 5–6 cm. long, surrounded below by one or several pairs of distichous, commonly leaf-bearing sheaths. Leaves oblong-elliptic to narrowly oblancheolate (“lanceolate”), more or less acute, long-narrowed below, 17.8–30 cm. long, 2–3 cm. wide. Scape lateral, basal, in the axil of a sheath, stout, about 45 cm. or less high, erect below, rather flexuous above, terminated by a very loose, several-flowered raceme. Pedicellate ovary elongate, arcuate, 3.5–5 cm. long, much surpassing the bract. Flowers large, with widely spreading segments. Sepals and petals yellow with 3 purplish spots, of which the middle one is very large. Sepals similar, narrowly elliptic-lanceolate (“lanceolate”), short-acuminate, lightly undulate, the lateral sepals slightly oblique, 3.5–3.7 cm. long, 6–7 mm. wide. Petals similar to the sepals, acute, subequally long but slightly wider than the sepals, suboblique. Lip somewhat shorter than the sepals, white; claw linear, erect and parallel to the column, 9–11 mm. long; lamina abruptly reflexed, oblong or elliptic-oblong, obtuse or subobtuse, crenate-undulate or serrulate, 13–16 mm. long, 6–7 mm. wide; disc through the lower half with a linear-oblong callus produced into 2 acute, flattened teeth separated by a much shorter tooth, and with 1–3 mi-



ODONTOGLOSSUM
digitatum
 C. Schweinf.

FIG. 164. *Odontoglossum digitatum* C. Schweinf. 1, plant; $\times \frac{2}{3}$. 2, dorsal sepal; $\times 1\frac{1}{2}$. 3, petal; $\times 1\frac{1}{2}$. 4, lateral sepal; $\times 1\frac{1}{2}$. 5, lip and column from side; $\times 1\frac{1}{2}$. 6, lip, spread out; $\times 1\frac{1}{2}$.

nute, dentiform calli on each side below. Column slender, clavate, incurved above, with a pair of semiorbicular, sometimes bilobed, auricles above, 18–19 mm. long.

Prov. of Bracamoros: Between the Amazon River and the city of Jaën, 480 meters, in rather warm locality, *Humboldt & Bonpland s.n.*—Amazonas, Junín, fide Schlechter, Fedde Repert. Beih. 9: 170. 1921.

No example of this species was available.

Odontoglossum flavescens Rolfe, Orch. Rev. 12: 92. 1904.

This is an obscure species, since there is no description of the vegetative parts and a very indefinite description of the floral segments. Accordingly, it is not entered in the key.

A photograph of the type in the Ames Herbarium furnishes, together with the original description, the following skeleton diagnosis:

Plant large. Pseudobulbs apparently fusiform, bifoliate, about 8 cm. long. Leaf linear-lorate, acute, about 52 cm. long and 2.4 cm. wide. Inflorescence paniculate, that in the specimen illustrated showing 2 divaricate branches about 5 cm. apart, each one loosely 5-flowered. Flowers secund, with the slender pedicellate ovary up to 2 cm. long. Floral segments small, elliptic-oblong, subconnivent, about 1 cm. long, clear yellow. "Lip rounded below, with an oblong obtuse apex, and a very large and prominent two-lobed crest, which is appressed to the column at the base."

Peru and Ecuador: Habitat not cited, introduced by Messrs. F. Sander & Company.

Odontoglossum fractiflexum Kränzl. Engler, Bot. Jahrb. 37: 390. 1906.

Plant large, apparently with an abbreviated rhizome. Pseudobulbs narrowly cylindrical, subcompressed, unifoliate, up to 8 cm. high, entirely concealed in youth by 5 or 6 pairs of distichous, imbricating, conduplicate sheaths of which the upper ones are successively longer and bear larger leaf-blades. Leaves linear-oblancoelate, acute or short-acuminate, long-narrowed below with a conduplicate sessile base, up to 40 cm. long and 2 cm. wide (those on the sheaths shorter and less narrowed below). Scape lateral, basal, in the axil of a sheath, somewhat longer than the leaves, up to 50 cm. in length, bearing through the upper half a loose panicle which is about 26 cm. long in natural position, the rachis (especially of the few-flowered branches) very strongly fractiflex. Pedicellate ovary slender, elongate, much exceeding the minute bracts. Flowers yellow, with widely spreading segments, the sepals and petals lightly undulate on the margins, with a recurved apex. Dorsal sepal elliptic-lanceolate or oblong-lanceolate, acute or acuminate, concave, 1.6–2 cm. long. Lateral sepals similar, appearing somewhat longer. Petals lanceolate-elliptic, flat, similar to the sepals but slightly shorter and wider, apparently dark-lined. Lip oblong-pandurate, with the narrower basal portion subparallel to the column, shortly acute, about 1.8 cm. or less long and 8 mm. wide near the

front; disc below with a pair of rather high keels passing into 3 subequal teeth toward the apex and with a short keel or large tooth between the keels. Column angled slightly above the middle, wingless.

Puno: Between Sandía and Cuyocuyo, 2500–2800 meters, on cliffs and on trees, *Weberbauer 871*.

In the Ames Herbarium there is a photograph of the type.

Odontoglossum graminifolium C. Schweinf. Am. Orch. Soc. Bull. 15: 30, t., 1946. Figure 165.

Plant slender, epiphytic, about 28 cm. high. Pseudobulbs rudimentary, unifoliate, entirely concealed by several pairs of distichous, conduplicate, leaf-bearing sheaths of which the inner ones are much larger with larger blades. Leaves linear, acuminate, gradually narrowed below to a more or less elongate, conduplicate base, up to 25.5 cm. long and 9 mm. wide (leaf on the pseudobulb), the outer blades very short. Scapes lateral, in the axils of sheaths, gently arcuate, about 25 cm. or less long; peduncle slender, with about 4 very small, tubular or infundibuliform sheaths; raceme loosely 7-flowered, about 6 cm. long. Flowers very small for the genus, yellow, with spreading segments. Dorsal sepal oblong-ob lanceolate, acute, mucronate, concave below, 7–7.6 mm. long, about 2 mm. wide. Lateral sepals linear-ob lanceolate, subparallel and connate near the base, acute, mucronate, longitudinally concave, carinate, somewhat longer and slightly narrower than the dorsal sepal. Petals broadly and obliquely oblong, acute, distinctly shorter and wider than the dorsal sepal. Lip with the lower portion (to above the middle) erect and parallel to the column and the anterior part abruptly reflexed, ovate-lanceolate in outline, concave at the base, rounded or subtruncate and minutely apiculate at the apex, about 8 mm. long and 4.5–5.6 mm. wide near the base when expanded; disc with a large, median, sulcate callus extending to above the middle and terminating in a pair of free, ovoid apices. Column very short and stout, clavate, about 3.5 mm. high at the back, with a pair of large porrect, semiovate wings which are indented near the apex.

Cuzco: Prov. of Convención, "alturas de Pintobamba," 2700 meters, *Vargas 3257*.

Odontoglossum Hallii Lindl. Bot. Reg. 23: sub t. 1992. 1837; Fol. Orch. *Odontoglossum* 3, no. 6. 1852; Batem. Monog. *Odontoglossum* t. 21. 1874; Hook. f. Bot. Mag. 102: t. 6237. 1876.

Plant large, variable, epiphytic, with an abbreviated rhizome. Pseudobulbs ovoid or oblong-ovoid, strongly compressed, unifoliate or bifoliate, 5–10 cm. long, surrounded below by 2 or 3 pairs of distichous, leaf-bearing sheaths. Leaves elliptic-oblong or oblong-ob lanceolate, 13.7 to over 30 cm. long, 1.9–4.5 cm. wide, acute, more or less narrowed to a conduplicate, often petiole-like base. Scape lateral in the axil of a sheath, more or less surpassing the leaves; peduncle with a few remote, short, tubular-infundibuliform sheaths; flower-cluster commonly racemose, rarely somewhat branched, loosely 4- to 20-flowered, 30–90 cm. tall, with the rachis more or less fractiflex. Flowers large, with widely spreading segments. Sepals and petals yellow with spots and blotches of purplish brown; lip white with a

few dark spots and a large yellow crest. Dorsal sepal lanceolate, elliptic-lanceolate or "ovate-lanceolate," long-acuminate, concave, 3.6–5.5 cm. long, about 1.2 cm. or less wide. Lateral sepals similar, often somewhat larger, oblique. Petals similar to the lateral sepals, but shorter and often broader, obliquely ovate-lanceolate. Lip shorter than the petals in natural position, with the short, narrow claw erect and parallel to the column; lamina pandurate-oblong, the anterior portion lacerate-dentate, abruptly mucronate and markedly broader than the crenulate basal portion; disc at the base with a large crest consisting of several multifimbriate keels. Column strongly arcuate, about 1.6–1.9 cm. long at the back, 2-winged above with the wings divided into narrow teeth or tendrils.

Peru[?]: Valley of Lloa, about 2400 meters, *Hall s.n.* Also Colombia and Ecuador (type).

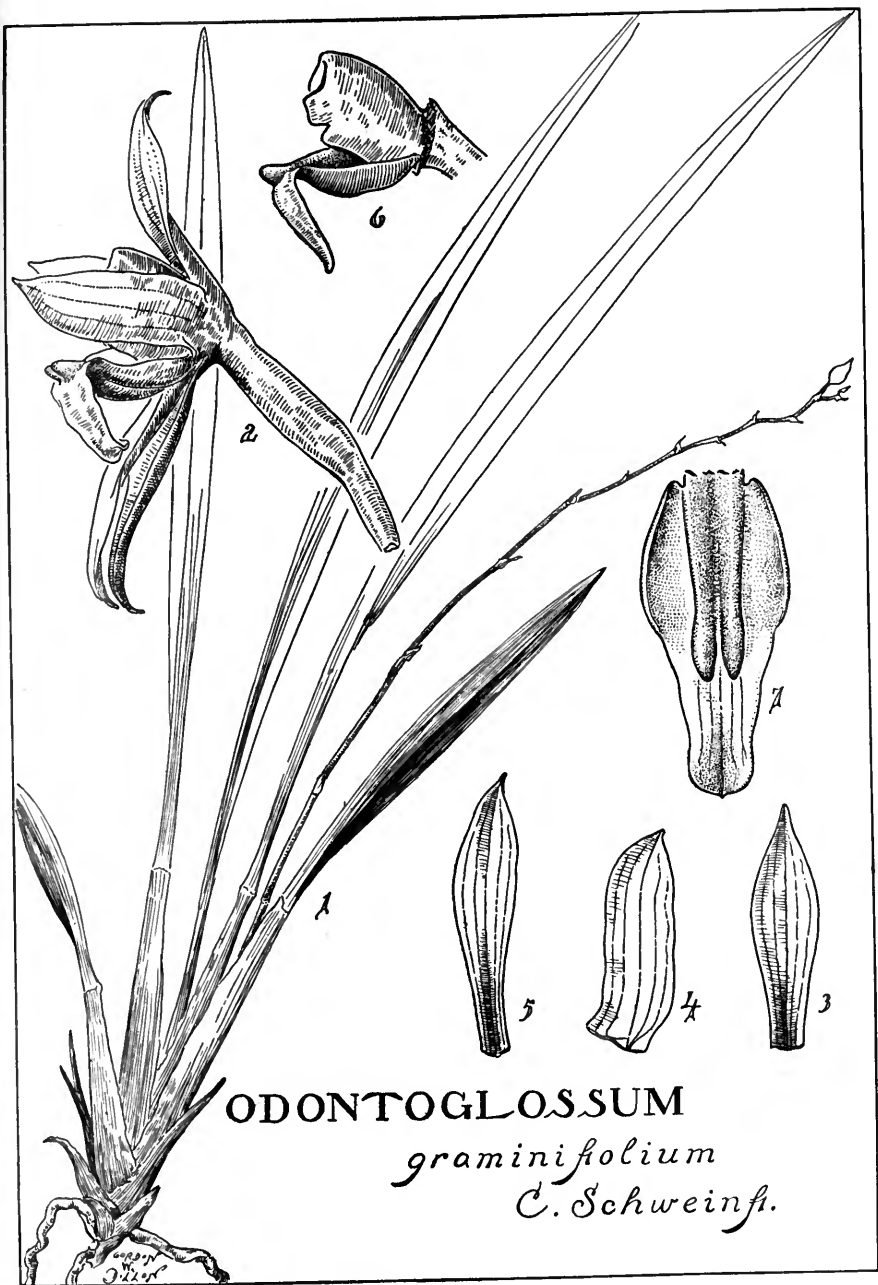
Odontoglossum Harryanum Reichb. f. *Gard. Chron. n. ser.*, 26: 486. 1886; *Warn. & Will. Orch. Alb. 8: t. 366.* 1889; *Cogn. & Goos. Dict. Icon. Orch. Odontoglossum t. 11.* 1897.

Plant large. Pseudobulbs approximate, oblong-ovoid to pyriform, 6–8 cm. long, bifoliate, clothed at the base on each side by 2 or 3 sheaths of which the inner ones are leaf-bearing. Leaves narrowly oblong to oblong-elliptic, acute to obtuse, gradually narrowed below to a more or less distinct, channelled petiole, those on the pseudobulb (which are the largest) up to 44 cm. long (including the petiole), 2.5–4 cm. wide. Scape up to 1 m. high, racemose above, several- to many-flowered. Flowers rather large, variable in size and color, pale brown to chestnut-brown, petals and lip at the base with purple lines on a white ground and the large apical part of the lip white, all parts more or less undulate. Dorsal sepal elliptic-oblong to subelliptic, more or less acute, about 4.5 cm. long, 1.3– nearly 2.5 cm. wide. Lateral sepals similar, lightly oblique. Petals elliptic-oblong to narrowly elliptic, acute, lightly oblique, more or less smaller than the sepals. Lip about equaling or slightly exceeding the sepals, from a stout, basally auriculate claw abruptly dilated into an ovate-pandurate or lightly 3-lobed lamina, the sides incurved and the anterior portion subcordate to suborbicular and abruptly acute to obtuse; disc with a prominent yellow crest which is lacerate or fimbriate in front. Column relatively small, 1.2–1.7 cm. long, with a pair of small dentate wings above.

Junín: Prov. of Tarma, Utcuyacu, 1900 meters, on a rotten tree trunk in low forest, *Woytkowski 35352.* Also Colombia (type).

Odontoglossum Hennisii Rolfe, *Gard. Chron. ser. 3, 10: 158.* 1891.

Pseudobulbs densely aggregated, oblong-ovoid, subcompressed, about 4 cm. long. Leaves oblanceolate-linear, acute, 10.2–15.2 cm. long, up to 2.1 cm. wide. Scape about 20 cm. long, loosely 6-flowered. Pedicellate ovary about 2.5 cm. long, five times as long as the subtending bract. Flowers rather large, with spreading segments. Sepals similar, lanceolate, acuminate, about 2.6 cm. long, yellow with a large brown area near the base and also about the middle. Petals somewhat smaller, yellow with brown spots and lines. Lip free, white with red-brown spots and blotches; claw about 4 mm. long; lamina spreading, 3-lobed, about 2.1 cm.



ODONTOGLOSSUM
graminifolium
 C. Schweinf.

FIG. 165. *Odontoglossum graminifolium* C. Schweinf. 1, plant; $\times \frac{2}{3}$. 2, flower from side; $\times 4$. 3, dorsal sepal; $\times 4$. 4, petal; $\times 4$. 5, lateral sepal; $\times 4$. 6, lip and column from side; $\times 4$. 7, lip from above, spread out; $\times 5\frac{1}{2}$.

long and 1.7 cm. broad; lateral lobes rounded, denticulate; mid-lobe triangular-ovate, long-acuminate; disc with numerous slender, somewhat branched filaments from 2 to 5 mm. long. Column clavate, about 1.5 cm. high, yellowish-white with brown wings, denticulate at the triangular, acute apex.

Peru or Ecuador, *Hennis s.n.* (sent to Messrs. Charlesworth, Shuttleworth & Co. of Heaton, Bradford and Clapham).

No record of this species was available.

Odontoglossum Hrubyianum Reichb. f. Gard. Chron. ser. 3, 4: 234. 1888.

Plant medium-sized. Pseudobulb pyriform, compressed, bifoliate, about 5 cm. high, surrounded below by one or more pairs of leaf-bearing sheaths. Leaves ligulate, acute, about 22.7 cm. or less long. Inflorescence racemose above, laxly 5-flowered. Sepals and petals similar, cuneate-lanceolate, acute, apparently deflexed, dark sepia-brown or horse-chestnut color with a yellow apex. Lip clawed; claw slender, adnate to the column at the base; lamina pandurate, subacute, denticulate on the deflexed sides, light ochre blotched with chestnut-brown near the base; disc with a conspicuous basal, white, apically bidentate callus with a tooth ("apicule") on each side below and a swelling on each side at the very base. Column arcuate, trigonous, with obscure, very narrow, crenulate wings.

Peru: Habitat not recorded, *Hübsch s.n.* Introduced by Messrs. F. Sander & Sons.

The description was taken from the original diagnosis.

Odontoglossum juninense Schltr. Fedde Repert. Beih. 9: 109. 1921; Mansf. Fedde Repert. Beih. 57: t. 128, nr. 500. 1929.

Plant epiphytic, rather large, about 40 cm. high, with an abbreviated rhizome. Pseudobulbs narrowly ovoid, strongly compressed, unifoliate or bifoliate, 4.5–5.5 cm. long, surrounded on each side at the base by a leaf-bearing sheath. Leaves linear-ligulate, acute, 22–30 cm. long, about 1–1.3 cm. wide in the middle, slightly and gradually narrowed toward the base. Scape erect, arcuate above, about 40 cm. long; peduncle slender, few-sheathed, 20–25 cm. long; raceme loosely several- (about 8-) flowered. Flowers rather large, greenish yellow with large brown spots. Parts of the perianth widely spreading. Sepals similar, narrowly lanceolate, acuminate, narrowed near the base, with the lateral ones oblique, about 3.5 cm. long and 7.5 mm. wide. Petals obliquely oblong-lanceolate or elliptic-lanceolate, acuminate, markedly shorter and a little broader than the sepals. Lip clawed, about 1.6 cm. long and 9 mm. wide above the middle; claw short, linear, erect and parallel to the column, nearly 5 mm. long; lamina reflexed, from an oblong base abruptly dilated into a subquadrate-ovate ("oval-oblong") lamina which is acute or short-acuminate, with a serrulate, lightly undulate margin; disc below with a linear, depressed callus which is thickened and 3-dentate in front and extended into a pair of short bidentate lamellae, and with a small bidentate callus on each side near the base. Column lightly arcuate, about 1.4 cm. high, lightly auriculate-lobulate on the sides of the stigma.

Junín: On the mountains of Janangu, east of Huacapistana, 2300–2400 meters, in damp mossy woods, *Weberbauer 2120*.

No material of this species was seen.

Odontoglossum lacerum Lindl. Sert. Orch. sub t. 25. 1838; Fol. Orch. *Odontoglossum* 19, no. 54. 1852.

Plant rather large. Pseudobulb ellipsoid, complanate, unifoliate, about 3.2 cm. high, surrounded below by about 3 pairs of distichous, leaf-bearing sheaths. Leaves linear-oblong to elliptic-oblong, acute, narrowed below to a slender, channelled petiole; lamina about 12 cm. or less long and 1.4–1.8 cm. wide; petiole about 3 cm. long. Scape lateral, basal in the axil of a sheath, much surpassing the leaves, terminated by a slender, very loosely several- (about 10-) flowered raceme which has a single short branch at the base of the flower-cluster. Flowers rather large, bright lemon-yellow with one or two large brown blotches on the spreading segments. Sepals and petals similar, lanceolate or elliptic-lanceolate, acuminate with incurved tips, about 2.9 cm. long and 8.5 mm. wide, the lateral sepals and petals lightly oblique. Lip markedly shorter than the other segments in natural position; claw narrow, erect and parallel to the column; lamina reflexed-spreading, ovate or ovate-lanceolate, concave, irregularly lacerate-dentate, cuspidate in front; disc at the base with a crest consisting of fimbriate lamellae of which the two front ones are subulate. Column slender, more or less arcuate above, about 1.3 cm. long, with a pair of short, porrect, subtruncate auricles near the apex.

Huánuco: Cassapi (Casapi), *Mathews 1867* (type).—Loreto, fide Schlechter, *Fedde Repert. Beih.* 9: 170. 1921.

No example of this species was accessible, but a drawing from the Lindley Herbarium was examined.

Odontoglossum longifolium Lindl. Benth. Pl. Hartw. 152. 1844; Fol. Orch. *Odontoglossum* 14, no. 39. 1852. *Cyrtchilum longifolium* Kränzl. *Notizbl. Bot. Gart. Berl.* 7: 98. 1917, *nomen nudum*, in key; Kränzl. *Engler, Pflanzenr.* IV. 50 (Heft 80), 79, fig. 8J, a–c. 1922.

Plant large, slender. Pseudobulb pyriform-cylindric, compressed, unifoliate, about 6 cm. high, surrounded below by two or more pairs of distichous, imbricating, conduplicate, leaf-bearing sheaths. Leaves linear-lanceolate, acute or short-acuminate, gradually long-narrowed below with a conduplicate, petiole-like base, up to about 35 cm. long and 2.3 cm. wide. Scape lateral, basal in the axil of a sheath, slender, much surpassing the leaves, about 56 cm. tall; peduncle arcuate, with several very short, close sheaths, about 30 cm. long; flower-cluster an erect, very loose, few-branched panicle, with the short, fractiflex branches erect-ascending. Bracts minute, squamiform, much exceeded by the slender pedicellate ovaries. Dorsal sepal oblanceolate-spatulate, acute, with a slender base (thus clawed), about 9 mm. long and 3 mm. wide. Lateral sepals similar but somewhat longer and narrower with a longer claw, oblique. Petals similar to the dorsal sepal but somewhat shorter. Lip geniculate in the middle, with the lower half erect and parallel

to the column and the anterior half reflexed, oblong-lanceolate when expanded, acute, bilamellate below with the tips of the lamellae free, diverging and ear-like. Column small, abruptly clavate above, with a pair of very small, falcate-oblong wings.

Cajamarca, fide Schlechter, Fedde Repert. Beih. 9: 171. 1921. Ecuador (type).

In the Ames Herbarium there is a photograph of the type in the Reichenbach Herbarium.

Odontoglossum longipes Reichb. f. & Warsc. Bonpl. 2: 100. 1854; Reichb. f. Walp. Ann. 6: 837. 1864. *Cyrtochilum longipes* Kränzl. Notizbl. Bot. Gart. Berl. 7: 99. 1917, *nomen nudum*, in key; Kränzl. Engler, Pflanzenr. IV. 50 (Heft 80), 84, fig. 9B, a, b. 1922.

Plant rather large. Pseudobulbs broadly ellipsoid and unifoliate (according to Kränzl), surrounded on each side by several (5-7) conduplicate, imbricating, leaf-bearing sheaths. Leaves not described. Scape (incomplete) undoubtedly elongate, stout, paniculate above, with the uppermost internodes very short; branches slender, abbreviated or up to 20 cm. long (Kränzl), strongly fractiflex. Bracts minute, triangular-cucullate. Pedicellate ovary up to 2.7 cm. long, nearly ten times as long as the subtending bract. Flowers small, yellowish, cartilaginous. Sepals carinate on the back. Dorsal sepal cuneate-oblong or obovate, concave, apiculate, 8-9 mm. long, 3-4 mm. wide. Lateral sepals a little longer and narrower, elliptic-oblancheolate, acute, longer-clawed than the dorsal sepal. Petals oblong-rhombic or rhombic-obovate, obtuse, slightly smaller than the dorsal sepal. Lip rhombic to ovate-lanceolate, subentire to very obscurely 3-lobed near the middle with rounded lateral lobes, obtuse, about 8-9 mm. long, up to 5.2 mm. wide when expanded; disc through the lower half with one sulcate keel or two approximate keels ending in thick, diverging lamellae with a small tooth between them. Column dwarf, broadly margined on each side throughout.

Peru: Habitat not recorded, *Warscewicz s.n.* (type).—Piura: Camino Piura to Huancabamba, El Tambo, about 3000 meters, terrestrial, *Scolnik 1414*.

Odontoglossum megalophium Lindl. Orch. Linden. 15, no. 83. 1846; Fol. Orch. Odontoglossum 14, no. 41. 1852. *Oncidium megalophium* Beer, Prakt. Stud. Orch. 289. 1854. *Cyrtochilum megalophium* Kränzl. Notizbl. Bot. Gart. Berl. 7: 98. 1917, *nomen nudum*, in key; Kränzl. Engler, Pflanzenr. IV. 50 (Heft 80), 78. 1922.

Plant rather large, epiphytic. Pseudobulbs broadly ellipsoid, ribbed on the sides, surrounded on each side by several distichous, imbricating, conduplicate, leaf-bearing sheaths. Leaves long-petioled; lamina oblong-lanceolate, 35 cm. or more long, about 3 cm. wide, acute or acuminate, long-narrowed below; petiole about 16 cm. long, very slender, channelled. Scape lateral in the axil of a sheath, elongate, much surpassing the leaves, terminated by an elongate panicle having the branches remote (the lower branches again branched), with a fractiflex rachis.

Bracts very small, triangular, spreading. Pedicellate ovary slender, up to 1.2 cm. long. Flowers numerous, very small, yellow. Dorsal sepal spatulate, obtuse or rounded at the apex, often apiculate, concave, 4-5 mm. long, about 2.5 mm. wide. Lateral sepals similar, longer and longer-clawed than the dorsal sepal. Petals obovate-spatulate, rounded and apiculate at the apex, not clawed, a little shorter than the dorsal sepal and markedly broader. Lip shorter than the lateral sepals, recurved in the middle, ovate or subcordate-ovate, obtuse or subacute, keeled beneath near the apex, 4-5 mm. long; disc through the lower half with a pair of apically converging, high keels which are lobed above. Column very short, clavate, wingless.

"Peru," fide Schlechter, Fedde Repert. Beih. 9: 171. 1921. Colombia and Venezuela (type).

Odontoglossum melanthes Reichb. f. & Warsc. Bonpl. 2: 100. 1854. *Cyrtochilum melanthus* Kränzl. Notizbl. Bot. Gart. Berl. 7: 98. 1917, *nomen nudum*, in key; Kränzl. Engler, Pflanzenr. IV. 50 (Heft 80), 80. 1922.

Pseudobulbs and leaves unknown. Scape stout, paniculate above with short, few- (about 4-) flowered branches, the rachis flexuous. Bracts very small, ochreate, acute, equaling about a ninth of the slender pedicellate ovary. Flowers small, dark purple with a whitish yellow lip. Dorsal sepal obovate-spatulate ("elliptic and clawed"), abruptly acute or apiculate. Lateral sepals subsimilar, longer-clawed. Petals obliquely oblong-cuneate, acute. Lip [lanceolate or ovate-lanceolate], 3-lobed in the middle; lateral lobes antrorsely rhombic; mid-lobe from a rather broad base, slightly dilated, then triangular (thus trapezoid); disc with 2 contiguous keels slightly diverging at the apex. Column very short, broadly winged on each side [throughout].

Peru: Habitat not recorded, *Warscewicz s.n.*

This diagnosis is a translation of the original description. The only available material of this concept, which bears the designation "Odontgl. melanthes Rehb. f. & Wzw." in Reichenbach's handwriting, shows a fragment of a panicle with compound branches about 8 cm. distant, and flowers inseparable from those of *Odontoglossum longipes* Reichb. f. & Warsc. Suspicion points to the synonymy of these species.

Odontoglossum microthyrsus Kränzl. Engler, Bot. Jahrb. 37: 390. 1906.

Plant relatively small, with an abbreviated rhizome, about 13 cm. high. Roots very stout for the plant. Pseudobulbs approximate, oblong-cylindric ("oblong-linear"), slender or stout, compressed, unifoliate, up to 2 cm. long, surrounded below by 3 pairs of distichous, imbricating, conduplicate sheaths which are commonly leaf-bearing. Leaves all similar, oblong or elliptic-oblong, acute, narrowed to a sessile (on the pseudobulb shortly petioled), conduplicate base, 5-6 cm. long, 1-1.2 cm. wide. Scapes lateral, basal, in the axil of sheaths, commonly about twice as long as the leaves, about 12 cm. or less long; peduncle slender, about 7.5 cm. or

less long, with one or more short, close sheaths; flower-cluster commonly loosely paniculate (when well-developed) with a single short branch at the base, loosely several- (up to 10-) flowered. Flowers small, with undulate segments, brown-violet with the lateral lobes of the lip and column white. Dorsal sepal suborbicular, clawed below, concave, about 5 mm. long and broad. Lateral sepals oblanceolate-oblong, subacute, a little longer and much narrower than the dorsal sepal. Petals suborbicular, clawed below, very similar to the dorsal sepal. Lip 3-lobed, about 4.5 mm. long and 3.5 mm. wide near the base; lateral lobes rounded, membranaceous; mid-lobe broadly linear, lightly bilobed at the apex; disc at the base with 3 calli of which the middle one is oblong and is surrounded on each side by a shining, excavated tubercle. Column very short.

Junín: Prov. of Tarma, mountains east of Palca, 2700–3000 meters, on steppe with scattered shrubs and numerous grasses, *Weberbauer 2447*.

Description amplified by a photograph of the type in the Ames Herbarium.

***Odontoglossum multistellare* Reichb. f. *Linnaea* 41: 25. 1876.**

Plant large. Vegetative parts not recorded. Scape tall, stout, terminated by a rather narrow panicle about 44 cm. long, with subremote, ascending, few- (6- or less) flowered branches. Flowers rather large, numerous, with spreading segments, straw-color adorned with brown lines. Pedicellate ovary slender, 2–2.7 cm. long, many times exceeding the small, lanceolate, cucullate bracts. Sepals and petals very similar, lanceolate, acuminate or long-acuminate, about 2.5–3 cm. long and 6–8 mm. wide. Lip slightly shorter than the other segments; claw broad, thickened, subparallel to the column; lamina 3-lobed, hastate-triangular or very broadly ovate in outline, abruptly narrowed to form a long-cuspidate or triangular-lobulate, crenulate-serrulate termination; disc at the base with 4 keels of which the outer are 2-divided (into filiform tubercles) and the inner keels 3- to 4-divided (into similar tubercles). Column less than half as long as the sepals, terminated by a trifid, cucullate apex, the lateral lobes falcate and the middle one broad and serrulate at the apex, with an arm on each side of the stigmatic cavity.

Peru: Habitat not recorded, *Pearce s.n.*

There is a drawing of this species from the Reichenbach Herbarium in the Ames Herbarium.

***Odontoglossum myanthum* Lindl. Benth. Pl. Hartw. 152. 1844; Fol. Orch. *Odontoglossum* 13, no. 38. 1852. *Cyrtochilum myanthum* Kränzl. Notizbl. Bot. Gart. Berl. 7: 98. 1917, *nomen nudum*, in key; Kränzl. Engler, Pflanzenr. IV. 50 (Heft 80), 77, fig. 8F, *a-e*. 1922.**

Plant large, rather slender. Pseudobulb obscure, elongate-cylindric, unifoliate, up to 10 cm. long according to Kränzl, entirely concealed by 2 or 3 pairs of distichous, imbricating, conduplicate, leaf-bearing sheaths. Leaves oblong-lanceolate

or narrowly elliptic-lanceolate, acuminate, more or less narrowed below to a conduplicate base (that on the pseudobulb very long-narrowed below, about 45 cm. long and 2.7 cm. wide), the blades on the sheaths successively smaller outward. Inflorescences lateral, in the axil of a sheath, nearly twice as long as the leaves, about 66 cm. or more long, very loosely and narrowly paniced nearly to the base; branches horizontal, commonly branched and fractiflex in age, about 5 cm. or less distant. Bracts minute, triangular-ovate, much shorter than the slender pedicellate ovary. Flowers very small, brownish or dull purple, with spreading segments. Dorsal sepal oblong-oblancheolate, acute, concave, about 5-6 mm. long. Lateral sepals narrowly oblancheolate, acute, apparently distinctly longer and narrower than the dorsal sepal. Petals oblancheolate, acute, somewhat shorter and narrower than the dorsal sepal. Lip strongly reflexed near the middle, with the basal portion erect and parallel to the column, elliptic-lanceolate and scarcely 5 mm. long when expanded, acute; disc below with 2 lines or crests which are slightly thickened in front. Column short, very stout, with a pair of minute, lanceolate-subulate, erect wings near the apex.

Cajamarca, fide Schlechter, Fedde Repert. Beih. 9: 171. 1921. Ecuador (type).

In the Ames Herbarium there is a photograph of the type.

Odontoglossum myrianthum Reichb. f. Xen. Orch. 1: 189, t. 68, fig. II, 4, 5. 1856. *Cyrtorchilum myrianthum* Kränzl. Notizbl. Bot. Gart. Berl. 7: 99. 1917, *nomen nudum*, in key; Kränzl. Engler, Pflanzenr. IV. 50 (Heft 80), 82. 1922.

Vegetative parts lacking. Inflorescence several- to many-flowered, loosely paniculate above, with the lower branches flexuous and few-flowered and the upper portion racemose. Bracts minute, triangular, many times shorter than the slender pedicellate ovary. Parts of the flower spreading. Sepals obovate or spatulate-obovate, rounded to subacute at the apex, 4.5-5 mm. long, about 1.75 mm. wide. Petals oblong-obovate, rounded at the apex, with a broad (sessile) base, a little wider than the sepals. Lip with the basal portion appressed to the column, reflexed above, triangular-ovate in outline, lightly 3-lobed below the middle, about 3.5 mm. long; lateral lobes basal, semiorbicular; mid-lobe much larger, porrect, ligulate-triangular, subacute; disc with a fleshy, carinate callus (between the lateral lobes) which is sulcate above and has a semiorbicular papilla on each side at its apex. Column very short, stout, wingless.

Peru: Palca (Pavón Herbarium).

No example of this species was available.

Odontoglossum mystacinum (Lindl.) Lindl. Fol. Orch. Odontoglossum 6, no. 14. 1852. *Cyrtorchilum mystacinum* Lindl. Bot. Reg. 24, Misc. 30, no. 38. 1838; Bot. Reg. 25: t. 62. 1839. *Odontoglossum rigidum* Lindl. Benth. Pl. Hartw. 152. 1844; Fol. Orch. Odontoglossum 7, no. 17. 1852. *Oncidium rigidum* Beer, Prakt. Stud. Orch. 290. 1854.

Plant large. Pseudobulbs pyriform or "oval," compressed, unifoliate, about 3.5 cm. high, surrounded by several distichous, conduplicate, leaf-bearing sheaths. Leaves ligulate (rarely elliptic-oblong), acute, carinate, apparently about 15 cm. or less long and up to 1.6 cm. wide. Inflorescence much surpassing the leaves, loosely paniculate above. Floral bracts lanceolate, navicular, acuminate, sphacellate, up to 1.5 cm. long, about half as long as the pedicellate ovary. Flowers 2.5–3.5 cm. distant, yellow, medium-sized. Sepals widely spreading. Dorsal sepal ovate-lanceolate, acuminate, concave, about 1.5 cm. long and 5 mm. wide. Lateral sepals lanceolate or narrowly elliptic-lanceolate, slightly longer and narrower than the dorsal sepal, apparently free or nearly so. Petals very similar to the dorsal sepal but somewhat broader. Lip with the base applied to the column, distinctly clawed below; claw linear; lamina obovate from a cordate base, slightly pandurate, with a prominent, recurved, apiculate apex, about 2 cm. long when expanded and 1.2 cm. wide where broadest; disc bilamellate on the claw, with several teeth in front of the keels. Column small, clavate, with a pair of irregularly lacerate wings at the apex.

Peru: Habitat not recorded, *Harrison s.n.* (type of *Cyrtochilum mystacinum*).—Amazonas: Chachapoyas, *Mathews 168*, sub *Odontoglossum rigidum*. Also Ecuador (type of *O. rigidum*).

The description was chiefly prepared from the plate of *Cyrtochilum mystacinum* cited, no material being available.

This taxon appears to be very similar to *Oncidium aureum* Lindl., but has a lip with a deflexed apex and a prominent apicule.

Odontoglossum obscurum C. Schweinf. Bot. Mus. Leaf. Harvard Univ. 14: 67. 1949. *Mesospinidium Wallisii* Reichb. f. *Linnaea* 41: 106. 1876, not *Odontoglossum Wallisii* Linden & Reichb. f. (1870).

Plant slender, delicate, growing on rocks, about 25 cm. high. Rhizome apparently abbreviated. Pseudobulbs aggregated, ovoid to cylindrical, complanate, unifoliate, 1–2.5 cm. high, surrounded and often surpassed by 2 or 3 pairs of distichous, leaf-bearing sheaths. Leaves linear, subobtuse to acute, more or less narrowed to a conduplicate base, 10–20.4 cm. long, 5.5–12 mm. wide. Scape lateral, basal in the axil of a sheath, distinctly surpassing the leaves, arcuate-spreading; peduncle slender, about 21–50 cm. long, with 3 to 6 very small and close, tubular-infundibuliform sheaths; panicle either short, 9- to 10-flowered, about 5 cm. long with few branches above or relatively elongate, loosely many-flowered and up to 25 cm. long; rachis lightly fractiflex. Flowers small, rather fleshy, with spreading segments. Dorsal sepal obovate-spatulate from a narrow base, abruptly acute or apiculate, about 6.7 mm. or less long and 3.8 mm. wide. Lateral sepals obliquely spatulate or oblong-spatulate, acute, carinate, distinctly longer and narrower than the dorsal sepal. Petals variable, obliquely oblanceolate to oblong-obovate, apiculate, shorter and narrower than the dorsal sepal. Lip with the basal half erect and parallel to the column in natural position with the anterior half abruptly reflexed, obtuse or slightly retuse at the apex, ovate-oblong, oblong-elliptic or "oblong-ligulate" when expanded, lightly retuse in the middle of each side, about 6 mm. long; disc with a linear, sulcate callus extending through the lower half and ending

in 2 free teeth or lobules. Column very short and stout, broadly winged on each side throughout, the wings ending in a blunt triangular tooth.

Peru: Habitat not recorded, *Wallis s.n.* (type of *Mesospinidium Wallisii*).—Cuzco: Prov. of Urubamba, Machu-Picchu, 2040 meters, on rocks, *Vargas 3373*.

Odontoglossum praestans Reichb. f. & Warsc. Bonpl. 2: 99. 1854; Rolfe, *Lindenia* 7: 71, t. 322. 1892; *Orch. Rev.* 23: 156, fig. 14. 1915.

Plant showy, variable. Rhizome apparently abbreviated. Pseudobulbs ovoid or pyriform-cylindric, often aggregated, subcompressed, about 6 cm. or less long, bifoliate, mottled with purplish brown, surrounded by 3 or 4 pairs of distichous, imbricating, conduplicate sheaths of which the upper ones bear successively larger leaves. Leaves linear or linear-oblong, abruptly acute and apiculate, more or less narrowed to a sessile or shortly petioled, conduplicate base, up to 23 cm. long, 1.4 cm. or more wide. Scapes lateral in the axils of sheaths, equaling or exceeding the leaves, above racemose (or with a large-branched panicle according to Reichenbach); peduncle (in the collection seen) 10–11 cm. high, with about 2 close, very small, tubular sheaths; raceme short to long, rather densely few- (6-) to many- (15-) flowered, about 10–30 cm. long. Flowers rather large, with widely spreading segments, greenish yellow spotted with cinnamon-brown or purple. Dorsal sepal lanceolate or linear-lanceolate, long-acuminate, 2.9–3.6 (rarely 4.5) cm. long, 6–9 mm. wide. Lateral sepals similar, very slightly longer and narrower, somewhat falcate-incurved, dorsally carinate. Petals similar to the lateral sepals, lanceolate or ovate-lanceolate, long-acuminate, lightly oblique, shorter and slightly wider than the dorsal sepal. Lip simple, lanceolate or narrowly lanceolate, long-acuminate, 2.5–2.7 cm. long; claw short, erect and parallel to the column, deeply tubular-concave; lamina with a broadly cuneate or subtruncate base which is 9–10 mm. wide, gently recurved above; disc at the base (of the lamina) with 4 short, stout, longitudinal, irregularly dentate keels of which the inner pair is much the larger. Column stout, 9–11 mm. high at the back, prominently angled in front below the middle, with a pair of porrect, more or less elongate, decurved, irregularly lacerate wings above, the most conspicuous portion being at the summit.

Peru: Amazonas [?] sources of the Marañon River, *Warscewicz s.n.* (type).—Cuzco: Prov. of Urubamba, Machu-Picchu to Sta. Rita, 2040 meters, on rocks, *Vargas 3363*.

In the Ames Herbarium are several records of the type.

Odontoglossum pusillum C. Schweinf. *Am. Orch. Soc. Bull.* 14: 340, t., 1946. Figure 166.

Plant small and slender for the genus, variable, growing on rocks. Rhizome stout, creeping. Pseudobulbs usually aggregated, oblong-cylindric or rarely oblong-ellipsoid, strongly compressed, unifoliate, about 2–6 cm. tall, surrounded below by 1 to 3 pairs of distichous, conduplicate, imbricating sheaths which are successively larger above and commonly leaf-bearing. Leaves linear to linear-oblong, abruptly

rounded with a more or less obliquely bilobed apex, more or less narrowed to a conduplicate (often petiole-like) base, 2–19.2 cm. long, 4–10 mm. wide. Scapes lateral, in the axils of sheaths surrounding the pseudobulbs, slightly shorter than the leaves or much longer, 12–29 cm. long; peduncle complanate, up to 13 cm. long, with a single, small, close, tubular sheath above the middle; inflorescence racemose or paniculate with 1 or 2 short, strict branches near the base, loosely few- to many-flowered, the rachis 1.5–18 cm. long. Floral bracts minute, many times shorter than the slender pedicellate ovary. Flowers very small for the genus, with widely spreading segments, yellow orange or greenish brown with whitish, yellow-dotted lip. Dorsal sepal lightly recurved and tubular-involute in natural position, oblong-oblancheolate when expanded, acute at the thickened apex, 7–7.5 mm. long, 2.1–2.4 mm. wide. Lateral sepals connate into a tubular-concave, bilobed lamina which is curved or lightly sigmoid when viewed from the side, markedly longer and wider than the dorsal sepal, the terminal lobes ovate and acute or mucronate. Petals obliquely oblanceolate or oblong-spatulate, falcate-incurved, acute, about as large as the dorsal sepal. Lip divided into 2 parts; basal portion upright and parallel to the column, oblong, angled or round-dilated and erect on each side at the base, about 3 mm. or more long, almost entirely occupied by an oblong, fleshy callus which is slightly dilated toward the 3-lobed apex, the middle lobe deeply emarginate; anterior portion abruptly reflexed in course of development, reniform-ovate or cordate-ovate when expanded, broadly rounded and often obscurely lobulate in front with a minute apicule, truncate or subcordate at the base, 4.2–4.8 mm. long, 5.2–6 mm. wide. Column stout, short, recurved, clavate, wingless, 3–3.5 mm. long at the back.

Cuzco: Prov. of Calca, Lares Valley above Mantoc, 2500 meters, *Weberbauer 7916* (type). Prov. of Urubamba, Machu-Picchu, 2060 meters, *Vargas 3338*.

Odontoglossum retusum Lindl. Benth. Pl. Hartw. 152. 1844; Fol. Orch. *Odontoglossum* 13, no. 36. 1852; Hook. f. Bot. Mag. 123: t. 7569. 1897. *Oncidium retusum* Beer, Prakt. Stud. Orch. 290. 1854. *Cyrtochilum retusum* Kränzl. Notizbl. Bot. Gart. Berl. 7: 99. 1917, *nomen*, in key; Kränzl. Engler, Pflanzenr. IV. 50 (Heft 80), 86. 1922.

Plant rather large, epiphytic or growing on rocks. Pseudobulbs ovoid to narrowly ellipsoid, sometimes aggregated, subcompressed, unifoliate, about 2.5–5 cm. long, surrounded below by 3 or 4 pairs of distichous, imbricating, conduplicate sheaths which are successively larger and leaf-bearing upward. Leaves (the largest on the pseudobulb) elliptic-linear to linear-oblancheolate, obtuse to subacute, gradually narrowed below to a channelled, petioled base, up to 29 cm. long and about 2 cm. wide (those on the sheaths less narrowed below). Scape lateral, basal, in the axil of a sheath, more or less exceeding the leaves; peduncle slender, about 23.5 cm. or more long, provided with about 3 remote, small, close, tubular sheaths; inflorescence slender, loosely many-flowered, with few to several short, few-flowered branches, the branches sometimes compound; rachis 12–30 cm. or more long. Flowers rather small for the genus with spreading segments, orange-scarlet with a golden yellow lip. Dorsal sepal broadly oblanceolate or narrowly obovate, acute, deeply concave or subconduplicate, about 1.3–1.6 cm. long and 5.4 mm. wide when expanded. Lateral sepals oblanceolate, lightly oblique, acute and apiculate, dor-

ODONTOGLOSSUM

pusillum C. Schweinf.



FIG. 166. *Odontoglossum pusillum* C. Schweinf. 1, plant; $\times \frac{2}{3}$. 2, flower in natural position, oblique view; $\times 3\frac{1}{3}$. 3, lip and column from side; $\times 4$. 4, lip spread out, from above; $\times 4$.

sally carinate, somewhat longer and narrower than the dorsal sepal. Petals narrowly oblong-obovate, acute, lightly oblique, distinctly shorter and narrower than the dorsal sepal. Lip oblong-subquadrate, sessile, with the base suberect and parallel to the column, recurved-spreading above, simple to obscurely 3-lobulate with rounded basal lobules, subtruncate to retuse in front, apiculate, about 1 cm. long and 7.6 mm. wide near the base; disc below with a sulcate callus or 2 approximate calli extending about to the middle. Column dwarf, very stout, about 3 mm. high at the back, prominently margined on each side throughout.

Cajamarca, fide Schlechter, Fedde Repert. Beih. 9: 171. 1921. Ecuador (type).

Odontoglossum revolutum Lindl. Ann. & Mag. Nat. Hist. 15: 256. 1845; Fol. Orch. Odontoglossum 16, no. 45. 1852. *Oncidium revolutum* Beer, Prakt. Stud. Orch. 290. 1854.

Plant large and robust, variable, with a stout, apparently creeping rhizome. Pseudobulbs congested, apparently unifoliate, entirely concealed by about 4 pairs of distichous, imbricated, conduplicate sheaths which are successively larger and leaf-bearing upward; thus is formed a very stout and robust basal portion. Leaves linear, rigid, abruptly obtuse, sessile, slightly narrowed at the conduplicate base, up to 30 cm. or more long and 2.4 cm. wide when the strongly revolute sides are expanded. Scape stout, lateral, in the axil of sheaths, much surpassing the leaves, about 100 cm. tall in the type; peduncle about 79 cm. tall, with several (about 5 or more) short, appressed, tubular sheaths. Inflorescence a compound, pyramidal panicle about 30 cm. or less long, the branches more or less remote on the axis, densely flowered. Bracts prominent, ovate or lanceolate, cucullate, spathaceous. Flowers medium-sized, with spreading, recurved segments, apparently yellow. Sepals conduplicate, with undulate margins, dorsally carinate especially the lateral ones. Dorsal sepal lanceolate-elliptic when expanded, acuminate, clawed, 1.5-3 cm. long, 5.8-11 mm. wide. Lateral sepals very similar, slightly longer and narrower. Petals lanceolate or elliptic-lanceolate, acuminate, much shorter than the dorsal sepal and slightly narrower than the lateral sepals. Lip recurved, with the base erect and parallel to the column and the sides of the anterior portion erect in natural position, lightly 3-lobed with a suborbicular basal portion and a lanceolate or oblong terminal portion, acute or acuminate, with a prominent mucro, 1.4-2 cm. long when expanded, 5.6-7 mm. wide below; disc with a conspicuous pair of high, thin keels near the base, a much smaller keel in the center, and a group of 2 or 3 filiform papillae on either side in front. Column small, wingless, about 5.5-8 mm. long at the back.

Junín, fide Schlechter, Fedde Repert. Beih. 9: 171. 1921. Colombia (type).

Odontoglossum ringens Reichb. f. Saund. Refug. Bot. 2: t. 99. 1878.

Plant large. Pseudobulb oblong-ovoid ("oblong"), complanate, bifoliate, apparently about 12 cm. long, surrounded at the base by one or more pairs of short, distichous, leaf-bearing sheaths. Leaves narrowly oblong or "ligulate," elongate,

acute, apparently over 40 cm. long, about 2.5 cm. wide. Scape lateral, basal, terminated by a long, loosely branched panicle of which the branches are short, fractiflex and rather densely few- (3- to 8-) flowered. Floral bracts minute, many times shorter than the pedicellate ovary. Flowers medium-sized, with widely spreading segments, pale yellow with brown lines on the sepals and petals and violet lines on the basal part of the lip. Dorsal sepal oblong-lanceolate, acute, about 2.3 cm. long and 5 mm. wide. Lateral sepals similar, oblique, often with reflexed tips. Petals elliptic-lanceolate ("oblong"), acute, oblique, undulate-margined, shorter and wider than the sepals. Lip rhombic-pandurate, about as long as the petals, suberect at the very base and recurved in front, quadrate below, then abruptly dilated near the middle to form an ovate-triangular, acute or subacuminate apical portion; disc at the base with a saddle-like callosity consisting of a pair of high, thin keels which are dentate below and prolonged in front into 2 or 3 lobes or teeth and with a small callose keel between them. Column small, clavate, about 8 mm. high, with a pair of nearly obsolete, angulate wings above and 2 tooth-like blunt lobes in front of the stigmatic cavity.

Peru: Habitat not recorded, *Pearce* (Veitch's collector) *s.n.*

No material of this species was available.

***Odontoglossum subuligerum* Reichb. f. *Linnaea* 41: 27. 1876.**

Plant large. Leaves lanceolate, acute. Scape slender, apparently over 35 cm. long, with several (4 or more) short, close, tubular, very distant sheaths. Inflorescence short, racemose, distantly few- (2- or 3-) flowered. Floral bracts much shorter than the pedicellate ovary. Sepals similar, lanceolate or oblong-lanceolate, acuminate, about 3-3.5 cm. long and 8 mm. wide. Petals similar to the sepals, slightly shorter. Lip shorter than the other segments, about 2.4 cm. long, with a small, linear claw which is adnate to the column at the base; lamina "oblong-ligulate" or obovate-oblong, dilated above, acute, plicate-denticulate in front; disc at the base with 7 calli in 2 series on each side, the upper 4 filiform, the anterior ones triangular-setaceous and runcinate at the back. Column arcuate, trigonous, about 1.5 cm. high, angled above the base, with a pair of wings which are rhombic at the apex.

Peru: Habitat and collector not recorded.

No material of this taxon was available, but there is a record of the type in the Ames Herbarium.

***Odontoglossum tigroides* C. Schweinf. *Am. Orch. Soc. Bull.* 14: 22, t., 1945. Figure 167.**

Plant medium-sized, epiphytic, with an apparently abbreviated rhizome. Pseudobulb narrowly ovoid to cylindric-pyriform, strongly complanate, bifoliate or trifoliate, 3.5-5 cm. high, surrounded below by about 3 pairs of distichous, deeply imbricating sheaths of which the upper pair bears small, conduplicate blades. Leaves oblong to oblong-spatulate, abruptly rounded at the apex, gradually narrowed below to a conduplicate, petiole-like base, 9-13 cm. long, 1.3-1.7 cm. wide. Scapes lateral, basal in the axils of the inner sheaths, much exceeding the leaves, 20.5-32 cm. long, suberect to spreading in youth, becoming arcuate or

pendent in age, one on either side of the pseudobulb; peduncle rather stout, complanate, 3–10 cm. long, with 1–3 remote, stout, infundibuliform sheaths; raceme subsdensely or loosely many-flowered, somewhat looser below, sometimes interrupted in the middle by several sterile, imbricated, infundibuliform bracts; rachis about 20 cm. or less long, becoming fractiflex in age. Floral bracts conspicuous, broadly ovate, amplexicaul, equaling or slightly surpassing the pedicellate ovary. Flowers racemose, small for the genus, fragrant, strongly distichous, with widely spreading, fleshy segments; sepals and petals yellowish white with 2 broad, transverse, brown-red bands, lip white with 2 brownish red dots. Sepals and petals with the lower portions revolute-convex and the anterior parts recurved and undulate. Dorsal sepal broadly obovate or suborbicular-obovate when expanded, broadly rounded above with a minute apicule, up to 12.8 mm. long and 8.6 mm. wide when expanded. Lateral sepals similar but a little longer and narrower, obovate-spatulate, broadly obtuse or subacute, suboblique. Petals obliquely oblong-obovate, obtuse to rounded above, shorter than the dorsal sepal and narrower than either sepal. Lip much smaller than the other segments, with the lower portion erect and parallel to the column and the larger anterior part reflexed-spreading, lightly 3-lobed above the middle, about 8.8 mm. long in natural position; lateral lobes semiorbicular, convex-revolute; mid-lobe much smaller, convex, broadly ovate when expanded, abruptly narrowed near the middle to an acute tip; disc between the lateral lobes with a pair of fleshy, ellipsoid, more or less indented, diverging calli. Column short, stout, straight, about 5 mm. high at the back, with a pair of conspicuous, falcate-semiovate wings at the summit.

Huánuco: Yanano, about 1800 meters, on mossy tree, *Macbride* 3840.

Odontoglossum trilobum Schltr. Fedde Repert. Beih. 9: 111. 1921; Mansf. Fedde Repert. Beih. 57: t. 128, nr. 503. 1929.

Plant large, epiphytic, with a short rhizome. Pseudobulbs compressed, ovoid or oblong-ovoid, bifoliate, 9–12 cm. tall, surrounded on each side by one or more pairs of conduplicate, leaf-bearing sheaths. Leaves narrowly oblong or lorate, subobtuse, gradually narrowed below to a conduplicate, petiole-like base, up to 41 cm. long and 3.5 cm. wide. Scape lateral, basal in the axil of a sheath, much surpassing the leaves, gently arcuate, loosely paniculate above, up to 200 cm. tall; peduncle about 30–60 cm. long, with several (6 or more) short, remote, tubular, evanescent sheaths; panicle narrow, elongate, many-flowered, with rather remote, loosely 2- to 4-flowered, fractiflex branches. Bracts very small, deltoid, concave, much shorter than the slender, pedicellate ovary. Flowers medium-sized, with widely spreading segments, light green spotted with brown and white. Sepals and petals with lightly undulate margins. Dorsal sepal oblong-lanceolate or elliptic-lanceolate, about 2.5 cm. long and 7 mm. wide, acute, dorsally keeled at the apex. Lateral sepals very similar, slightly oblique, as long as the dorsal sepal and very little narrower. Petals obliquely lanceolate-oblong, abruptly acute and apiculate, very slightly shorter than the sepals, about as wide as the lateral sepals. Lip rhombic-lanceolate in outline, sharply 3-lobed below the middle, about 1.8–2.4 cm. long and 1–1.4 cm. wide across the lateral lobes, spreading from an erect, narrowly cuneate, claw-like base; lateral lobes spreading, obliquely dolabriform or semiobovate-rounded, with irregular anterior margins; mid-lobe oblong-lanceolate,



FIG. 167. *Odontoglossum tigroides* C. Schweinf. 1, plant; $\times \frac{2}{3}$. 2, flower, natural position, front view; $\times 2$. 3, lip and column, obliquely from side; $\times 4$. 4, lip expanded, from above; $\times 4$. 5, capsule; $\times \frac{2}{3}$.

obtuse to subacute, apiculate, about 1–1.4 cm. long and 4 mm. wide; disc from the base of the lip through the lower third with an oblong, fleshy callus which is slightly dilated above with a pluridentate upper portion and a bilobed apex. Column relatively short and straight, about 7 mm. high at the back, with a pair of minute, obliquely ovate-lanceolate, falcate wings above.

Junín: Near La Merced, in the Chanchamayo Valley, *Köhler brothers s.n.* (type). Schunke Hacienda, above San Ramón, 1300–1700 meters, in dense forest, *Schunke A64* (this specimen is very poor and fragmentary; hence questionable).—Loreto: Pumayacu, between Balsapuerto and Moyobamba, 600–1200 meters, in forest, *Klug 0.16*.

Odontoglossum tripudians Reichb. f. & Warsc. Bonpl. 2: 100. 1854; Hook. f. Bot. Mag. 99: t. 6029. 1873; Cogn. & Goos. Dict. Icon. Orch. *Odontoglossum* t. 27. 1902.

A rather large and showy plant. Pseudobulbs oblong-ovoid or ellipsoid, compressed, bifoliate, 6–10 cm. high, apparently approximate, surrounded below by 1 or 2 pairs of distichous, conduplicate sheaths which are commonly leaf-bearing. Leaves oblong-oblancheolate, acute or acuminate, long-narrowed below with a conduplicate base, 17.7–25 cm. long, about 2.5 cm. wide. Scape lateral, basal in the axil of a sheath, exceeding the leaves, arcuate, about 33 cm. long, terminating in a loosely 8- to 12-flowered raceme which is 18.5 cm. or more long. Bracts very small, triangular-lanceolate, much shorter than the pedicellate ovary. Flowers rather large, with widely spreading segments, dull yellow-green on the back. Dorsal sepal lanceolate-elliptic, acute or acuminate, 2.4–3.5 cm. long, 6–13 mm. wide, maroon with a yellow tip. Lateral sepals similar but slightly narrower, elliptic-lanceolate, suboblique, acuminate. Petals similar to the lateral sepals but a little smaller, oblique, acuminate, sometimes with a few spreading teeth on the sides, golden yellow with very broad, maroon blotches. Lip with a short, narrow, erect claw parallel to the column, 2.3–2.7 cm. long when expanded, white or yellowish with rose or violet blotches; lamina subquadrate-pandurate, the basal part cordate-ovate with erose or crenulate margins and the anterior part suborbicular and apiculate, with irregularly laciniate margins; disc near the base with about 10 radiating keels, the inner 4 larger and produced into spinous processes. Column stout, arcuate, 1.3–1.5 cm. long, with a pair of irregularly lacerate or deeply 3-toothed wings above.

Peru: Habitat not recorded, *Warscewicz s.n.* (type). Also Colombia.

Odontoglossum Wyattianum G. Wilson, Orch. Rev. 36: 47. 1928.

This is an obscure species, since no vegetative features were described, and even the origin is uncertain. Consequently it was not entered in the key.

Flowers said to be similar to those of *O. Harryanum* but smaller and not so highly colored, 5–7.6 cm. in vertical diameter. Sepals up to 3.8 cm. long, golden brown with a triangular white blotch at the base. Petals about equal to the sepals

but more pointed. Lip about 3.8 cm. long, purple and white, broadly ventricose, trumpet-like in profile, contracted at the base, 3-lobed; lateral lobes large, rounded, erect; mid-lobe spreading, bilobed. Column white lined with red-brown, having a pair of yellow pointed wings above the stigma.

Peru?

SYMPHYGLOSSUM Schltr.

A very small genus of American epiphytes, at present limited to two species growing in Ecuador and Peru.

Plants with quite the habit and general appearance of *Cochlioda*, to which they have been generally united, but they appear to be distinct by reason of certain floral characters. Lateral sepals connate through the lower half (free or nearly so in *Cochlioda*); petals adnate to the column below (free in *Cochlioda*); lip simple (3-lobed in *Cochlioda*); column bearing a simple stigmatic orifice (2 separate ones in *Cochlioda*).

Symphyglossum sanguineum (Reichb. f.) Schltr. Orchis 13: 9. 1919. *Mesospinidium sanguineum* Reichb. f. Walp. Ann. 6: 858. 1864; Batem. Bot. Mag. 93: t. 5627. 1867. *Cochlioda sanguinea* Benth. & Hook. f. Gen. Pl. 3: 560. 1883; Cogn. Martius Fl. Bras. 3, pt. 6: 208, t. 44, fig. 1. 1905.

Plant medium-sized to large, epiphytic. Rhizome abbreviated. Pseudobulbs aggregated (rarely solitary), oblong-ovoid or ellipsoid, strongly compressed, 3–7 cm. long, usually bifoliate, surrounded at the base by several pairs of distichous, deeply imbricating sheaths of which the longer uppermost ones are leaf-bearing. Leaves variable, elliptic-oblong to linear, acute, long-narrowed below to a conduplicate, petiole-like base, 6.3–25 cm. long, 7–20 mm. wide, subcoriaceous, with the mid-nerve carinate beneath. Scape lateral, basal in the axil of an inner sheath, erect to nodding, sometimes loosely branched, 5–50 cm. long, often much surpassing the leaves; peduncle with several remote, closely clasping, short sheaths; flower cluster usually racemose, rather laxly few- to many-flowered. Floral bracts small, triangular-ovate or lanceolate, acute or acuminate, much shorter than the slender pedicellate ovary. Flowers rather small, rose-purple with a whitish rose lip, subsecund, the subspreading segments rather fleshy. Dorsal sepal elliptic to oval-obovate, deeply concave, broadly rounded and minutely apiculate at the apex, 10–15 mm. long, about 7 mm. wide when expanded. Lateral sepals connate to the middle or above forming a broadly obovate, concave lamina which is about as long as the dorsal sepal but considerably broader, with rounded, subacute lobes. Petals similar to the dorsal sepal but a little smaller, with the central basal part adnate to the column, oval-obovate, abruptly subacute. Lip fleshy, shorter than the sepals, the center adnate to the column to the upper part of the latter with the margins free, the lower portion parallel to the column, the anterior portion deflexed, entire, ovate, concave and narrowed to a subacute point; disc with a pair of high, semi-orbicular plates at the base of the free lamina. Column short, gradually much dilated upward, about 4.7–9 mm. long at the back.

Peru: Near the source of the Marañon River, *Warscewicz s.n.* (type of *Mesospinidium sanguineum*).—Cajamarca, fide Schlechter, Fedde Repert. Beih. 9: 169. 1921. Also Ecuador.

BRASSIA R. Br.

A rather small but confusing genus of American epiphytes extending from southern Florida (U.S.A.), the West Indies and Mexico, through Central America and South America to Brazil, Bolivia and Peru.

Plants small to very large, but usually medium-sized, often with a stout rhizome. Pseudobulb subglobose-ovoid or oblong-ovoid to oblong-cylindric (rarely elongate-cauliform), 1- to 2-leaved (rarely 3- to 5-leaved), surrounded on each side below by 2 or more pairs of imbricating, often leaf-bearing sheaths. Leaves elliptic-oblong to oblong-ob lanceolate or rarely linear. Scapes lateral, basal, axillary, shorter to much longer than the leaves, terminated by a lax to dense raceme or rarely a panicle, few- to many-flowered. Floral bracts commonly much shorter than the pedicellate ovary. Flowers small or usually large, with more or less spreading segments. Sepals similar, free, narrowly lanceolate or linear-lanceolate, acuminate or with an elongate, caudate apex. Petals similar to the sepals but more or less smaller. Lip commonly sessile, spreading from the base of the column, simple or pandurate, shorter and much wider than the other segments, commonly with 2 or more keels or calli at the base. Column very short, stout, footless, wingless. Anther terminal, opercular, incumbent. Pollinia 2, obovoid, unappendaged.

- A1. Inflorescence paniculate, with several spreading-ascending branches. *B. thyrsoides*
- A2. Inflorescence simply racemose, few- to several-flowered. I
- Ia. Lip pandurate in outline. 1
- Ib. Lip not pandurate. 4
- 1a. Anterior part of the lip strongly dilated, gradually acuminate above; calli in front of the basal pair very short and broad. *B. cryptophthalma*
- 1b. Anterior part of the lip not strongly dilated, abruptly pointed or aristate. . . 2
- 2a. Basal keels of the lip confluent into a broad apex; flowers numerous (about 16); sepals and petals transversely chocolate-barred near the base. . *B. Forgetiana*
- 2b. Basal keels of the lip separate, not confluent above; flowers few (about 10 or less); sepals and petals apparently not transversely barred. 3
- 3a. Anterior part of the calli of the lip not terminating in a pair of arcuate keels; flowers relatively large, lateral sepals over 5 cm. long. *B. signata*
- 3b. Anterior part of the calli of the lip terminating in a pair of long, arcuate keels; flowers relatively small, lateral sepals 4 cm. or less long; column dilated at the base. *B. arcuigera*
- 4a. Lamina of the lip with a subquadrate-oblong lower third, then abruptly rhombic-dilated above; basal callus bicuspidate in front. *B. Filomenoi*
- 4b. Lamina of the lip without a subquadrate-oblong lower third, not abruptly dilated above. 5
- 5a. Base of the lip with 6 distinct calli; flowers fleshy; sepals 2-2.6 cm. long. *B. villosa* (*B. hexodonta*)
- 5b. Base of the lip with 2 or 4 distinct calli. 6

- 6a. Flowers small, lateral sepals 3.7 cm. or less long..... 7
 6b. Flowers large, lateral sepals 4.5 (rarely 4) cm. or more long..... 9
 7a. Leaf linear-ligulate, 6-10 cm. long and 1.3 cm. or less wide; lip with 2 simple, longitudinal keels at the base..... *B. elegantula*
 7b. Leaf oblong or oblanceolate, 16-24 cm. long, 4 cm. or more wide; lip with 2 pairs of 2 calli at the base..... 8
 8a. Sepals 3.4-3.7 cm. long; lip obovate-oval, abruptly long-acuminate, about 2.5 cm. long..... *B. juninensis*
 8b. Sepals about 2 cm. long; lip elliptic-lanceolate or oblong-ovate, shortly acuminate, about 1.3 cm. long..... *B. Koehlerorum*
 9a. Pseudobulbs elongate-cauliform, about 35 cm. or more tall, remotely 3- to 5-leaved..... *B. cauliformis*
 9b. Pseudobulbs oblong-cylindric to ovoid-subglobose, 18 cm. or less tall, sub-approximately 1- or 2-leaved (very rarely 3-leaved)..... 10
 10a. Lip more or less verrucose above; anterior pair of calli prominent and divergent..... *B. bidens*
 10b. Lip not verrucose above; anterior pair of calli consisting of erect, often minute teeth..... 11
 11a. Petals about as long as the dorsal sepal or somewhat shorter..... 12
 11b. Petals about half as long as the dorsal sepal or less..... 13
 12a. Pseudobulbs oblong-cylindric to oblong-ovoid, 2-leaved; leaves subobtusely; sepals 5 mm. wide..... *B. bicolor*
 12b. Pseudobulbs ovoid-subglobose, 1-leaved; leaves short-acuminate; sepals 2.5 mm. or less wide..... *B. peruviana*
 13a. Pseudobulbs broadly ellipsoid to ovoid-oblong, commonly 1-leaved; basal callus of the lip low, consisting of 1 low, sulcate callus or 2 approximate calli, usually terminating in an erect tooth..... *B. longissima*
 13b. Pseudobulb oblong-cylindric, 2- or (very rarely) 3-leaved; basal calli of the lip separate and commonly high, with 2 conspicuous, usually separate teeth in front..... *B. caudata*

Brassia arcuigera Reichb. f. Gard. Chron. (1869) 388; Rolfe, Orch. Rev. 25: 222. 1917.

Vegetative parts not described. Raceme (incomplete in the drawing of the type from the Reichenbach Herbarium) loosely several-flowered; rachis about 8 cm. long, gently arcuate, about 7-flowered. Floral bracts triangular-lanceolate, acute or acuminate, amplexicaul and concave, much shorter than the pedicellate ovary. Flowers relatively small for the genus, with spreading segments. Sepals subequal, "linear" or linear-lanceolate, acuminate, 3-4 cm. long. Petals very similar, but markedly shorter. Lip about as long as the petals, lightly pandurate, "oblong" or ovate-oblong, "aristate" or very abruptly acuminate, sessile; disc at the base with a pair of "semiooblong" or obliquely oblong, fleshy calli which are produced in front into conspicuous arched or arcuate-diverging keels. Column short, dilated at the base.

Peru: Habitat and collector not recorded; introduced by Messrs. Veitch.

No specimen of this species has been seen, but in the Ames Herbarium are drawings of the type from the Reichenbach Herbarium.

Brassia bicolor Rolfe, *Lindenia* 8: 87, t. 378. 1893.

Plant rather large and showy. Pseudobulbs aggregated, oblong-cylindric or oblong-ovoid, subcompressed, bifoliate, up to about 12 cm. high, surrounded at the base by 1 or 2 pairs of distichous, long-acuminate, imbricating sheaths of which the larger inner one is often leaf-bearing. Leaves "linear-oblong" or elliptic-ob lanceolate, subobtuse, about 22 cm. or less long and 6 cm. or less wide. Scapes erect, with a subdensely flowered raceme. Flowers about 8, rather large, with widely spreading segments, greenish yellow spotted or deeply banded below with blackish brown. Dorsal sepal linear-lanceolate, long-acuminate, about 5 cm. long and 5 mm. wide. Lateral sepals similar to the dorsal sepal but somewhat longer, oblique. Petals similar to the lateral sepals but shorter and slightly narrower than the dorsal sepal. Lip "lanceolate-oblong" or rhombic-lanceolate, rather long-acuminate, about 3.5 cm. long and 1 cm. wide, with slightly undulate margins; disc at the base with a pair of small keels which are parallel, fleshy, erect, glabrous, and terminate in an erect tooth at the apex. Column clavate, about 7 mm. long.

Peru: Habitat and collector not recorded; introduced by Messrs. Linden.

No material of this species was available.

Brassia bidens Lindl. Bot. Reg. 30, Misc. 6, no. 6. 1844; Fol. Orch. Brassia 3, no. 4. 1853; Cogn. Martius Fl. Bras. 3, pt. 6: 266. 1905. *Brassia Lanceana* Lindl. var. *viridiflora* Hook. Bot. Mag. 67: t. 3794. 1841. *Oncidium bidens* Reichb. f. Walp. Ann. 6: 769. 1863.

Pseudobulb cylindric-oblong or rarely narrowly cylindric, compressed, 2- or (very rarely) 3-leaved, 6-13 cm. high, surrounded below by 2 or 3 pairs of distichous, imbricating sheaths which are successively larger upward and occasionally leaf-bearing. Leaves oblong to oblong-elliptic or oblong-ob lanceolate to ob lanceolate-elliptic, acute or subacute, more or less cuneate below, 14-29.5 cm. long, 2.2-7 cm. wide, subcoriaceous. Scape lateral, basal, in the axil of a sheath, commonly equaling or exceeding the leaves, suberect to lax; peduncle 23 cm. or less long, with 3 or more remote, short, infundibuliform sheaths; raceme subdensely 5- to 15-flowered, 11-23.5 cm. long. Floral bracts very small, infundibuliform. Flowers rather large, with widely spreading segments, green or yellow-green, with brown or blackish spots. Dorsal sepal linear-lanceolate, long-acuminate or caudate, up to 7 cm. long and 6 mm. wide, concave below, tubular-involute above. Lateral sepals very similar, but longer and slightly narrower, dorsally carinate. Petals similar to the sepals, but markedly shorter than either, obliquely linear-lanceolate, long-acuminate. Lip much shorter and broader than the other segments, rhombic-obovate or rhombic-ob lanceolate, more or less abruptly acuminate, sessile at the rounded base, up to 4 cm. long and 2.3 cm. wide above the middle, undulate; disc usually prominently verruculose through the center, at the base with a pair of approximate, low, fleshy keels which terminate in a pair of conspicuous, erect-spreading, triangular teeth. Column very small, about 5 mm. or less high at the back.

Amazonas: Prov. of Bagua, canyon of Río Marañon, between km. 247 and 250 along Mesons-Muro Highway, *Hutchison 1532*.—

Loreto: Mishuyacu, near Iquitos, 100 meters, in forest, *Klug 1199*. Vicinity of Iquitos, 100 meters, epiphyte, *Klug 10003*.—San Martín: San Roque, 1350–1500 meters, *Williams 7717*. Also Brazil (type), British Guiana, and Venezuela.

Brassia caudata (L.) Lindl. Bot. Reg. 10: t. 832. 1824; Fol. Orch. Brassia 3, no. 5. 1853; Hook. Bot. Mag. 62: t. 3451. 1835; Cogn. Martius Fl. Bras. 3, pt. 6: 257, t. 58. 1905. *Epidendrum caudatum* L. Sp. Pl. ed. 2: 1349. 1763. *Malaxis caudata* Willd. Sp. Pl. 4: 93. 1805. *Oncidium caudatum* Reichb. f. Walp. Ann. 6: 766. 1863. *Brassia Lewisii* Rolfe, Orch. Rev. 1: 199. 1893. Figure 168.

Plant epiphytic, very variable. Pseudobulbs often aggregated, oblong-cylindric (commonly narrowly so), strongly compressed and ancipitous, 6–15 cm. long, bifoliate (very rarely trifoliate), surrounded below by 3 or 4 pairs of distichous, imbricated sheaths which are successively larger upward and occasionally leaf-bearing. Leaves elliptic-oblong to oblong-ob lanceolate, abruptly acute, more or less long-cuneate below, 12.5–35.5 cm. long, 2.1–5 (rarely 5.7) cm. wide. Scapes shorter or longer than the leaves, suberect to nodding; peduncle with 3 or more, mostly remote, short, close, tubular-infundibuliform sheaths; raceme loosely to subdensely 4- to 15-flowered, with the rachis up to 16.5 cm. (rarely 28 cm.) long. Floral bracts triangular-ovate or triangular-lanceolate, deeply concave, amplexicaul, much shorter than or subequaling the ovary. Flowers rather large, with widely spreading segments, greenish yellow with brown or reddish spots. Dorsal sepal narrowly lanceolate, long-caudate, concave below, tubular-involute above, up to 8 cm. long and 6 mm. wide. Lateral sepals lanceolate-linear, oblique, much longer than the dorsal sepal (often twice as long) and somewhat narrower, navicular. Petals falcate-lanceolate and incurved toward the dorsal sepal, shortly caudate, about half as long as the dorsal sepal or less. Lip somewhat shorter or longer than the petals, ovate-oblong, more or less abruptly long-acuminate or aristate, rounded and sessile at the base, about 3.5 cm. long and 1.5 cm. wide or smaller; disc at the base with a pair of short, approximate, usually high, pubescent keels and a pair of small, erect teeth in front. Column very short and stout, about 5 mm. high at the back.

Loreto: Mishuyacu, near Iquitos, 100 meters, in forest, *Klug 1047*, 1284. Vicinity of Iquitos, 100 meters, on tree in dense forest, *Klug 10007*. Also Florida (U.S.A.), Mexico, through Central America, the West Indies (type of *Epidendrum caudatum*) and northern South America to Surinam, Ecuador, Bolivia and Peru.

Brassia cauliformis C. Schweinf. Am. Orch. Soc. Bull. 15: 132, t., 1946. Figure 169.

Plant tall, robust. Pseudobulb elongate-cauliform, up to 35 cm. or more tall, remotely 3- to 5-leaved (the interval between the lowest leaves 3.5–10 cm.), surrounded below by two pairs of imbricating, conduplicate, usually leaf-bearing sheaths. Leaves of two forms: blades on the upper sheaths oblong-ob lanceolate or elliptic-lanceolate, short-acuminate, long-narrowed to a sessile, conduplicate

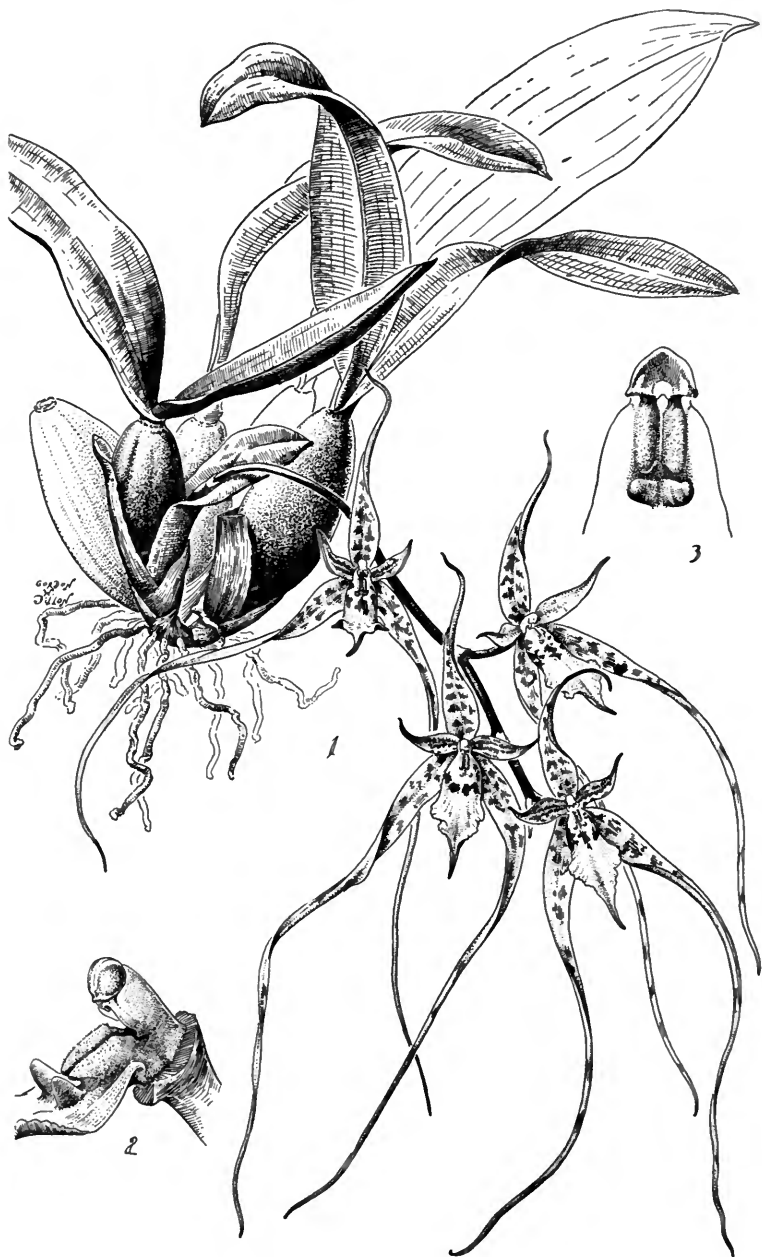


FIG. 168. *Brassia caudata* (L.) Lindl. 1, plant; $\times \frac{1}{2}$. 2, base of lip, showing calli and column, front-side view; $\times 2\frac{1}{2}$. 3, base of lip, showing calli from above, with column removed; $\times 2\frac{1}{2}$.

BRASSIA

cauliformis

C. Schweinf.



FIG. 169. *Brassia cauliformis* C. Schweinf. 1, plant; $\times \frac{1}{10}$. 2, inflorescence; $\times \frac{1}{2}$. 3, lip and column, obliquely from side; $\times 1$. 4, lip from above; $\times 1$.

base, 19–43 cm. long, up to 4.7 cm. wide; blades on the pseudobulb linear-oblan-
ceolate, short- or long-acuminate, very long-narrowed to a channelled base, up to
59.5 cm. long and 4 cm. wide. Scapes lateral, basal in the axil of a sheath, some-
times about 1.5 m. tall (according to the collector's notes), robust, with one or
more remote, small, close, amplexicaul sheaths; raceme loosely 12- to 14-flowered,
rachis about 28.5 cm. or less long. Floral bracts ovate-lanceolate, acuminate, am-
plexicaul, up to 1.6 cm. long, much shorter than the pedicellate ovary. Flowers
variable in size and often rather large, with widely spreading segments, greenish
yellow with a brown-spotted lip or yellow. Dorsal sepal linear-lanceolate, acumi-
nate, 3.8–7.4 cm. long, 5–6 mm. wide. Lateral sepals similar but very slightly
larger, lightly oblique and navicular. Petals lanceolate-linear, acuminate, dis-
tinctly shorter than the sepals. Lip ovate-lanceolate or rhombic-lanceolate, acumi-
nate, 3–5.6 cm. long, 1.3–2.9 cm. wide, with the margins (except near the base)
crenulate and undulate; disc at the base with a pair of short, glabrous keels which
are low and approximate below, then diverging and semielliptic-dilated above
(when viewed from the side). Column very short and stout, about 5 mm. high
at the back.

Cuzco: Prov. of Convención, Hda. Potrero, Sapan-Sachayocc,
2200 meters, on open grass slope, *Vargas 2528*. Prov. of Quispican-
chis, Chaupichaca, Marcapata Valley, 1600–1700 meters, in "shrub-
wood," *Weberbauer 7823* (type).

***Brassia cryptophthalma* Reichb. f. Gard. Chron. n. ser. 12:
554. 1879.**

Vegetative portion and lower part of the inflorescence lacking. Raceme short,
arcuate, subdensely several- (about 7-) flowered, with a purple-violet rachis.
Floral bracts small, lanceolate-ovate, amplexicaul, much shorter than the pedicel-
late ovary. Flowers rather large, with widely spreading segments, pale yellow
with dark violet lower portions to the sepals and the lip deeper yellow with a few
dark violet spots. Sepals linear-lanceolate, long-acuminate or "aristate," 6–7 cm.
long, the lateral ones somewhat longer than the dorsal and slightly oblique. Petals
similar to the lateral sepals, but shorter than the dorsal. Lip pandurate, oblong-
obovate in outline and strongly dilated above, acuminate, rounded at the sessile
base, about 4.5 cm. or more long and 2.1 cm. wide above; disc at the base with 4
smooth keels in two series; posterior keels approximate, oblong becoming lower in
front and ending in a sharp, upcurved tooth; anterior keels broadly oblong, short
and diverging. Column very short and stout.

Peru: Habitat and collector not recorded; introduced by Messrs.
Mayer of Karlsruhe.

No example of this species was available, but in the Ames Her-
barium there are drawings of this plant from the Reichenbach
Herbarium.

***Brassia elegantula* Reichb. f. Gard. Chron. n. ser. 24: 616.
1885; Rolfe, Orch. Rev. 13: 200. 1905. *Oncidium elegantulum* Reichb.
f. Gard. Chron. n. ser. 24: 616. 1885.**

Plant very small for the genus, tufted, about 15 cm. high including the inflorescence. Rhizome abbreviated. Pseudobulbs "rather small, glaucous," otherwise not described. Leaves linear or "cuneate-ligulate, rigid, acute, glaucous," 6.3–10.2 cm. long, 8–13 mm. wide. Inflorescence slender; raceme nearly 8 cm. long, few- (2- to 5-) flowered, loose to subdense. Floral bracts relatively large, ovate or "triangular," acute, deeply concave and amplexicaul, shorter than the pedicellate ovary. Flowers small, with widely spreading segments, green with brown transverse bars and a white lip having a few madder-purple dots; about 2.4 cm. in diameter. Dorsal sepal lanceolate or oblong-lanceolate, acute, about 1.2 cm. long. Lateral sepals about equal, deflexed, falcate-incurved. Petals similar to the dorsal sepal but distinctly shorter, erect. Lip oblong-ovate or "oblong," rather abruptly acute or "apiculate," with the upper half reflexed; disc at the base with a pair of longitudinal keels which are hairy inside and abruptly inflexed in front. Column very short, wingless, green and brown.

"Peru," fide Schlechter, Fedde Repert. Beih. 9: 172. 1921. Habitat uncertain; said to be imported from Mexico by F. Sander.

No example of this species was available, but in the Ames Herbarium are drawings of the type from the Reichenbach Herbarium.

Brassia Filomenoi Schltr. Fedde Repert. Beih. 9: 111. 1921; Mansf. Fedde Repert. Beih. 57: t. 129, nr. 504. 1929.

Plant epiphytic, probably large, vegetative parts lacking. Scape up to 40 cm. long; peduncle distantly few-sheathed, raceme loosely 10- to 15-flowered, erect-spreading, secund, up to 20 cm. long. Floral bracts oblong-deltoid, apiculate, much shorter than the ovary. Flowers showy, rather large; sepals and petals greenish yellow with dark brown at the base; lip sparingly spotted with dark brown. Sepals lanceolate-linear or "linear," long-acuminate, diverging, 6.3–6.5 cm. long, the lateral ones oblique. Petals very similar to the sepals but a little shorter, oblique. Lip obovate-oblong in outline, about 4 cm. long and 1.5 cm. wide near the middle; claw very short; lamina quadrate-oblong through the lower third, rounded at the base, then rhombic-dilated and narrowed above into an elongate, gradually acuminate point; disc at the base with a pair of approximate, fleshy, subglabrous calli which are abruptly lobulate-dilated above and very shortly cuspidate in front on each side. Column short, about 6 or 7 mm. high, glabrous.

Loreto: Near Moyobamba, *Filomeno* s.n.

No specimen of this species was accessible.

Brassia Forgetiana Hort. ex Gard. Chron. ser. 3, 48: 434, 463, 471, fig. 209. 1910, *nomen tantum*; C. Schweinf. Bot. Mus. Leaflet. Harvard Univ. 12: 196. 1946.

Plant large, allied to *B. maculata* R. Br., but heretofore without substantial, definite diagnosis. Description drawn from the detailed illustration cited. Leaf large, oblong or elliptic-oblong, abruptly subacute or rounded at the apex, apparently over 30 cm. long and 6–7 cm. wide. Raceme arcuate, densely many-flowered, the rachis nearly 20 cm. long. Floral bracts ovate or ovate-lanceolate, acuminate, clasping, about one third as long as the pedicellate ovary. Flowers medium-sized

for the genus, with horizontally spreading segments, greenish white with transverse chocolate or chocolate-purple bars near the base of the sepals and petals. Dorsal sepal narrowly lanceolate, long-acuminate, concave, about 6 cm. long and 6 or 6.5 mm. wide below the middle. Lateral sepals linear-lanceolate, long-acuminate, oblique, slightly falcate-incurved, a little longer than the dorsal sepal. Petals obliquely linear-lanceolate, long-acuminate, falcate-incurved, somewhat more than half as long as the dorsal sepal and slightly narrower at the base where broadest. Lip pandurate-oblong, rounded and very abruptly long-cuspidate at the apex, sessile at the rounded base, nearly 4.5 cm. long, about 1 cm. wide near the base and 0.9 cm. wide near the apex; disc at the base with a pair of approximate, longitudinal, fleshy calli which are fused above into a somewhat dilated, abruptly truncate and 3-lobulate apex. Column very short and stout, about 6 mm. high.

Peru: Habitat not recorded, *Forget s.n.*; introduced by Messrs. Sander.

No example of this species was available.

Brassia juninensis C. Schweinf. Am. Orch. Soc. Bull. 14: 248, t., 1945. Figure 170.

Plant medium-sized for the genus, epiphytic, with a stout rhizome. Pseudobulbs oblong-cylindric, strongly compressed, obliquely bifoliate at the apex, 8–12 cm. high, surrounded below by 2 or 3 pairs of imbricating sheaths which are progressively larger upward and rarely leaf-bearing. Leaves elliptic-oblong to broadly oblanceolate or oblong-oblanceolate, more or less abruptly acute, cuneate or long-cuneate at the complicate base, 16–20.5 cm. long, up to 4.4 cm. wide. Scape lateral, basal in the axil of a sheath, shorter than the leaves or rarely slightly surpassing them, suberect or rarely with a reflexed raceme; peduncle 7–14 cm. long, commonly with several short sheaths, which are remote above; raceme loosely 6- to 12-flowered. Floral bracts small, triangular-ovate, amplexicaul, acute or acuminate, about one half as long as the pedicellate ovary or less. Flowers rather small, subfleshy, with spreading segments, pale greenish cream-color with the petals brown-purple below and the lip brown-spotted. Dorsal sepal linear-lanceolate or elliptic-linear, long-acuminate, concave below, about 3.4 cm. long, 3.5–6.5 mm. wide. Lateral sepals obliquely linear-lanceolate, acuminate, dorsally carinate with the keel produced into a prominent mucro, a little longer and very slightly narrower than the dorsal sepal. Petals linear or linear-lanceolate, long-acuminate, lightly oblique, markedly shorter and narrower than the sepals. Lip sessile, obovate-oval or oblong-obovate when expanded, with the apical portion recurved in natural position, abruptly long-acuminate, about 2.5 cm. long and 1.4 cm. wide, with crenulate margins especially above; disc at the base with a pair of very small, approximate, fleshy, pubescent calli which become lower beyond the middle and with 2 fleshy ovoid-dentiform, spreading calli just in front. Column very short and stout, about 5 mm. high at the back, with a large stigmatic cavity.

Junín: La Merced, Hacienda Schunke, about 1230 meters, in large clumps, flowers fragrant in the morning, *Macbride 5660* (type). Chanchamayo Valley, 1200 meters, *Schunke 531*. Same place and altitude as the last, *Schunke 562, 1807*.

BRASSIA

juninensis

C. Schweinf.

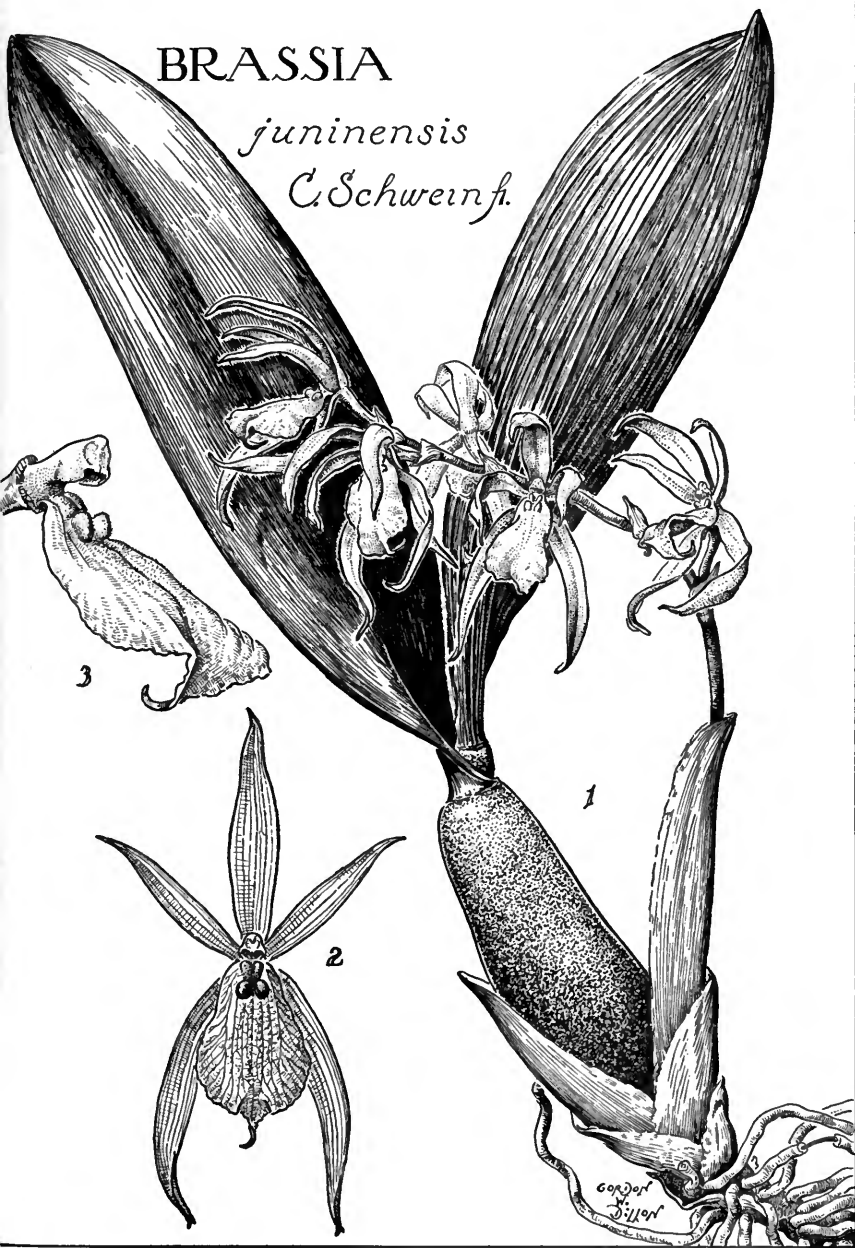


FIG. 170. *Brassia juninensis* C. Schweinf. 1, plant; $\times \frac{2}{3}$. 2, flower from front; $\times 1$. 3, lip and column, oblique view; $\times 2$.

Brassia Koehlerorum Schltr. Fedde Repert. Beih. 9: 112. 1921; Mansf. Fedde Repert. Beih. 57: t. 129, nr. 505. 1929.

Plant epiphytic, erect, about 40 cm. high, with a short rhizome. Pseudobulbs narrowly oblong-cylindric, subcompressed, bifoliate, 15–17 cm. high, surrounded at the base by short, non-leaf-bearing sheaths. Leaves obliquely oblong-ligulate, subacute, gradually somewhat narrowed toward the base, 21–24 cm. long, nearly 4–4.5 cm. wide in the middle. Scapes erect-spreading, 20–25 cm. long; peduncle up to 10 cm. long; raceme rather loosely 10- to 18-flowered, secund. Floral bracts rather small, deltoid. Flowers small for the genus, with slightly spreading segments. Dorsal sepal narrowly lanceolate, subacute to subacuminate, about 2 cm. long and 4.3 mm. wide. Lateral sepals similar, but slightly longer, suboblique, lightly carinate. Petals obliquely linear-lanceolate, subacute, slightly shorter and markedly narrower than the sepals. Lip from a subunguiculate-narrowed base elliptic-lanceolate or “oblong-elliptic,” shortly acuminate to a subobtuse tip, about 1.3 cm. long and nearly 5 mm. wide in the middle; disc at the base with a pair of short, fleshy, minute-papillose keels which are retuse in the middle of each side or coarsely bicrenate with a pair of rounded, spreading, papillose calli just in front. Column very short and stout, about 4 mm. high.

Junín: Near La Merced, in the Chanchamayo Valley, *Bros. Koehler s.n.*

No specimen of this species was seen.

Brassia longissima (Reichb. f.) Nash, Bailey Stand. Cyclop. Hort. 1: 541. Mar. 1914. *Brassia longissima* Schltr. Die Orchid. 496. Oct. 1914, in part. *Brassia Lawrenceana* Lindl. var. *longissima* Reichb. f. Gard. Chron. (1868) 1313; Hook. f. Bot. Mag. 95: t. 5748. 1869.

Plant large, variable, with a stout creeping rhizome. Pseudobulb strongly ancipitous, oval or ellipsoid to pyriform-cylindric, unifoliate or less commonly bifoliate, 5–18 cm. long, surrounded below on each side by 2 or 3 imbricating sheaths which are successively larger upward, the uppermost one leaf-bearing. Leaves (on the pseudobulb) elliptic-oblong to oblong, 15–56 cm. long, 4–7 cm. wide, acute, shortly cuneate at the complicate base. Scape lateral, basal in the axil of sheaths, shorter than or longer than the leaves, 30–60 cm. high; peduncle with 2 or more remote, short, close, tubular sheaths; raceme rather loosely 4- to 15-flowered, with the rachis 9–24 cm. long. Floral bracts small, triangular-ovate and amplexicaul or infundibuliform, much shorter than the pedicellate ovary. Flowers very large, with horizontally spreading segments, yellow-green to orange-yellow with dark brown spots and lip whitish or cream-color with a few brown spots. Dorsal sepal linear-lanceolate, elongate-setaceous, 7–12 cm. long, 5–7 mm. wide at the concave base. Lateral sepals similar but about twice as long or more. Petals obliquely linear-lanceolate, falcate-incurved, long-acuminate, about half as long as the dorsal sepal. Lip oblong-lanceolate, long-acuminate, 4–7.6 cm. long, up to 1.5 cm. wide; disc at the base with a pair of approximate, narrow, fleshy, pubescent ridges which commonly terminate in erect tubercles. Column very short and stout, about 6 mm. high.

Amazonas: Habitat not recorded, *Woytkowski 23*.—Loreto: Puyayacu, between Balsapuerto and Moyobamba, 600–1200 meters, epiphytic in forest, *Klug 0.1*. Also Costa Rica (type) and Panama.

Brassia peruviana Poepp. & Endl. Nov. Gen. ac Sp. 2: 12, t. 117. 1838; Cogn. Martius Fl. Bras. 3, pt. 6: 263. 1905. *Oncidium peruvianum* Reichb. f. Walp. Ann. 6: 767. 1863.

Plant large, with a short rhizome. Pseudobulb rather small, subglobose-ovoid, compressed, unifoliate, 4–5 cm. long, glaucous, sheathed below by 1 or 2 pairs of conduplicate, imbricating, leaf-bearing sheaths. Leaves large, linear-ob lanceolate, shortly acuminate, long-narrowed below to a more or less petioled, channelled base, 40–60 cm. long, 3–5 cm. wide. Scape lateral, basal, robust, erect, a little shorter than the leaves, 40–50 cm. tall; peduncle with a few, very remote, rather short, acute sheaths; raceme loosely several- (about 9-) flowered. Floral bracts triangular-ovate, acute, somewhat ventricose, 2 or 3 times shorter than the pedicellate ovary. Flowers medium-sized for the genus, subfleshy, with somewhat spreading segments which are yellowish green spotted with purple. Dorsal sepal linear or lanceolate-linear, gradually narrowed to an acute apex, 4–4.5 cm. long, 2–2.5 mm. wide, slightly concave. Lateral sepals similar but somewhat longer, subfalcate. Petals linear or lanceolate-linear, long-acuminate, subfalcate, about equaling the dorsal sepal. Lip spreading with the apex lightly recurved, oblong-ovate, acute, somewhat attenuate below, about 2.5 cm. long, 9–12 mm. wide, with the margin crisped and minutely crenulate; disc at the base with a pair of short, fleshy, smooth calli which are approximate below and rather diverging above and 2 minute, remote teeth in front. Column very short and stout, slightly attenuate below, 3–4 mm. high.

Huánuco: District of Chihuamcala, near Cuchero (Cohero), in rather dry thickets, *Poeppig 1589*.

No example of this species was available.

Brassia signata Reichb. f. Gard. Chron. n. ser. 16: 6. 1881; Veitch, Man. Orch. Pl. pt. 7, *Brassia* 126. 1891. *Oncidium signatum* Reichb. f. l.c.

Plant medium-sized for the genus, with an abbreviated rhizome. Pseudobulbs caespitose, oblong-ovoid to ellipsoid, compressed, 7.6–12.7 cm. long, bifoliate or trifoliate, surrounded at the base by one or more pairs of imbricating, leaf-bearing sheaths. Leaves oblanceolate-oblong or "cuneate-ligulate," acute or subacute, slightly and gradually narrowed below, 22.8–30.4 cm. long, about 3.6 cm. wide. Scapes subequaling or exceeding the leaves, suberect, loosely racemose above, with 2–10 flowers. Flowers rather small for the genus, with widely spreading segments, the sepals and petals green turning to yellow and lined with brown below, and the lip white with 2 or 4 purplish spots. Dorsal sepal linear-lanceolate, long-acuminate, about 5 cm. long and 5 mm. wide. Lateral sepals similar but somewhat longer, lightly oblique. Petals similar to the lateral sepals but smaller than either sepal. Lip broadly pandurate, oval-ovate in outline, abruptly long-acuminate, about 2.5 cm. long; disc at the base with 2 approximate yellow keels which are

emarginate in the middle of each side. Column very short and stout, about 6 mm. high.

Peru: Habitat not recorded; introduced by Messrs. J. Backhouse and Sons of York, England.

No specimen of this species was available, but the Ames Herbarium contains a drawing with floral analysis from the Reichenbach Herbarium.

***Brassia thyrsoles* Reichb. f. Gard. Chron. (1868) 842.**

Plant large and stout. Pseudobulb pyriform-cylindric, with two remote constrictions (one near the middle and one above), apparently bifoliate or trifoliate, about 12 cm. high. Leaves not described or illustrated. Scape lateral, basal, robust, suberect, apparently about 53 cm. tall; peduncle with a few small, remote, appressed sheaths; inflorescence a stout panicle with several spreading-ascending branches, densely or subdensely many-flowered. Floral bracts triangular-ovate, acute or acuminate, concave and amplexicaul, widely spreading, about half as long as the pedicellate ovary or more. Flowers rather small for the genus, yellow with greenish spots, with widely spreading segments. Dorsal sepal linear-lanceolate, acuminate, 3.5–4.5 cm. long, about 4 mm. wide. Lateral sepals similar but somewhat longer, oblique. Petals similar to the lateral sepals but shorter than either sepal. Lip elliptic-oblong or rhombic-ovate, acuminate, angled and often narrowed at the base, crisped, recurved above, about 3.5 cm. or less long when expanded, nearly 1.1 cm. wide near the middle; disc at the base with a pair of low lamellae which are angled at the apex and with a pair of obtusely angled lamellae just in front. Column very small, about 5 mm. high.

Peru: Habitat not recorded; introduced by Messrs. Veitch and Sons.

No example of this species was accessible, but the Ames Herbarium contains drawings of the type from the Reichenbach Herbarium.

***Brassia villosa* Lindl. Fol. Orch. Brassia 4, no. 7. 1853; Cogn. Martius Fl. Bras. 3, pt. 6: 264. 1905. *Brassia hexodonta* Reichb. f. & Warsc. Bonpl. 2: 98. 1854. *Oncidium villosum* Reichb. f. Walp. Ann. 6: 767. 1863.**

Pseudobulbs, leaves and lower parts of scape lacking. Raceme densely or subdensely many-flowered, secund, about 23 cm. or more long. Floral bracts broadly triangular-ovate, acute, amplexicaul, appressed, 3 or 4 times shorter than the pedicellate ovary. Flowers small, fragrant, with rather fleshy, spreading segments. Dorsal sepal oblong-lanceolate, long-acuminate, 2 cm. long, 3 mm. wide. Lateral sepals similar but considerably longer, subfalcate. Petals narrowly lanceolate, acuminate, strongly arcuate-falcate, markedly shorter and slightly wider than the dorsal sepal. Lip sessile, spreading-reflexed, ovate-oval, abruptly acute or apiculate, undulate on the margin and sometimes lightly lobulate, subrounded at the base, about 1.5 cm. long, 7–10 mm. wide; disc at the base with 6 short, pubescent calli, the 2 posterior calli oblique and somewhat confluent above, the 2 median

calli subapproximate and central, and the 2 anterior calli spreading and semiorbicular. Column short, stout, clavate, acutely angled on each side at the apex, about 5 mm. high.

Peru: Habitat not designated (type of *B. hexodonta*).—Huánuco: Source of the Marañon River, *Warscewicz s.n.* (type of *B. villosa*). Also British Guiana.

No specimens of this concept were available, but the Ames Herbarium contains a photograph with floral analysis of typical *B. villosa* from the Lindley Herbarium as well as a drawing of *B. hexodonta* from the Reichenbach Herbarium.

MILTONIA Lindl.

A rather small genus of tropical American epiphytes, extending from Costa Rica and Panama through Colombia, Ecuador and Peru to Paraguay and Argentina, and centering in Brazil.

Plant commonly large, rarely small. Rhizome abbreviated or long-creeping. Pseudobulbs often aggregated, 1- to 2-leaved, surrounded below by one or more pairs of distichous, often leaf-bearing sheaths. Leaves linear or oblong, narrowed below. Scapes lateral, basal in the axil of sheaths, shorter or often longer than the leaves, loosely 1- to many-flowered above, racemose or rarely paniculate. Flowers small, medium-sized or very large, with widely spreading segments. Sepals subequal, free or the lateral ones shortly connate at the base. Petals similar to the sepals or often broader. Lip spreading from the base of the column, sessile or shortly clawed, simple or pandurate; disc near the base 1- to several-lamellate. Column short or very short, footless, often with a cucullate clinandrium. Anther terminal, opercular, incumbent. Pollinia 2, ovoid, unappendaged.

- A1. Scape much shorter than the leaves; flowers small for the genus, lip 1.5 cm. or less long. *M. parva*
- A2. Scape as long as the leaves or longer; flowers relatively large; lip about 2.7 cm. or more long. I
- Ia. Inflorescence commonly branched; sepals and petals crisped-undulate, spatulate-oblong, 7.5 mm. or less wide; lip not auricled at the base. *M. Warscewiczii*
- Ib. Inflorescence always simple; sepals and petals flat, obovate-oblong, 10 mm. or more wide; lip with a pair of triangular-ovate auricles at the base. *M. vexillaria*

Miltonia parva C. Schweinf. Am. Orch. Soc. Bull. 14: 294, t., 1945. Figure 171.

Plant small and slender for the genus. Rhizome creeping, slender, concealed by loose, concave, amplexicaul sheaths. Pseudobulbs cylindric, strongly compressed, unifoliate, 3.5–4.5 cm. long, surrounded at the base by 2 distichous, imbricating sheaths, the larger upper one commonly bearing a small leaf-blade. Leaf (on the pseudobulb) oblong-linear to elliptic-linear, sharply acute, gradually nar-

rowed below to a conduplicate, petiole-like base, 17–23.5 cm. long, 1–1.5 cm. wide. Scape lateral, basal, very short, with a loosely 2-flowered raceme, about 5 cm. or less tall. Flowers small for the genus, with widely spreading segments. Dorsal sepal elliptic-oblong, abruptly acute, dorsally subcarinate, 1.68–1.8 cm. long, 5.2–7 mm. wide. Lateral sepals very similar in shape and size, dorsally carinate. Petals similar to the sepals but markedly smaller. Lip spreading from the base, simple, ovate-suborbicular or suborbicular, lightly retuse to broadly rounded in front, crenulate-erose and undulate except near the base, about 1.2–1.5 cm. long and 1.7–1.8 cm. wide; disc with a single more or less distinct, oblong, fleshy callus in the center of the base. Column small, lightly arcuate, terminating in a cucullate clinandrium, 8.9–9.5 mm. high at the back, with a pair of porrect, triangular teeth near the base.

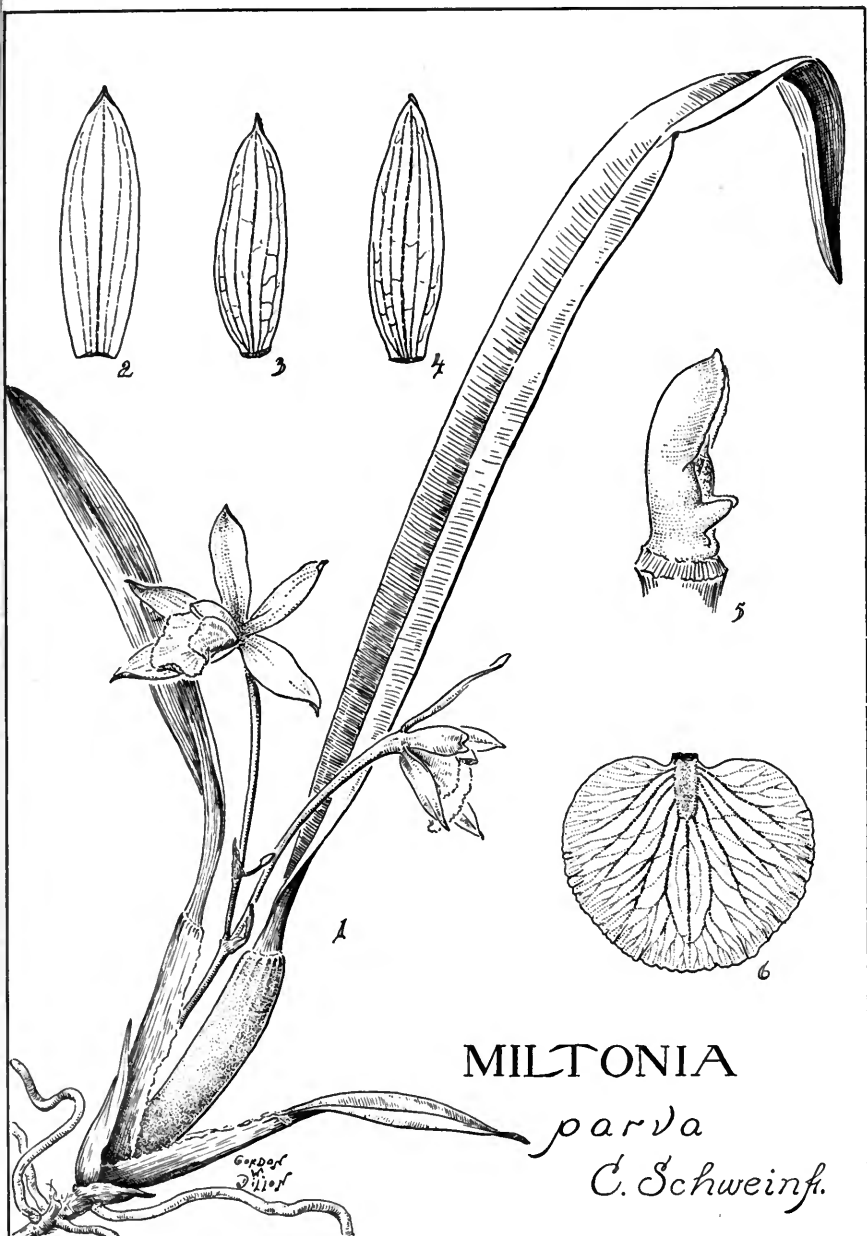
Junín: Chanchamayo Valley, 1200 meters, *Schunke N.* (type). Same locality, 1500 meters, *Schunke 1272, 1295.*

Miltonia vexillaria (Reichb. f.) Nichols. Dict. Gard. 2: 369 (1884–1888); Veitch, Man. Orch. Pl. 8: 110. 1892; Cogn. & Goos. Dict. Icon. Orch. *Miltonia* t. 1. 1896. *Odontoglossum vexillarium* Reichb. f. Gard. Chron. (1867) 901; l.c. (1872) 667, fig. 163; Hook. f. Bot. Mag. 99: t. 6037. 1873.

Plant medium-sized to large, apparently with an abbreviated rhizome. Pseudobulbs oblong-ellipsoid, strongly compressed, about 4–6.3 cm. high, 1- or 2-leaved at the summit, surrounded at the base by 2 or 3 distichous, imbricating, leaf-bearing sheaths. Leaves narrowly elliptic-lanceolate to linear-lanceolate, acute, about 15–30 cm. long, 2.5–3.7 cm. wide. Scapes lateral, basal in the axil of sheaths, usually 2 or 3 (rarely 6) to each plant, slender, arcuate, commonly longer than the leaves, up to 50 cm. long, very loosely racemose and 2- to 7-flowered. Flowers large and showy, very variable in size and color, usually pale rose-color (less commonly white or rose-carmine). Sepals similar, ovate-oblong, subacute to truncate, recurved above, white on the margins, about 2–3 cm. long and 1–1.4 cm. wide, the lateral sepals lightly oblique. Petals similar to the sepals but commonly broader. Lip much larger than the other segments, round-ovate to suborbicular, prominently bilobed in front, extended at the base into a pair of small, erect, triangular-ovate auricles, about 2.7–5.4 cm. long (on each side of the middle) and 2.4–6.4 cm. wide; disc at the yellow base with a minute, bilobed callus and 3 obscure teeth in front. Column abbreviated, clavate, wingless.

Cuzco: Prov. of Paucartambo, from Sta. Isabel to Asunción, 1800 meters, epiphyte, *Vargas 5525.* Also Colombia (type) and Ecuador.

Miltonia Warscewiczii Reichb. f. Xen. Orch. 1: 129, 132. 1856; Hook. f. Bot. Mag. 96: t. 5843. 1870; Cogn. & Goos. Dict. Icon. Orch. *Miltonia* t. 8. 1900; Cogn. Martius Fl. Bras. 3, pt. 6: 283. 1905. *Oncidium fuscatum* Reichb. f. Walp. Ann. 6: 763. 1863. *Odontoglossum Weltonii* Hort. ex Gard. Chron. (1870) 1: 417. *Oncidium Weltonii* Hort. ex Gartenfl. 25: 339. 1876.



MILTONIA

parva
C. Schweinf.

FIG. 171. *Miltonia parva* C. Schweinf. 1, plant; $\times 1$. 2, dorsal sepal; $\times 2$. 3, petal; $\times 2$. 4, lateral sepal; $\times 2$. 5, column from side; $\times 3$. 6, lip spread out; $\times 2$.

Plant large, epiphytic. Rhizome apparently abbreviated. Pseudobulbs congested, strongly compressed, oblong-cylindric (sometimes slightly narrowed upward), unifoliate, 8–12.7 cm. long, surrounded below by 1 or 2 pairs of conduplicate, leaf-bearing sheaths. Leaves oblong, rounded or abruptly acute at the apex, gradually narrowed below to a conduplicate base, up to 33 cm. long (on the pseudobulb), about 3 cm. or more wide. Scape lateral, basal in the axil of a sheath, surpassing the leaf, suberect to arcuate, 25–54 cm. long; peduncle about 41 cm. or less long, entirely or mostly concealed by numerous, close, tubular sheaths; inflorescence simple or more commonly loosely branched, laxly to subdensely many-flowered. Floral bracts lanceolate, concave, appressed, about half as long as the slender pedicellate ovary. Flowers several to numerous, with widely spreading segments; sepals and petals crisped-undulate on the margins, reddish brown with white or yellowish apex; lip rose-purple, variegated with white, yellowish and reddish-brown. Dorsal sepal oblanceolate-oblong or spatulate-oblong, obtuse or retuse and mucronate, 1.7–2.1 cm. long, up to 7.5 mm. wide. Lateral sepals similar but a little longer and narrower, obtuse, oblique and lightly recurved, dorsally carinate. Petals very similar to the dorsal sepal but less narrowed below, oblanceolate-oblong, obtuse or retuse. Lip variable, much larger than the other segments, spreading from the base, oval-suborbicular or suborbicular-obovate (sometimes slightly quadrangular), deeply bilobed at the rounded or subtruncate apex, up to 2.8 cm. long (from the base to the apex of a lobule) and 2.5 cm. wide; disc naked or with an obscure, fleshy, bilobed thickening at the very base. Column very short and stout, 4–5 mm. high at the back, with a pair of rounded, inconspicuous wings.

Huánuco: Cuchero (Cochoero), on trees, *Poeppig 1765, Warszewicz s.n.* (type). Also Colombia, and Ecuador, *fide Schlechter, Fedde Repert. Beih. 8: 155. 1921.*

SOLENIIDIUM Lindl.

A very small genus rather closely allied to *Oncidium*, at present limited to four species, confined to the northern half of South America. A single species is known in Peru.

Plants epiphytic, medium-sized to rather large, with an abbreviated rhizome. Pseudobulbs aggregated, ovoid or oblong-ovoid to ellipsoid, 1- to 2-leaved at the apex. Leaves oblong or linear-oblong. Inflorescence lateral, basal, laxly or rarely subdensely racemose above. Flowers medium-sized, long-pedicelled. Sepals subequal, free, wide-spreading. Petals similar to the sepals. Lip spreading from the base of the column, simple, with a narrow claw-like base, dilated above; disc with a pair of calli or lamellae. Column erect, footless, broadly 2-winged, the wings dilated into auricles above. Anther opercular, incumbent, galeate, 1-celled. Pollinia 2, ovoid, unappendaged.

Solenidium peruvianum Schltr. *Fedde Repert. Beih. 9: 113. 1921; Mansf. Fedde Repert. Beih. 57: t. 129, nr. 507. 1929.*

Plant medium-sized, erect, about 20 cm. high. Pseudobulbs aggregated, [ellipsoid], compressed, unifoliate, about 2 cm. long, below with a leaf-bearing sheath on

each side. Leaf erect, ligulate-linear, subobtuse, up to 15 cm. long and 1 cm. wide. Inflorescence erect, about 18 cm. high; peduncle subcompressed, about 12 cm. long; raceme about 7 cm. long, loosely several- (about 6-) flowered. Flowers rather small and subfleshy, with wide-spreading segments. Dorsal sepal oblong-obovate, broadly obtuse or rounded at the apex, about 11 mm. long. Lateral sepals similar but a little larger, oblique, acute or apiculate. Petals similar to the sepals but a little shorter, elliptic-obovate, oblique, obtuse. Lip somewhat shorter than the other segments, broadly obovate in outline, from a quadrate-unguiculate basal portion with erect sides, suborbicular-dilated, apiculate, about 9 mm. long and 6 mm. wide near the middle; disc from the base to beyond the middle with a pair of approximate, fleshy, minute-papillose, linear-oblong calli. Column short, stout, about 6 mm. high, terminating in a pair of erect, falcate-oblong, obtuse auricles.

Loreto: Near Moyobamba, *Filomeno s.n.*

No example of this species has been available.

ONCIDIUM Sw.

A very large genus of New World epiphytes extending from southern Florida (U.S.A.), the West Indies and Mexico through Central America and South America to Brazil and Argentina.

Plants very variable, small and insignificant to large and showy, with a creeping or abbreviated rhizome, either terrestrial or epiphytic. Pseudobulbs short and suborbicular to elongate and narrowly cylindrical (sometimes minute or lacking), more or less compressed, usually 1- to 3-leaved, commonly surrounded below by one or more pairs of frequently leaf-bearing sheaths. Leaves variable, rather flat, more rarely ascipitous and equitant or terete, commonly elongate. Inflorescence lateral, basal in the axil of sheaths, above racemose or paniculate, loose or dense, few- to many-flowered, erect, frequently long-climbing or twining. Flowers commonly showy and usually yellow, often spotted with brown, with spreading or reflexed segments. Sepals commonly subequal, the lateral sepals free or more or less connate. Petals similar to the dorsal sepal, commonly smaller or rarely larger. Lip spreading from the base of the column, sessile or with a short claw, usually pandurate or 3-lobed, the mid-lobe being often much larger, transverse and emarginate, rarely small, narrow and entire; disc with a commonly tuberculate callus at the base. Column short, stout, footless, usually with a petaloid wing at the apex on each side of the stigmatic orifice, sometimes wingless, often with a conspicuous swelling in front. Anther terminal, opercular, incumbent. Pollinia 2, obovoid, unappendaged, affixed to a stipe.

- | | | |
|-----|---|---------------------|
| A1. | Lip distinctly narrower toward the apex, very rarely subpandurate above . . . | 1 |
| A2. | Lip distinctly broader toward the apex, or pandurate | 25 |
| Ia. | Flowers relatively small, lateral sepals 1.5 cm. or less long | 1 |
| Ib. | Flowers medium-sized to large, lateral sepals 2 cm. or more long | 9 |
| 1a. | Column with conspicuous, well-developed wings above | 2 |
| 1b. | Column without conspicuous or well-developed wings | 5 |
| 2a. | Lip cuneate-obovate or cuneate-rhombic | <i>O. acinaceum</i> |
| 2b. | Lip broadly triangular (i.e., much broader near the base) | 3 |

- 3a. Crest of the lip with a pair of high keels, higher in front; lateral sepals rounded or retuse at the apex. *O. xanthornis*
- 3b. Crest of the lip without a pair of prominent carinate keels, but consisting of numerous short papillae or tubercles. 4
- 4a. Panicle not climbing, at most nodding above, with many-flowered branches; flowers of one form; column-wings semioval, entire, acute. *O. deltoideum*
- 4b. Panicle climbing, with few-flowered, short branches; flowers of two kinds; column-wings semiorbicular, lobulate, obtuse. *O. ionopterum*
- 5a. Floral bracts prominent, although much shorter than the ovary. 6
- 5b. Floral bracts minute. 7
- 6a. Scape lax, climbing, with very loosely flowered branches; lip triangular in outline. *O. cimiciferum*
- 6b. Scape erect or suberect with densely flowered branches; lip ovate in outline. *O. ovatilabium*
- 7a. Lip ovate in outline, bicarinate below with the keels attenuated in front; ultimate branchlets of the panicle rather densely flowered. *O. mentigerum*
- 7b. Lip triangular in outline, with numerous warts which are more or less fused at the base; ultimate branchlets of the panicle loose or very loose. 8
- 8a. Petals distinctly broader than the dorsal sepal; lip with more or less protuberant basal angles; column with prominent angles below. *O. trulla*
- 8b. Petals scarcely broader than the sepals; lip without protuberant basal angles; column without prominent angles below. *O. cocciferum*
- 9a. Petals usually nearly or quite as large as the dorsal sepal, broadly rounded or at least strongly obtuse at the apex. 10
- 9b. Petals definitely smaller than the dorsal sepal, commonly narrowed toward the apex. 12
- 10a. Lip acute to subacute; lateral lobes or auricles not retrorse. *O. superbiens* (*O. aemulum*)
- 10b. Lip long-acuminate; lateral lobes strongly retrorse. 11
- 11a. Crest of the lip consisting of 3 equal, retrorse, ancipitous lamellae with 3 smaller lamellae in front; wings of the column broad, rounded. *O. macranthum*
- 11b. Crest of the lip consisting of 1 large median keel, flanked by a smaller prostrate lamella on each side; wings of the column relatively narrow, ligulate. *O. macranthum* var. *hastiferum*
- 12a. Lip with linear or linear-oblongate, erect lateral lobes. *O. minax*
- 12b. Lip with broadly triangular or auriculate lateral lobes, more or less distinct dilations or altogether simple. 13
- 13a. Dorsal sepal obtuse to broadly rounded above. 14
- 13b. Dorsal sepal commonly narrowed above. 18
- 14a. Floral segments finely serrate-denticulate to fimbriate; lamina of the dorsal sepal much broader than long. *O. serratum*
- 14b. Floral segments not denticulate. 15
- 15a. Dorsal sepal long-clawed, spatulate-oblong; lip simple. *O. incarum*¹
- 15b. Dorsal sepal shortly and abruptly clawed; lip more or less 3-lobed. 16

¹ No material of this species was seen, and so its position in the key is somewhat uncertain.

- 16a. Claws of the sepals without basal auricles *O. Leopoldianum*
- 16b. Claws of the sepals auricled at the base 17
- 17a. Lateral lobes at the base of the lip acute; petals commonly conduplicate and oblique or falcate *O. falcipetalum* (*O. ionodon*, *O. Davisii*)
- 17b. Lateral lobes at the base of the lip rounded; petals flat, not falcate.
O. superbiens (*O. aemulum*)
- 18a. Lip with a pair of narrow, lanceolate, retrorse, basal lobes having a filiform tooth at their base; crest consisting of 5 short lamellae, the central 3 bilobed.
O. cordatum
- 18b. Lip without narrow, retrorse, basal lobes with a filiform tooth at their base; crest not consisting of 5 short lamellae 19
- 19a. Mid-lobe of the lip conspicuously crisped-undulate; lateral lobes prominently subquadrate-auriculate and often coarsely toothed 20
- 19b. Mid-lobe of the lip flat or with involute margins; lateral lobes rounded, triangular, bilobed or sometimes indistinct 21
- 20a. Bracts abbreviated, not spathaceous; basal callus of the lip consisting of 3 oblong keels, the central one higher *O. Kienastianum*
- 20b. Bracts large, spathaceous; anterior part of the callus consisting of 3 ovate or ovate-oblong lamellae, the central one largest *O. trilingue*
- 21a. Lateral lobes of the lip rounded; wings of the column rounded; sepals and petals white with a large, purple central portion *O. Leopoldianum*
- 21b. Lateral lobes of the lip (if distinct) triangular or hastate (rarely bilobed); wings of the column linear or dentiform 22
- 22a. Claws of the sepals without basal auricles 23
- 22b. Claws of the sepals with basal auricles, the dorsal sepal prominently auricled 24
- 23a. Lamina of the sepals elliptic-lanceolate, long-narrowed below; sepals and petals white with transverse, red-violet or brownish bars *O. zebrinum*
- 23b. Lamina of the sepals ovate or oval-ovate to suborbicular, at least the dorsal sepal abruptly narrowed below; sepals and petals cinnamon-brown with a yellow upper half to the petals *O. ventilabrum* (*O. undulatum*)
- 24a. Lateral lobes of the lip obtuse; mid-lobe obtuse, dilated above; disc with 2 central keels *O. gargantua*
- 24b. Lateral lobes of the lip more or less acute; mid-lobe acute, not much (if at all) dilated above; disc with a 3-ridged, central keel.
O. falcipetalum (*O. ionodon*, *O. Davisii*)
- 25a. Leaves equitant, imbricating, entirely concealing the stem; plants very small, flabelliform 26
- 25b. Leaves flat, not equitant (occasionally the leaves are conduplicate or they are unknown); plants commonly medium-sized to large 27
- 26a. Crest at the base of the lip with 3 or 4 lacinate or fimbriate lobes.
O. glossomystax
- 26b. Crest at the base of the lip with entire lobes *O. pusillum*
- 27a. Flowers of two kinds, one fertile and relatively large, the other abortive and small 28
- 27b. Flowers uniform, fertile 33
- 28a. Anterior part of the lip much larger and commonly much broader than the basal part 29
- 28b. Anterior part of the lip subequaling the basal part or smaller 30

- 29a. Lip acute at the broadly rounded apex; sepals and petals with the basal half purple and the upper half yellow; petals acute or subacute, nearly four times as large as the sepals. *O. formosissimum*¹
- 29b. Lip prominently bilobed; sepals and petals wholly yellow; petals obtuse, somewhat larger than the sepals. *O. calanthum*
- 30a. Claw between the basal and the anterior portions of the lip very short or wanting. 31
- 30b. Claw between the basal and the anterior portions of the lip rather prominent. 32
- 31a. Basal part of the lip semiorbicular, with rounded angles on each side. *O. heteranthum*
- 31b. Basal part of the lip rhombic, with acute angles on each side. *O. tigratum*¹
- 32a. Petals obovate-oblong or spatulate-oblong, more or less retuse at the broad apex; lobes at the base of the lip spreading. *O. retusum*
- 32b. Petals lanceolate-oblong, commonly acute; lobes at the base of the lip retrorse. *O. pentadactylon*
- 33a. Lateral sepals connate up to the middle or above. 34
- 33b. Lateral sepals free or only slightly connate at the base. 37
- 34a. Lip with a definite claw at the base; wings of the column fimbriate. *O. aureum* (*Odontoglossum festatum*, *Odontoglossum hemichrysum*, *Oncidium hemichrysum*)
- 34b. Lip sessile (without a claw). 35
- 35a. Sepals and petals clawed, obtuse; lip with a 5-lamellate callus at the base. *O. Lucasianum*²
- 35b. Sepals and petals sessile (not clawed), acute or subacuminate. 36
- 36a. Apical lobe of the lip reniform, much wider than the basal portion; lobes of the lateral sepals not diverging; flowers brown, white and purple. *O. nubigenum* (*O. cucullatum*)
- 36b. Apical lobe of the lip broadly obovate or obovate-reniform, not much wider than the basal portion; lobes of the lateral sepals diverging like a swallow's tail; flowers yellow and brown. *O. tripterygium*
- 37a. Stem (rhizome) and inflorescence long-creeping or climbing. 38
- 37b. Stem or rhizome (if present) not long-creeping or climbing; inflorescence erect to arcuate or deflexed, not long-creeping or climbing. 47
- 38a. Inflorescence or scape abbreviated, 1- to 3-flowered. 39
- 38b. Inflorescence or scape elongate, racemose or usually paniculate, commonly several- (10) to many-flowered. 40
- 39a. Lip simple, oblong-pandurate, with the anterior part obcordate and scarcely wider than the basal part; wings of the column wanting. *O. serpens*
- 39b. Lip truly 3-lobed, with the anterior part reniform and much wider than the basal part; wings of the column evident, dolabriform. *O. globuliferum* (*O. convolvulaceum*)

¹ The original descriptions, as well as the records of these species from the Reichenbach Herbarium, fail to show flowers of two kinds, but Kränzlin mentions such in Engler, Pflanzenr. IV. 50 (Heft 80), 1922, so they are entered in both branches of the key.

² *O. Lucasianum* sometimes has the lateral sepals free, and so is keyed on the other branch also.

- 40a. Sepals oblong (the lamina with subparallel sides); dorsal sepal sessile (only narrowed below); lip equaling or exceeding the sepals in length. 41
- 40b. Sepals not oblong (at least without parallel sides), the lamina commonly ovate-elliptic to suborbicular or reniform; dorsal sepal long-clawed or abruptly clawed; lip markedly smaller than the sepals. 42
- 41a. Pseudobulbs 1-leaved, remote (up to 20 cm. apart); inflorescence not climbing, subdensely racemose above; sepals and petals obtuse.
O. Weberbauerianum
- 41b. Pseudobulbs 2-leaved, only subremote; inflorescence climbing, very loosely paniculate; sepals acute (or apiculate) to acuminate. *O. Schillerianum*
- 42a. Apex of the lip broadly rounded to bilobed. 43
- 42b. Apex of the lip acute to apiculate or obtuse. 45
- 43a. Claw of the dorsal sepal not auricled at the base; lip broadly rounded in front; column-wings none. *O. volubile (O. corynephorum)*
- 43b. Claw of the dorsal sepal auriculate at the base; lip more or less bilobed; column-wings present. 44
- 44a. Lamina of the dorsal sepal oval-suborbicular, broadly rounded above, flat or nearly so; column-wings minute, cornute or falcate-ascending.
O. diceratum
- 44b. Lamina of the dorsal sepal deltoid-ovate, acute, prominently crisped-undulate; column-wings cuneate and retuse. *O. cryptocopis*
- 45a. Lamina of the dorsal sepal reniform or semiorbicular, much broader than long, broadly rounded above. *O. serratum*
- 45b. Lamina of the dorsal sepal "oblong" or broadly ovate, longer than broad, obtuse or acute. 46
- 46a. Petals without a creamy white or yellow upper half, rounded or subhastate at the base; mid-lobe of the lip cuneate-spatulate, often denticulate-crisped toward the apex. *O. xanthodon*¹
- 46b. Petals with a creamy white or yellow upper half, cuneate at the base; mid-lobe of the lip oblong-lanceolate or elliptic-lanceolate, not denticulate-crisped toward the apex. *O. ventilabrum (O. undulatum)*
- 47a. Flowers very large; dorsal sepal and petals oblanceolate-linear, 5.5 cm. or more long. 48
- 47b. Flowers medium-sized to small; dorsal sepal and petals 2 cm. or less long. 49
- 48a. Column-wings on each side bilobed, the upper lobe linear-subulate and glandular, and the lower lobe broad and somewhat lacerate. *O. Papilio*
- 48b. Column-wings on each side uniformly pectinate with the cilia glandular-capitate. *O. Sanderae*
- 49a. Plant very small, about 10 cm. or less tall; scapes 1- to few-flowered; mid-lobe of the lip conspicuously 4-lobed. *O. crista-galli*
- 49b. Plant medium-sized to very large, about 13 (rarely 9) cm. or more tall; scape usually many-flowered; mid-lobe of the lip simple (rarely) to retuse or bilobed. 50
- 50a. Mid-lobe of the lip broadly rounded in front and apiculate in the middle. 51
- 50b. Mid-lobe of the lip lightly retuse to bilobed in front. 52
- 51a. Sepals shorter than the lip; wings of the column very large. *O. formosissimum*
- 51b. Sepals longer than the lip; wings of the column very small or wanting.
O. ochmatochilum

¹ This species, of which no material has been seen, may prove to be referable to *O. ventilabrum*.

- 52a. Petals definitely broader than the lateral sepals, often twice as broad or more..... 53
- 52b. Petals at most slightly broader than the lateral sepals or narrower..... 66
- 53a. Basal half of the lip orbicular in outline, with numerous, free teeth or tubercles surrounding the central callus..... *O. polyadenium*
- 53b. Basal half of the lip not orbicular in outline, commonly without numerous, free teeth surrounding the central callus..... 54
- 54a. Anterior portion of the lip (mid-lobe) sessile, i.e., without a distinct claw... 55
- 54b. Anterior portion of the lip (mid-lobe) with a claw, even if short..... 56
- 55a. Leaves small (commonly conduplicate), up to 12.7 cm. long and 2.5 cm. wide (when expanded); basal portion of the lip transversely oblong, equally wide with the anterior part..... *O. onustum*
- 55b. Leaves large, up to 40 cm. long and 4 cm. wide; basal portion of the lip subquadrate, much narrower than the anterior part..... *O. cajamarcae*
- 56a. Basal half of the lip rhombic, often acute on each side; claw between the basal and anterior portions of the lip short or very short..... 57
- 56b. Basal half of the lip not rhombic, more or less rounded or auriculate on each side..... 58
- 57a. Column-wings semilunate or bifid, forming 2 ligulate segments... *O. tigratum*
- 57b. Column-wings simple, dolabriform-semicordate..... *O. fasciferum*
- 58a. Column without wings; claw between the basal and anterior portions of the lip oblong-linear; sepals and petals strongly repand..... *O. tipuloides*
- 58b. Column winged on each side; claw between the basal and anterior portions of the lip not oblong-linear..... 59
- 59a. Lateral (basal) lobes of the lip minute, auriculate; anterior portion of the lip many times broader than the basal portion; sepals cucullate above.
O. ampliatum
- 59b. Lateral lobes of the lip rather prominent; anterior portion of the lip not many times broader than the basal portion; sepals not cucullate..... 60
- 60a. Lip about twice as long as the lateral sepals; lamina with one or more free tubercles surrounding the middle callus; flower-cluster a short, rather densely flowered, pyramidal panicle..... *O. Batemanianum*
- 60b. Lip subequalling or somewhat surpassing the lateral sepals; flower-cluster an elongate, commonly loosely flowered panicle..... 61
- 61a. Rostellum long-beaked; wings of the column from a narrow base divergently bilobed..... *O. pyramidale* (*O. chrysopyramis*)
- 61b. Rostellum not long-beaked; wings of the column with a broad base..... 62
- 62a. Basal portion of the lip when expanded noticeably broader than the anterior portion (mid-lobe); mid-lobe cuneate, lightly retuse..... *O. Mathieuanum*
- 62b. Basal portion of the lip equaling or narrower than the anterior portion; mid-lobe transverse, reniform, emarginate to bilobed..... 63
- 63a. Sepals oblong, elliptic-lanceolate or oblong-ovate, narrowed above..... 64
- 63b. Sepals narrowly obovate or cuneate-spatulate, i.e., broader above..... 65
- 64a. Petals elliptic-oblong, sessile, acute; column-wings small, unequally bilobed.
O. hieroglyphicum
- 64b. Petals oblong-ovate, shortly clawed, broadly obtuse and apiculate; column-wings large, lightly 3-lobed, falcate above..... *O. leopardinum*
- 65a. Petals not retuse; claw between the basal and apical portions of the lip more or less elongate; column-wings long-acute above, falcate..... *O. obryzatum*

- 65b. Petals often prominently retuse; claw between the basal and apical portions of the lip very short; column-wings subquadrate-rounded or subdolabriform, often retuse in the middle. *O. excavatum*
- 66a. Column-wings narrow, dentiform to subulate. 67
- 66b. Column-wings relatively broad, neither dentiform nor subulate. 68
- 67a. Plant small, pseudobulbs 7 mm. or less long, unifoliate; panicle dense; sepals about 1 cm. or less long, broadly obtuse to rounded above. *O. nanum*
- 67b. Plant large, pseudobulbs 7.5 cm. or more long, bifoliate; panicle loose; sepals about 1.3 cm. long, acute or subacute. *O. pictum*
- 68a. Basal part of the lip (across the outspread lateral lobes) distinctly wider than the anterior part (mid-lobe). *O. gracillimum*
- 68b. Basal part of the lip (across the lateral lobes) distinctly narrower than the anterior part (rarely subequal). 69
- 69a. Sepals obtuse to rounded at the apex (sometimes obscurely apiculate). 70
- 69b. Sepals acute to acuminate. 74
- 70a. Lip oblong, obovate-oblong or subquadrate-oblong in outline, commonly about twice as long as broad; lamina with an upcurved, 4-fingered callus at the base. *O. hians*
- 70b. Lip not oblong in outline, shorter than broad (rarely slightly longer, in *O. sessile* and *O. pardothyrsus*); lamina without an upcurved, 4-fingered callus. 71
- 71a. Disc of the lip with a 5-lamellate callus surrounded by warts. . *O. Lucasianum*
- 71b. Disc of the lip without a 5-lamellate callus surrounded by warts. 72
- 72a. Sepals and petals sessile (without any claws), oblong or elliptic-oblong. *O. sessile*
- 72b. Sepals definitely clawed, the lamina broadly ovate or oval to rounded. . . 73
- 73a. Lip distinctly shorter than the sepals; anterior portion of the lip but little wider than the basal portion; sepals and petals more or less undulate. *O. pardothyrsus*
- 73b. Lip equaling or surpassing the sepals; anterior portion of the lip more than twice as wide as the basal portion; sepals and petals strongly undulate. *O. luridum*
- 74a. Lip produced on each side at the base into a conspicuous, rounded or oblong-rounded, spreading or retrorse auricle or lobe; claw between the basal and anterior portions prominent and elongate. 75
- 74b. Lip not produced into conspicuous auricles at the base, but with a more or less rounded or rhombic basal portion; claw between the basal and anterior portions short or wanting. 77
- 75a. Basal central part of the lip with a series of sulcate lines below the callus; column-wings simply and unequally bilobed. *O. lineoligerum*
- 75b. Basal central part of the lip without a series of sulcate lines; column-wings not bilobed. 76
- 76a. Callus at the base of the lip cruciform with broadly ligulate, retuse-dentate lateral lobes and an elongate, linear-cuneate anterior lobe. . . *O. cruciferum*¹
- 76b. Callus at the base of the lip oval or subquadrate in outline, with subequal fleshy tubercles in three series. *O. Baueri*

¹ This species, which was described from a portion of an inflorescence only, appears to be very close to the widespread *O. Baueri* Lindl., and subsequent collections may prove that these species are synonymous.

- 77a. Lateral sepals nearly twice as long as the lip; inflorescence a narrow, open, virgate panicle. *O. hirundo*
 77b. Lateral sepals shorter than the lip (rarely subequaling the lip); inflorescence a pyramidal, often dense panicle. 78
 78a. Anterior portion of the lip scarcely wider than the basal portion; callus with 2 tubercles on each side. *O. discobulbon*
 78b. Anterior portion of the lip markedly wider than the basal portion; callus with 4 or more free papillae on each side. *O. armillare (O. foveatum)*

Oncidium acinaceum Lindl. Sert. Orch. sub t. 48, no. 13. 1842; Fol. Orch. *Oncidium* 18, no. 52. 1855; Kränzln. Engler, Pflanzenr. IV. 50 (Heft 80), 180, fig. 15G, *a-d*. 1922.

Plant large, up to 60 cm. high when extended. Pseudobulbs oval or ovoid, densely crowded according to Kränzln, l.c., subcompressed, about 6 cm. high, 2- or 3-leaved at the summit, surrounded at the base by 2 or 3 distichous, leaf-bearing sheaths. Leaves oblanceolate or oblong with a narrowed, complicate base, acute to obtuse, 8-13 cm. long, 1.5-3 cm. wide. Scape lateral, in the axil of an upper sheath, up to over 60 cm. in length, climbing above, loosely flowered, racemose, or paniculate with short, fractiflex branches (according to Kränzln). Flowers uniform (according to Lindley), dimorphic (according to Kränzln). Sterile flowers very minute, with lanceolate sepals, oblong petals and lip about 5 mm. long, very short-pedicelled. Fertile flowers relatively large, rose-lilac, long-pedicelled; dorsal sepal oblong or oblong-linear, obtuse, about 1.5 cm. long, 3-4 mm. wide. Lateral sepals spatulate-linear, connate through the lower fourth, as long as the dorsal sepal. Petals obovate, obtuse, as long as the sepals but about three times broader. Lip obovate-rhombic, broadly obtuse to retuse, indistinctly trilobulate above, about 1.4 cm. long and 1 cm. wide above; disc with 4 approximate, longitudinal keels (hamate at the apex), the outer pair being shorter. Column much shorter than the other segments, lightly recurved, 8-9 mm. high, with a pair of large acinaciform wings above.

Amazonas: Chachapoyas, on trees, *Mathews 3186* (type).—Cajamarca: Prov. of Chota, mountains west of Huambos, 2900-3000 meters, frequent in sclerophyllous vegetation, *Weberbauer 4173*. Also Colombia (Antioquia, fide Kränzln.).

No example of this species was available, but the Ames Herbarium contains a photograph of the Mathews type in the Lindley Herbarium.

Oncidium ampliatus Lindl. Gen. & Sp. Orch. 202. 1833; Bot. Reg. 20: t. 1699. 1835; Fol. Orch. *Oncidium* 28, no. 90. 1835; Kränzln. Engler, Pflanzenr. IV. 50 (Heft 80), 230. 1922. *Oncidium Bernoulilianum* Kränzln. Engler, Pflanzenr. IV. 50 (Heft 80), 231. 1922. Figure 172.

Plant usually large, variable. Rhizome abbreviated. Pseudobulbs orbicular to broadly ovoid or pyriform, strongly compressed and often subtetragonous, frequently crowded, bearing 1 or 2 leaves, 3-7.5 (10 fide Kränzln.) cm. long, surrounded



FIG. 172. *Oncidium ampliatum* Lindl. Plant; $\times 1$.

at the base by 1 or more pairs of evanescent sheaths. Leaves elliptic-oblong, oblanceolate-oblong or obovate-oblong (more rarely elliptic), obtuse to broadly rounded (rarely subacute) -51 cm. long, 2.8-9.2 cm. wide. Scape much exceeding the leaves, suberect or spreading from a decumbent base, up to 83.5 cm. or more tall; peduncle with several (11 or less) remote, short sheaths which are close and tubular; inflorescence racemose or more commonly paniculate, usually subdensely many-flowered. Floral bracts very small, squamiform. Flowers long-pedicelled with spreading segments, yellow with more or less minute brown spots within; whitish without. Sepals more or less distinctly clawed. Dorsal sepal spatulate-obovate, concave above, broadly rounded at the apex, 7-8.8 mm. long, 5.6-8.3 mm. wide when expanded.

Lateral sepals free, similar to the dorsal sepal but a little longer and narrower, oblique. Petals obovate-suborbicular, more or less truncate above, clawed below, somewhat longer than the lateral sepals and much broader than the dorsal sepal. Lip deeply 3-lobed, 13.3–23.5 mm. long from the base to either side of the retuse apex; lateral lobes minute, auriculiform; mid-lobe (separated by a short claw) subquadrate-reniform, retuse or bilobed in front, cordate at the base, about 16–33 mm. wide, with irregular or lobulate sides; disc at the base with a small, fleshy callus of 2 series, the basal part of 2 larger, spreading lobes and the anterior part of 3 small lobes. Column very short, stout, 2.3–3.9 mm. high at the back, with a pair of small alliform, denticulate or lobulate wings.

Peru: Without locality, *Warszewicz s.n.*, fide Kränzl. Also Central America from Guatemala (type of *O. Bernoullianum*) to Panama and Colombia (type of *O. ampliatum*), Venezuela and Trinidad.

Oncidium armillare Lindl. Fol. Orch. *Oncidium* 51, no. 182. 1855; Kränzl. Engler, Pflanzenr. IV. 50 (Heft 80), 246, fig. 20F, *a-c*. 1922. *Oncidium foveatum* Lindl. Fol. Orch. *Oncidium* 52, no. 183. 1855; Cogn. Martius Fl. Bras. 3, pt. 6: 387. 1906; Kränzl. Engler, Pflanzenr. IV. 50 (Heft 80), 247. 1922.

Plant medium-sized to large; pseudobulbs oblong-ovoid, compressed, unifoliate, yellowish, densely crowded (according to Kränzl), 3–4.5 cm. long. Leaf linear or oblong-linear, obtuse or subacute with an apicule, narrowed at the complicate base, 6.5–23 cm. long, 1–1.5 cm. wide. Scape slender, lateral, basal in the axil of a sheath, exceeding the leaf, paniculate above with ascending, lightly fractiflex branches which are rather loosely few-flowered and 8.5 cm. or less long. Floral bracts very small and slender. Pedicellate ovary long and slender, many times exceeding the bracts. Flowers with spreading segments, yellow barred with brown. Dorsal sepal lanceolate or oblong-lanceolate, acute or acuminate, about 8–9 mm. long, 2.5–3.5 mm. wide. Lateral sepals similar, free, oblique. Petals oblong, acute or apiculate, almost as long as the sepals but somewhat broader. Lip much longer than the sepals, prominently 3-lobed, about 12–13 mm. long from the base to either side of the retuse apex, 7–11 mm. wide near the base; lateral lobes semiorbicular with crenulate margins; mid-lobe reniform, sessile or with a very short isthmus, deeply bilobed, subcordate at the base, about 12–15 mm. wide; disc at the base with a variable callus (sometimes foveate below) consisting of 3 undulate, callose ridges terminating in the middle in an acute tooth, and 2 similar teeth in front of the lateral lines and several free teeth in a semicircle on each side. Column short, with a pair of prominent, bilobulate, dolabriform or semiovate wings.

Peru: Habitat not recorded, *W. Lobb s.n.* (type of *O. armillare*). Sources of the Marañon, *Warszewicz s.n.* (type of *O. foveatum*). Also Colombia and Ecuador.

Oncidium aureum Lindl. Sert. Orch. sub t. 25, no. 5. 1838; Fol. Orch. *Oncidium* 22, no. 67. 1855; Rolfe, Orch. Rev. 3: 69. 1895; Cogn. Martius Fl. Bras. 3, pt. 6: 306. 1905; Kränzl. Engler, Pflanzenr. IV. 50 (Heft 80), 209. 1922. *Odontoglossum bicolor* Lindl. Bot.

Reg. 31, Misc. 59, no. 38. 1845. *Odontoglossum festatum* Reichb. f. Bonpl. 2: 100. 1854. *Odontoglossum hemichrysum* Reichb. f. & Warsc. Bonpl. 2: 100. 1854. *Oncidium aureum* (B) *stenochilum* Lindl. Fol. Orch. *Oncidium* 22, sub no. 67. 1855. *Ornithidium bicolor* Lindl. ex Reichb. f. Walp. Ann. 6: 489. 1863. *Oncidium festatum* Reichb. f. & Warsc. ex Reichb. f. Walp. Ann. 6: 733. 1863, in synonym. *Oncidium hemichrysum* Reichb. f. Walp. Ann. 6: 733. 1863. *Oncidium dichromum* Rolfe, Orch. Rev. 3: 363. 1895.

Plant medium-sized to large, variable throughout. Pseudobulb ovoid to pyriform (sometimes cylindric in the dried specimens), 2–5 (rarely 13) cm. long, 1- or 2- (sometimes 3-leaved), crowded (often only one present in the dried specimen), surrounded at the base by 2 or 3 pairs of imbricating, leaf-bearing sheaths. Leaves elliptic-oblong to linear, linear-oblong or oblong-oblong, subacute to acuminate, narrowed to a conduplicate base, rigid, up to 40.7 cm. or more long, 1.2–3.4 cm. wide (commonly largest on the pseudobulbs). Scape more or less surpassing the leaves, 23 to over 144 cm. long, with a strict, remotely sheathed peduncle, racemose to panicle, with several ascending or spreading branches, few to many-flowered; inflorescence or its apical portion commonly nodding; rachis more or less fractiflex. Floral bracts conspicuous, spreading, ovate, concave. Pedicellate ovary much surpassing the bracts, about 3 cm. or less long. Flowers very variable, yellow throughout, or the sepals and petals commonly brown, wine-red or purplish, and the lip yellow. Dorsal sepal ovate, concave, acute or acuminate, 9.7–15 mm. long, 5–7 mm. wide. Lateral sepals lanceolate-ovate to oblong-lanceolate, acute or acuminate, concave, connate below the middle, somewhat longer and narrower than the dorsal sepal, more or less oblique. Petals oblong-ovate, acute or acuminate, shorter than the dorsal sepal, and either narrower or broader. Lip much larger than the other segments, obovate, oblong-obovate or reniform-obovate, distinctly clawed, 15–22 mm. long; claw short, occupied by a fleshy, sulcate callus, the erect sides of which are often toothed near the apex and sometimes enclose several approximate papillae which extend onto the disc; lamina broadly rounded to truncate in front with an abrupt apicule, cordate at the base, about 10–32 mm. wide in front. Column short, stout, clavate, 4–6 mm. high at the back, with a pair of small, porrect, decurved, toothed or lacerate wings near the apex.

Peru: Near Palca, *Ruiz & Pav. 1794* (type of *Odontoglossum festatum*). Source of Río Marañon, *Warscewicz s.n.* (*O. aureum* (B) *stenochilum*).—Amazonas: East of Chachapoyas, between Tambo Ventillas and Piscohuañuma, on grassy plains, 2700–2800 meters, *Weberbauer 4420*.—Apurimac: Trail from Abancay to Soclaccasa Pass, about 3500 meters, in moss and leaf-mold, overhanging edges of cliffs, in full exposure to sun, *West 3817*.—Cuzco: “Valle de Pilla huata, montañas de Paucartambo,” *Herrera 3333*. “Pilla huata,” Cerro de Cusilluyoc, 2200–2400 meters, epiphyte in forest, *Pennell 13964*. Prov. of Paucartambo, between Ananacu and Pilla huata, about 2800–3300 meters, on rock outcrops and among shrubs in open brushland, *West 7062*. Prov. of Paucartambo, District of Marca-

chea, Achirani, 2750 meters, *Vargas 11115*.—Huánuco: Cani, "pueblo 7 miles n.e. of Mito," about 2600 meters, on steep grassy slopes, "Remi Remi," *Macbride 3482*. "6 miles south of Mito," about 3070 meters, in soil on "dense bunch grass slope," *Macbride & Featherstone 1839*. Pampayaco (Pampayacu), *Kanehira 305*. Prov. of Pachitea, above Molina near Panao, *Asplund 13707*. Panao, about 2700 meters, on shrubby slopes, *Macbride 3609*. Playapampa, about 2700 meters, on sphagnum banks, *Macbride 4483*.—Lima: Near Lima (type of *Odontoglossum bicolor*).—Junín: Carpapata, about Huacapistana, almost 2400 meters, terrestrial on open hillside, *Killip & Smith 24341*. Same locality, 2700–3200 meters, terrestrial on edge of forest, *Killip & Smith 24482*. Huassa-huassi, 2900 meters, "in moss reaches height of 4 feet," *Woytkowski 41*. Near Andinamarca, in high mountains, *Mathews 1068* (type of *Oncidium aureum*).—Puno: Prov. of Sandía, near Limbani, 3200–3450 meters, "buried in wet moss sheets, in shade," *Metcalf 30521*. Also Bolivia and Ecuador.

Oncidium Batemanianum Parm. ex Knowles & Westc. Fl. Cab. 3: 183, t. 137. 1840, as *O. Batemannianum*; Cogn. Martius Fl. Bras. 3, pt. 6: 385, t. 86. 1906; Kränzl. Engler, Pflanzenr. IV. 50 (Heft 80), 247. 1922.

Plant large, showy, variable. Pseudobulbs broadly ovoid to subconic-cylindric, more or less compressed, 2- or 3-leaved, 3–10 (rarely 13) cm. long, provided at the base with 1 or 2 leaf-bearing sheaths. Leaves oblong or linear, acute or acuminate, gradually long-narrowed to a conduplicate base, 18–40 (rarely 60) cm. long, up to 2 (rarely 3) cm. wide, blades on the pseudobulbs much the largest, rather strict. Scape much surpassing the leaves, paniculate above; peduncle stout, about 103.5 cm. or less tall, with 5–8 remote, short, close, tubular sheaths; panicle rather short, with several arcuate-recurved or spreading branches, rather densely many-flowered, about 15–27 cm. long, the rachis and branches more or less fractiflex. Floral bracts small, narrowly triangular, spreading, much shorter than the slender, pedicellate ovary which is 1.5 cm. or less long. Sepals and petals yellow spotted with chestnut brown, more or less distinctly clawed; lip yellow. Dorsal sepal elliptic to ovate, acute or acuminate, concave, 6–8 mm. long, 2.5–3.8 mm. wide. Lateral sepals free, obliquely oblong-elliptic or elliptic-lanceolate, cymbiform, somewhat longer and much narrower than the dorsal sepal. Petals obliquely oval or ovate, rounded to slightly retuse at the apex, apiculate, commonly about as long as the dorsal sepal but much wider (sometimes nearly twice as wide as the lateral sepals). Lip much larger than the other segments, deeply pandurate or 3-lobed, bilobed in front, 14 (rarely 11)–17 mm. long from the rounded base to either side of the retuse apex, 10–11 mm. wide near the base and 13 (rarely 11)–16 mm. wide near the apex; lateral lobes relatively small, retrorse, triangular-auriculate, rounded at the apex; mid-lobe obovate-reniform, shortly clawed, often with irregularly crenulate margins; disc with a multituberculate callus between the lateral lobes and one or more free teeth on each side. Column very short and stout, clavate, 2.5–3 mm. high at the back, with a large, fleshy, laterally flattened, longitudinally sulcate protuber-

ance in front, provided with a pair of small, transversely oval, often lobulate wings above.

Cuzco: Altura de Quellow . . . , 1,000 meters, terrestrial, *Bues s.n.* Prov. of Convención, Hda. Potrero, Sapan-Sachayocc, 2200 meters, terrestrial on open grassy slope, *Vargas 2530*. Prov. of Quispicanchis, Marcapata Valley, near Chilechile, 2500–2600 meters, in grassy plains, mixed with shrubs alternating with “shrubwoods,” *Weberbauer 7869*.—Huancavelica: Prov. of Tayacaja, northwest of Surcubamba, on trail to Mantaro Bridge, 2200 meters, loam in shrubwood, “Sacapa,” *Stork & Horton 10410*. Also Brazil (type) and Bolivia.

Oncidium Baueri Lindl. *Bauer, Ill. Orch. (Genera), t. 7. 1833; Cogn. Martius Fl. Bras. 3, pt. 6: 398, t. 85. 1906; Urban, Symb. Antill. 6: 645. 1910; Kränzl. Engler, Pflanzenr. IV. 50 (Heft 80), 257. 1922. Oncidium altissimum Lindl. Bot. Reg. 19: t. 1651. 1833, not Sw. Oncidium bolivianum Schltr. Fedde Repert. 10: 459. 1912; Mansf. Fedde Repert. Beih. 58: t. 57, nr. 226. 1930.*

Plant large, variable, with a stout and long-creeping rhizome. Pseudobulbs oblong-ovoid to cylindrical, strongly compressed, bifoliate (rarely unifoliate), 5–15 cm. long, apparently subremote, surrounded below by 2 or more pairs of evanescent, imbricating sheaths that bear successively larger leaves upward. Leaves (much larger on the pseudobulbs), linear-oblong to lorate, obtuse to short-acuminate, gradually narrowed below to a conduplicate base, 20–78 cm. long, commonly 2–3 (rarely 6) cm. broad. Scape much surpassing the leaves, sometimes 3 m. or more high, erect or nodding; peduncle about 22 cm. or more long, provided with several short, remote, close, tubular sheaths; inflorescence consisting of an elongate panicle with numerous short to elongate, simple, few- to many-flowered branches. Floral bracts triangular-ovate, scarious, commonly much shorter than the slender, pedicellate ovary which is 30 mm. or less long. Flowers rather small, with spreading, undulate-margined segments, greenish-yellow or sulphur-yellow, barred with brown. Dorsal sepal elliptic-lanceolate, acute or acuminate, 12–15 (rarely 8.3) mm. long, 3.5–5 mm. wide. Lateral sepals free, a little longer and often narrower than the dorsal sepal, oblique, elliptic-lanceolate or oblanceolate-oblong, lightly navicular, acute, with a carinate, recurved apex. Petals obliquely elliptic-oblong, somewhat sigmoid, acute with a recurved apex, similar to the dorsal sepal but commonly slightly shorter and narrower. Lip pandurate-trilobed, about as long as the lateral sepals but much broader, 12–17 mm. long from the base to either side of the retuse apex, 10 (rarely 7)–12 mm. wide across the lateral lobes; lateral lobes small, spreading, rounded, auriculiform; claw (between the lobes) abrupt, long and broad, subquadrate, slightly narrowed above; mid-lobe reniform, emarginate, 11.5 (rarely 10)–15 mm. wide; disc at the base with a prominent, subquadrate, multituberculate callus in 3 series, terminating in 3 subequal teeth. Column rather short and stout, arcuate, up to 6 mm. high, 2-angled in front, and above with a pair of short but broad, subdolabriform wings which are lobulate on the margins.

Loreto: Mishuyacu, near Iquitos, 100 meters, in forest, *Klug 498*. Vicinity of Iquitos, 100 meters, on living tree by river, *Klug 10002*.

—San Martín: Alto Río Huallaga, Río Mayo, Tarapoto, 360–900 meters, in forest, *Williams 6240* (flowers poor). Zepelacio, near Moyobamba, in forest, 1100–1200 meters, *Klug 0.19*. Also West Indies (type of *O. Baueri*), Colombia, Venezuela, British Guiana (type of *O. altissimum* Lindl.), Brazil, Ecuador, and Bolivia (type of *O. bolivianum*).

Oncidium cajamarcae Schltr. Fedde Repert. Beih. 9: 113. 1921; Mansf. Fedde Repert. Beih. 57: t. 129, nr. 506. 1929; Kränzl. Engler, Pflanzenr. IV. 50 (Heft 80), 323. 1922.

Plant large, stout, erect, growing on rocks, with an abbreviated rhizome. Pseudobulbs oval, compressed, unifoliate, about 6.5 cm. high, surrounded on each side by 1 or 2 leaf-bearing sheaths. Leaves broadly ligulate, subobtuse, up to 40 cm. long, about 4 cm. wide in the middle. Scape tall, slender, erect, paniculate above, 120–130 cm. high; peduncle few-sheathed, becoming glaucous, 90–100 cm. high; panicle few-branched, loosely many-flowered. Floral bracts spreading, oblong, acuminate, much shorter than the pedicellate ovary. Flowers rather large for the genus, golden yellow with brown spots in the center. Dorsal sepal broadly obovate, rounded at the apex, about 15 mm. long, nearly 9 mm. wide. Lateral sepals free, oblong-obovate, oblique, apiculate at the rounded apex, slightly longer and distinctly narrower than the dorsal sepal. Petals obovate-subquadrate, retuse with a minute apicule, oblique, slightly longer and much wider than the dorsal sepal. Lip much larger than the sepals, subquadrate-obovate in outline, deeply constricted (and thus 3-lobed) below the middle, cordate at the base, deeply retuse or bilobed at the apex, about 18 mm. or more long, 13 mm. wide near the base, 20 mm. wide across the anterior portion; lower portion ovate-subquadrate, with rounded, spreading, auriculiform basal lobes; anterior portion (mid-lobe) reniform, retuse, obscurely 4-lobed at the broadly rounded apex; disc at the base largely occupied by an obovate callus which is 3-dentate below and multiverrucose or tuberculate above with numerous surrounding warts. Column short, fleshy-dilated on each side below, about 7.5 mm. high, above with a pair of obliquely semiovate wings, which are obtusely acute or apiculate at the apex.

Cajamarca: Near Hualgayoc, on cliffs below Hacienda La Tahona, 2600 meters, *Weberbauer 4041* (type).

No material of this species was available. The type number was cited under *O. Batemanianum* by Kränzl. Engler, Pflanzenr. IV. 50 (Heft 80), 248. 1922.

Oncidium calanthum Reichb. f. Gard. Chron. (1870) 39; Kränzl. Engler, Pflanzenr. IV. 50 (Heft 80), 177. 1922.

Plant with a very long-creeping (flagelliform) or freely hanging rhizome. Pseudobulbs very distant from one another, ovoid, bifoliate. Leaves oblong-lanceolate or elliptic-lanceolate, acute or acuminate, complicate below. Scape large, climbing, 2 or 3 times surpassing the pseudobulb, racemose or paniculate above, twining, with the short, fractiflex branches loosely several-flowered, often

with flowers of 2 kinds (heteranthous). Floral bracts very small, triangular, scarious, spreading, much shorter than the slender pedicellate ovary which is 2.5 cm. or less long. Flowers golden yellow. Sterile flowers relatively small, with similar spatulate-oblong or obovate-oblong segments. Fertile flowers several times larger. Dorsal sepal obovate-oblong, subacute, about 12–13 mm. long and 4.5 mm. wide (according to Kränzlin). Lateral sepals similar but apparently somewhat longer and narrower, oblique. Petals oblong or obovate-oblong, hastate-clawed, obtuse, about as long as the dorsal sepal but markedly wider. Lip about as long as the sepals but much broader, pandurate, three-lobed, the basal portion (across the lateral lobes) being about 10 mm. wide and the anterior portion (mid-lobe) about 20 mm. wide; lateral lobes small, obovate-auriculate, rounded at the apex, contracted in front into a short, broad claw; mid-lobe cordate-reniform, emarginate at the broadly rounded apex; disc at the base and on the claw with a large, verrucose callus consisting of a cluster of warts in 5–7 longitudinal series. Column short, with a pair of rounded or semirhombic dilations below and with a pair of obliquely triangular or semiovate, lobulate wings above.

Peru or Ecuador; imported by Messrs. Backhouse.

No exact dimensions of the vegetative parts are given; the floral description is compiled from a reduced drawing in the Ames Herbarium.

Oncidium cimiciferum Reichb. f. ex Lindl. *Fol. Orch. Oncidium* 9, no. 22. 1855. *Cyrtochilum flexuosum* HBK. *Nov. Gen. et Sp.* 1: 350. 1816; Kränzlin. *Notizbl. Bot. Gart. Berl.* 7: 96, in key. 1917, *nomen*; Engler, *Pflanzenr.* IV. 50 (Heft 80), 63, fig. 6C, *a-c.* 1922. *Odontoglossum cimiciferum* Reichb. f. *Linnaea* 22: 849. 1849. *Oncidium flexuosum* Lindl. *Sert. Orch.* sub t. 48. 1842, not Sims.

Plant large, straggling. Pseudobulbs oblong-cylindric, up to 7.5 cm. high, 1- or 2-leaved, surrounded at the base by 3 or 4 pairs of imbricating, conduplicate, leaf-bearing sheaths which bear successively larger blades upward. Leaves linear-oblong to narrowly lanceolate (rarely elliptic-ligulate), acute or acuminate, narrowed at the conduplicate base, 23 to over 65 cm. long, 2–5 cm. wide. Scape very long, sometimes 3 m. in length, more or less climbing above, with numerous short, remote, flowering branches in the upper portion, the rachis spreading or reflexed, loosely few-flowered, fractiflex, and often compound (according to Kränzlin). Floral bracts conspicuous, ovate-oblong, acute, concave, much shorter than the pedicellate ovary which is commonly 2–3 cm. long. Flowers small, fleshy, brown or greenish-yellow with brown bands, the perianth segments reflexed and undulate. Dorsal sepal elliptic-oblong to spatulate, acute or acuminate, 9.5–11.5 mm. long, 4–4.2 mm. wide. Lateral sepals obliquely oblong-oblongeolate, a little longer and narrower than the dorsal sepal. Petals obliquely obovate-elliptic, acute, distinctly shorter and broader than the dorsal sepal. Lip shorter and broader than the sepals, simple, sessile, ovate-triangular, strongly convex, acute or acuminate, 9–9.5 mm. long, 7–8 mm. wide across the subtruncate base; disc on the central part of the basal half with a fleshy, multilobulate callus. Column very short and stout, about 4 mm. high at the back, with a broad, fleshy, semirhombic thickening on

each side below and with a pair of very obscure, broad wings above. Kränzl. (l.c.) gives smaller floral measurements.

Huánuco: Muña, about 2150 meters, epiphyte, *Macbride 3974*.—Junín: Prov. of Tarma, Agua Dulce, 2300 meters, in low highland wood about the grass-steppe, *Woytkowski 35453*. Also Colombia (type of *Cyrtochilum flexuosum*), Venezuela (type of *Odontoglossum camiciferum*) and Ecuador.

Oncidium cocciferum Reichb. f. & Warsc. Bonpl. 2: 101, 279. 1854; Lindl. Fol. Orch. *Oncidium* 9, no. 23. 1855. *Cyrtochilum cocciferum* Kränzl. Notizbl. Bot. Gart. Berl. 7: 96, in key. 1917, *nomen*; Engler, Pflanzenr. IV. 50 (Heft 80), 64, fig. 6E, a-c. 1922.

Plant large, epiphytic, with a very stout, creeping rhizome. Pseudobulbs approximate, oblong-ovoid, flattened or ancipitous, unifoliate, obliquely inserted on the rhizome, up to 8 cm. long (according to Kränzl.), invested at the base by 3 or more pairs of conduplicate, imbricating, leaf-bearing sheaths, the blades successively larger upward. Leaves similar, oblong-elliptic (linear, according to Kränzlin), acuminate, gradually narrowed to a conduplicate base, 24–60 cm. long (the latter measurement according to Kränzl.), 1.5–4 cm. wide. Scape up to more than 1.5 m. long (according to Kränzl.), paniculate above, with remote, strongly fractiflex, loosely few- (3- to 5-) flowered branches of which the lower are often compound. Floral bracts very small, convolute, oblong-ovate, acute, many times shorter than the slender pedicellate ovary that is up to 2.5 cm. long. Flowers small, greenish brown, obscurely banded with yellow, with widely spreading segments. Dorsal sepal obovate or spatulate, clawed, acute, up to 9 mm. long and 5 mm. wide. Lateral sepals similar but somewhat longer, oblique. Petals broadly obovate, scarcely clawed, apiculate, shorter than the dorsal sepal but equally wide. Lip triangular or triangular-ovate, subacute, subcordate at the base, strongly convex, about 8 mm. long and 5 mm. wide below; disc with a large ovate-subquadrate, verrucose callus extending from the base to beyond the middle or about to the middle and with several smaller tubercles on each side. Column short, stout, dilated on each side near the base, the apical wings scarcely produced.

Peru: Sources of the Marañon River, *Warscewicz s.n.*, fide Lindley.—Huánuco, fide Schlechter, Fedde Repert. Beih. 9: 173. 1921.—Junín: Prov. of Tarma, mountains of Yanangu, east of Huacapistana, 2200–2300 meters, thickets with scattering trees, *Weberbauer 2127*. Also Colombia (type).

No material of this species was available, but the Ames Herbarium contains several drawings of the vegetative and floral parts of the type, from the Reichenbach Herbarium.

Oncidium cordatum Lindl. Sert. Orch. sub t. 25, no. 2. 1838; Fol. Orch. *Oncidium* 4, no. 2. 1855. *Cyrtochilum cordatum* Kränzl. Notizbl. Bot. Gart. Berl. 7: 92, in key. 1917, *nomen*; Engler, Pflanzenr. IV. 50 (Heft 80), 41, fig. 2G a-b. 1922.

Plant large, with a stout, long-creeping rhizome. Pseudobulbs more or less distant, narrowly ovoid or conic, bifoliate, about 9 cm. long, invested and almost concealed by several pairs of conduplicate, leaf-bearing sheaths. Leaves on the sheaths larger, elliptic-lanceolate (linear-lanceolate according to Kränzl.), acute or acuminate, narrowed to a complicate base, 20–44 cm. long, up to 3.8 cm. wide. Scape about 1.5 m. long, twining, paniculate above with branches (rarely compound) about 15 cm. long. Floral bracts large, deeply concave, suborbicular-ovate when expanded, obtuse, 1.5 cm. long, much shorter than the slender, pedicellate ovary which is about 3.5 cm. or less long. Flowers large, thin, with spreading segments, about 5.7 cm. across, apparently brown bordered with yellow. Dorsal sepal long-clawed; lamina round-ovate, acute, about 19 mm. long and 13–15 mm. wide; claw slender, about 6 mm. long. Lateral sepals similar but a little longer than the dorsal sepal; claw longer, auriculate at the base, gradually cuneate above; lamina rhombic-ovate, subacuminate, about equally long with the dorsal lamina but narrower. Petals shorter than the dorsal sepal with a short, broad claw; lamina broadly triangular-ovate, acuminate, lightly oblique, about as broad as the dorsal sepal or slightly narrower. Lip strongly reflexed, clawed, about 25 mm. long when expanded and more than 10 mm. wide near the base; claw short, gradually dilated above; lamina hastate-lanceolate, acuminate, with short, retrorse, lanceolate auricles or lobules which are acute or acuminate and have a filiform tooth at the base; disc with 5 oblique, transverse lamellae, of which the inner 3 are asymmetrically bilobed and the smaller outer ones irregularly lacerate. Column small, almost wingless, but with a rather conspicuous linear-lanceolate tooth on either side below.

Peru: Near Pangoa, on rocks near banks of river, *Mathews 1067* (type).—Junín: Prov. of Tarma, mountains of Yanangu, east of Huacapistana, 2300–2400 meters, *Weberbauer 2119*.—Loreto, fide Schlechter, *Fedde Repert. Beih. 9: 173. 1921*.

No specimen of this species was available, but the Ames Herbarium contains a photograph of the type from the Lindley Herbarium.

Oncidium crista-galli Reichb. f. *Bot. Zeit.* 10: 697. 1852; Kränzl. *Engler, Pflanzenr.* IV. 50 (Heft 80), 165. 1922. *Oncidium iridifolium* Lindl. *Bot. Reg.* 22: t. 1911. 1836, not H.B.K. *Oncidium decipiens* Lindl. *Fol. Orch. Oncidium* 22, no. 68. 1855. *Odontoglossum crista-galli* Kränzl. ex Weberb. *Pflanzen. Peru. And.* 290. 1910.

Plant small, caespitose, rarely up to 10 cm. high. Pseudobulbs suborbicular or broadly ellipsoid, strongly compressed, apparently aggregated, about 10 mm. or less high, bearing one small, immature leaf at the summit, invested and mostly concealed by 2 or more pairs of the dilated bases of distichous leaves. Leaves flat (but often conduplicate in the dried specimen), elliptic-lanceolate to linear-lanceolate, acute or acuminate, membranaceous, up to 7.5 cm. long excluding the sheathing base, up to (rarely) 1 cm. wide. Inflorescence about equaling the leaves, filiform; peduncle bearing one or more close, tubular sheaths; raceme loosely 1- to 5-flowered. Floral bracts prominent, spreading, ovate to oblong-lanceolate, amplexicaul, more or less shorter than the pedicellate ovary. Flowers large for the

plant, successive, yellow often with brown markings, the segments wide-spreading and very variable in size. Dorsal sepal elliptic, elliptic-lanceolate or obovate-elliptic, acute or apiculate, 5.7–6 mm. long, 3.2–3.6 mm. wide. Lateral sepals free, obliquely elliptic-lanceolate, more or less semilunate, acute, about as long as the dorsal sepal but about half as wide. Petals ovate-oblong or subquadrate-oblong, obtuse, distinctly longer than the sepals and slightly broader than the dorsal sepal, lightly oblique. Lip much larger than the other segments, 3- or 6-lobed, about 13.5–22 mm. long from the base to the apex of an anterior lobule, 12–22 mm. wide across the lateral lobes; lateral lobes obliquely round-obovate, horizontally spreading from a short claw, more or less irregularly crenate on the outer margins; mid-lobe much larger, shortly clawed, semiorbicular in outline, deeply bilobed, with a sharp indentation in the middle of each side (thus 4-lobed), with the apical lobules broadly oblong or ovate and parallel, and the lateral lobules broadly rounded or semiorbicular; disc at the base with a large, flat, lobulate callus, surrounded on each side by 1 or more papillae. Column very short and stout, with a prominent, fleshy, ovate protuberance in front below and with a pair of short, broad, subdolabriform wings above.

Peru: Habitat not recorded, *Jürgensen 646, Warscewicz s.n.* (type of *O. crista-galli*), fide Kränzlin.—Loreto, fide Schlechter, Fedde Rept. Beih. 9: 174. 1921. Also Mexico (type of *O. decipiens*), through Central America to Panama, and Colombia.

Oncidium cruciferum Reichb. f. & Warsc. Bonpl. 2: 109. 1854; Lindl. Fol. Orch. *Oncidium* 50, no. 178. 1855; Kränzlin. Engler, Pflanzenr. IV. 50 (Heft 80), 242, fig. 20H, *a-e*. 1922.

Pseudobulbs and leaves not recorded. Scape very long, the portion existing about 1.2 m. long, branching throughout, the branches short, widely spreading, lightly fractiflex, loosely few- (4- to 5-) flowered and 5–6 cm. apart. Floral bracts ovate, concave, paleaceous, spreading, about a fourth as long as the slender, pedicellate ovary which is up to 2.5 cm. long. Perianth segments spreading, yellow with red or brown spots, according to Kränzlin. Sepals narrowly elliptic-lanceolate, acute or acuminate, undulate, about 15 mm. long and 3 mm. wide, the free lateral sepals somewhat longer. Petals similar to the sepals but slightly shorter and broader. Lip nearly as long as the sepals but much broader, pandurate-trilobed, about 14 mm. long, 8–9 mm. wide across the basal lobes, 12–15 mm. wide in front; lateral lobes relatively small, retrorse-spreading, auriculiform, subquadrate-rounded; mid-lobe cordate-reniform from a long, gradually narrowed isthmus, lightly emarginate in front; disc at the base with a conspicuous, velutinous, 3-lobed or cruciform callus, of which the lateral arms are broadly ligulate, arcuate-incurved and dentate at the apex, and the middle arm elongate, retuse, gradually dilated above, and dentate at the apex. Column small, sigmoid when viewed from the side, below in front a suborbicular plate and above a pair of very short, broad, tricrenate wings.

Peru: Habitat unrecorded, *Warscewicz s.n.*

The Ames Herbarium contains a drawing of the type from the Reichenbach Herbarium.

Oncidium cryptocopis Reichb. f. Gard. Chron. (1870) 827; Hook. f. Bot. Mag. 96: t. 5858. 1870. *Cyrtochilum cryptocopis* Kränzl. Notizbl. Bot. Gart. Berl. 7: 92, in key. 1917, *nomen*; Engler, Pflanzenr. IV. 50 (Heft 80), 36. 1922.

Plant large and showy throughout. Pseudobulbs very narrowly ovoid to cylindric, apparently aggregated, much compressed, bifoliate, 10–12.7 cm. long, clothed at the base by several (up to 3) pairs of leaf-bearing sheaths. Leaves oblong-linear or lorate, slightly broader above the middle, acute, about 30 cm. long and 3 cm. wide. Scape very long, twining above, about 1–1.5 m. or more long, with remote branches which are short, twining and few- (often 1-) flowered. Floral bracts cucullate, scarious, acute, much shorter than the slender pedicellate ovary which appears to be 8 cm. or less long. Flowers large, about 7.6 cm. wide from the apex of the dorsal sepal to the apices of the lateral sepals, pale chestnut-brown with the margins of the sepals and petals golden yellow and the mid-lobe of the lip yellow. Dorsal sepal shortly clawed; lamina broadly deltoid-ovate, acute or short-acuminate, with an undulate-cripsed margin, about 22 mm. long, 22–28 mm. wide; claw auricled at the base. Lateral sepals subparallel, much longer than the dorsal sepal, long-clawed; lamina obliquely elliptic-ovate or oblong-ovate, acute or acuminate, with recurved apex; claw slender, gradually dilated above, about 20 mm. long. Petals nearly as long as the dorsal sepal but much narrower, with undulate-cripsed margins; lamina ovate-lanceolate or rhombic-ovate, obtuse, recurved above; claw short, broad. Lip about half as large as the petals, with the basal portion spreading from the base of the column and the anterior part abruptly reflexed, pandurate-trilobed when expanded, about 12 mm. long (according to Kränzlin); lateral lobes relatively small, falcate-triangular, reflexed, acute; mid-lobe much larger, from a long stout claw abruptly dilated into a transversely oblong, more or less retuse lamina which is about 11 mm. wide; disc at the base (between the lateral lobes) with a callus which is carinate in the middle and multipapillose on each side. Column very short, with a pair of spreading, obliquely rhombic-cuneate wings and with a pair of flattened-subulate, parallel, decurved horns in front.

Peru: Habitat not recorded; imported by Mr. Bull.

No example of this species was available, but the Ames Herbarium contains sketches of the flower from the Reichenbach Herbarium.

Oncidium deltoideum Lindl. Bot. Reg. 23: t. 2006. 1837; Fol. Orch. *Oncidium* 31, no. 103. 1855. *Cyrtochilum deltoideum* Kränzl. Notizbl. Bot. Gart. Berl. 7: 97, in key. 1917, *nomen*; Engler, Pflanzenr. IV. 50 (Heft 80), 70, fig. 7A. 1922.

Plant medium-sized, rather showy. Pseudobulbs oblong-ovoid, compressed, 2- or 3-leaved, up to 6 cm. high, approximate, clothed at the base by 1 or 2 pairs of sheaths of which the larger upper one is commonly leaf-bearing. Leaves oblong-lanceolate, acute, complicate at the base, 12–20 cm. long (according to Kränzlin), 2–3 cm. wide. Scape about 42 cm. to almost 1 m. high (according to Kränzlin), terminating in a large, often nodding panicle of which the branches are spreading, compound, loosely many-flowered, with a fractiflex rachis. Floral bracts minute, ovate,

acute, much shorter than the slender, pedicellate ovary which is up to 2 cm. long. Flowers small for the genus, pale yellow, sometimes spotted with red, the sepals and petals horizontally spreading and recurved above. Dorsal sepal spatulate from a narrow claw-like base, rounded-obtuse, about 8–12 mm. long, 3–6 mm. wide. Lateral sepals oblong-oblancoelate, oblique, acute, somewhat longer (with a longer claw) and narrower than the dorsal sepal. Petals obovate-oblong to subspatulate, rounded to subacute at the apex, apparently somewhat shorter and broader than the dorsal sepal, with more or less undulate margins. Lip much shorter and broader than the sepals, simple or subsimple, broadly deltoid-ovate, subacute or bluntly apiculate, cordate at the base with minute, cucullate lobules next to the column, convex, with rounded outer sides, 7–8 mm. long, 10–13 mm. wide below; disc with the central portion adorned to above the middle with a crest consisting of 2 series of short oblong papillae (the anterior series broader with longer members). Column short, about 6 mm. long, above with a pair of spreading, broadly semiovate wings which are entire to minutely denticulate, and below with a pair of subquadrate plates.

Amazonas: Chachapoyas, *Mathews s.n.* (type).—La Libertad: Prov. of Otuzco, Hda. Mombrillar, 1670 meters, epiphyte, *López 0582*.

The López collection has a flower that coincides well with Kränzlin's figure of *Cyrtochilum deltoideum*, although it appears to be somewhat different from Lindley's plate of the type of *Oncidium deltoideum*.

Oncidium diceratum Lindl. Fol. Orch. *Oncidium* 6, no. 11. 1855. *Cyrtochilum diceratum* Kränzlin. Notizbl. Bot. Gart. Berl. 7: 95, in key. 1917, *nomen*; Engler, Pflanzenr. IV. 50 (Heft 80), 60, fig. 5G, a–d. 1922.

Plant large, without any description of the vegetative portions. Scape very long (according to Kränzlin), twining, paniculate above. Flowering portion (?branch) shown by the type about 34 cm. long, loosely several-flowered, the lower flowers on short, 2-flowered branches, the upper ones solitary; branches (according to Kränzlin) strict, up to 12 cm. long and 12 cm. distant. Floral bracts apparently prominent, ovate, concave, about half as long as the pedicellate ovary which is up to 3.2 cm. long. Flowers rather large, with horizontally spreading segments, about 4.7 cm. long from the apex of the dorsal sepal to the apices of the lateral sepals, apparently dark brown with the apex of the lip yellow. Dorsal sepal abruptly clawed, up to 21 mm. long; lamina ovate-suborbicular, rounded at the apex, up to 15 mm. wide; claw short, auriculate at the base. Lateral sepals free, slightly longer and markedly narrower than the dorsal sepal, the claw dilated above and the lamina obliquely elliptic-ovate, broadly obtuse. Petals markedly shorter and narrower than the dorsal sepal with a very short, broad claw; lamina ovate, obtuse. Lip much smaller than the sepals, 15–18 mm. long, pandurate-trilobed, 7–8 mm. wide across the dilated basal portion and about 10 mm. wide in front (according to Kränzlin), subcuneate at the very base, retuse at the apex, spreading below and reflexed below the middle; basal portion suborbicular with reflexed, semiorbicular lateral lobes; anterior portion (mid-lobe) much larger, obcordate from an indistinct

claw; disc at the base (between the lateral lobes) with 4 approximate warts (the 2 lateral ones parallel to the central ones), and with several smaller warts in front. Column short, stout, subclavate, about 7.5 mm. high, with a pair of small, fleshy, falcate-ascending horns above.

Cajamarca, fide Schlechter, Fedde Repert. Beih. 9: 174. 1922. Ecuador (type) and Colombia.

No example of this species was available, but the Ames Herbarium contains a photograph from the Lindley Herbarium with a drawing of the lip and column.

Oncidium discobulbon Kränzl. Engler, Bot. Jahrb. 54, Beibl. 117: 33. 1916; Engler, Pflanzenr. IV. 50 (Heft 80), 196. 1922.

Plant medium-sized. Pseudobulbs aggregated, oblong-ovoid, very strongly compressed, up to 6 cm. long, unifoliate, yellow and shining in the dried specimen, surrounded at the base by 1 or 2 pairs of leaf-bearing sheaths. Leaves linear, abruptly acute, up to 36 cm. long and 1.5 cm. wide, chartaceous, paler beneath. Scape about 57 cm. high; peduncle rather slender, about 22 cm. high, provided with a very few remote, close, short, tubular sheaths; panicle with numerous, ascending, compound branches, the rachis loosely many-flowered and fractiflex. Floral bracts very small, triangular-lanceolate, much shorter than the slender pedicellate ovary which is 1.5 cm. or less long. Flowers small, yellow spotted with brown. Dorsal sepal lanceolate, acute, about 7 mm. long and 1 mm. wide. Lateral sepals free, similar to the dorsal sepal but longer. Petals "ovate" or ovate-oblong, acute, equally long with the dorsal sepal but somewhat broader. Lip slightly longer and much broader than the rest of the perianth, pandurate-trilobed, lightly bilobed at the apex, subcordate at the base, about 9.5 mm. long from the base to either side of the retuse apex, about 7 mm. wide near the base and 11 mm. wide near the apex; lateral lobes semiovate, reflexed; mid-lobe from a very short, broad isthmus abruptly reniform, bilobed; disc at the base having a small, tripartite crest with 2 tubercles on each side and some small papillae in the middle. Column very small, sigmoid when viewed from the side, with a pair of erect wings divided into 2 falcate arms.

Cajamarca: Prov. of Chota, near Huambos, 2400-2500 meters, *Weberbauer 4198*.

No material of this species was available, but the Ames Herbarium contains a photograph of the type.

Oncidium excavatum Lindl. Sert. Orch. sub t. 25, no. 3. 1838; Fol. Orch. *Oncidium* 27, no. 85. 1855; Hook. Bot. Mag. 88: t. 5293. 1862; Cogn. & Goos. Dict. Icon. Orch. *Oncidium* t. 20. 1899; Cogn. Martius Fl. Bras. 3, pt. 6: 363. 1905; Kränzl. Engler, Pflanzenr. IV. 50 (Heft 80), 241. 1922. *Oncidium aurosum* Reichb. f. Bonpl. 2: 108. 1854. *Oncidium excavatum* Lindl. var. *Dawsonii* Williams, Orch.-Grow. Man. ed. 6: 483. 1885.

Plant large, showy. Pseudobulbs numerous, aggregated, oblong-ovoid, somewhat compressed, 7–12 (rarely 18) cm. long, 1- or 2-leaved, clothed at the base on each side with a few evanescent, leaf-bearing sheaths. Leaves linear-oblong or lorate, acute, long-attenuate to a conduplicate, subpetiolate base, 30–50 cm. long, 2.5–4 cm. wide. Scape stout, erect or subnodding, 60–150 cm. high; peduncle provided with a few short, remote, acuminate sheaths; inflorescence paniculate with a few spreading-ascending, simple, elongate branches. Floral bracts small, spreading, narrowly triangular, much shorter than the slender, pedicellate ovary which is 1.5–3 cm. long. Flowers loose to subdense, variable in size, with wide-spreading segments, yellow barred and spotted with red-brown through the lower half. Sepals somewhat undulate on the margin. Dorsal sepal narrowly obovate or oblanceolate-spatulate, rounded and abruptly acute at the apex, 12–16 mm. long, 7–9 (rarely 12) mm. wide, concave. Lateral sepals free, oblong-oblanceolate, abruptly acute, lightly oblique, a little longer and markedly narrower than the dorsal sepal. Petals oblong-obovate or triangular-obovate, apiculate at the often retuse apex, somewhat longer than the dorsal sepal and nearly twice as wide, strongly undulate on the margin. Lip slightly longer and much broader than the other segments, pandurate-trilobed, 12–22 (rarely 25) mm. long, up to 10 mm. wide across the basal portion and 20 mm. or less wide in front, sessile at the subtruncate base, more or less deeply emarginate at the apex; lateral lobes small, rotund-semiovate; mid-lobe much larger, from a short, broad claw abruptly cordate-reniform; disc at the base (between the lateral lobes) with a convex plurisulcate callus having about 4 verrucose lines and extended into 2 carinate ridges in front, surrounded on each side by several minute, free tubercles. Column very short and stout, about 5 mm. high, with a pair of porrect, subdolabriform wings which are truncate or lightly retuse without.

Peru: Habitat not recorded (type of *O. aurosum*).—Amazonas: Near Chachapoyas, *Mathews s.n.* (type of *O. excavatum*).—Near the source of the Marañon River, *Warscewicz s.n.*, *Wallis s.n.*—Cajamarca, Huánuco, fide Schlechter, Fedde Repert. Beih. 9: 174. 1921. Also Ecuador.

No example of this species was available, but the Ames Herbarium contains a photograph of the type from the Lindley Herbarium.

Oncidium falciferum Reichb. f. & Warsc. Bonpl. 2: 108. 1854, fide Schlechter, Fedde Repert. Beih. 9: 174. 1921, sphalm.

Oncidium falcipetalum Lindl. Orch. Linden 14, no. 76. 1846; Fol. Orch. *Oncidium* 5, no. 7. 1855; Cogn. & Goos. Dict. Icon. Orch. *Oncidium* t. 21. 1899. *Oncidium falcipetalum* Lindl. var. *Pavonii* Reichb. f. ex Lindl. Fol. Orch. *Oncidium* 5, sub no. 7. 1855, *nomen*. *Oncidium ionodon* Reichb. f. Linnaea 41: 23. 1876. *Oncidium Davisii* Reichb. f. Linnaea 41: 24. 1876. *Cyrtochilum falcipetalum* Kränzl. Notizbl. Bot. Gart. Berl. 7: 92, in key. 1917, *nomen*; Engler, Pflanzenr. IV. 50 (Heft 80), 37, fig. 1G, a–c. 1922. *Cyrtochilum Pavonii* Kränzl. Engler, Pflanzenr. IV. 50 (Heft 80), 38. 1922.

Plant large, sprawling, from a stout, creeping rhizome, both terrestrial and epiphytic. Pseudobulbs subremote, oval or oblong-ovoid to subcylindric, compressed, 5–10 (rarely 16) cm. long, 1- or 2-leaved, surrounded below by about 3 pairs of conduplicate, leaf-bearing sheaths producing successively larger blades upward. Leaves usually variable in size, those on the pseudobulb commonly the largest, oblanceolate to narrowly elliptic-lanceolate, acute or short-acuminate, long-narrowed below to a conduplicate, petiole-like base, up to 52 cm. long and 5.5 cm. wide. Scape much longer than the leaves, stout, twining, up to 6 meters long (according to Lindley), bearing at remote, irregular intervals flowering branches which are commonly simple, loosely several- (3- to 6-) flowered, the rachis (when mature) fractiflex and about 16 cm. or less long. Floral bracts conspicuous, concave, broadly ovate to suborbicular when expanded, equaling about one half or one third of the pedicellate ovary which is up to 4.5 cm. long. Flowers large, with widely spreading segments, commonly 6–7 cm. broad. Sepals chestnut-brown with a narrow yellow border, strongly undulate on the margins. Dorsal sepal 25–30 mm. long, clawed; lamina broadly ovate or suborbicular-ovate, obtuse, 17–26 mm. wide below; claw short, auricled at the base, abruptly passing into the lamina. Lateral sepals free, clawed, longer and commonly narrower than the dorsal sepal; lamina obliquely ovate or elliptic-ovate, subacute; claw longer than that of the dorsal sepal, rather gradually dilated into the lamina, auricled on the outer side at the base. Petals from a very short, broad claw ovate-lanceolate, oblique, acuminate, very strongly undulate and often twisted or conduplicate, somewhat shorter than the dorsal sepal and more or less narrower than the lateral sepals, yellow spotted with brown. Lip much smaller than the other segments, lanceolate in outline, more or less 3-lobed, spreading from the base of the column, abruptly reflexed below the middle, about 20–23 (rarely 15) mm. long, about 10–11 mm. wide near the basal portion when expanded; the side angles or lateral lobes obliquely triangular, reflexed, acute; the apical portion or terminal lobe lanceolate to oblong-obovate, acute or acuminate; disc at the base with a high, fleshy, tricarinate or bisulcate callus having several irregular fleshy tubercles in front and an irregular, fleshy ridge extending from the callus to the lateral angle of the lip. Column short, stout, about 8.8–10 mm. high at the back, with a pair of fleshy, porrect angles in front below, and a pair of ascending, linear-lanceolate to cuneate arms (often toothed at the oblique apex) on each side in the middle.

Peru: Habitat and collector not recorded (types of *Oncidium ionodon* and *O. Davisii*).—Huánuco: Pillao, 2700 meters on thick tree trunks and rarely on the ground, *Woytkowski 37019*.—Puno: Prov. of Sandía, 2–6 km. from Oconeque, on trail, 1800–2100 meters, in moist places in much fog and rain, *Metcalf 30589*. Also Venezuela (type of *O. falcipetalum*) and Colombia.

Oncidium fasciferum Reichb. f. & Warsc. Bonpl. 2: 108. 1854; Reichb. f. Walp. Ann. 6: 787. 1863; Cogn. Martius Fl. Bras. 3, pt. 6: 393. 1906; Kränzl. Engler, Pflanzenr. IV. 50 (Heft 80), 243, fig. 20D, a–e. 1922.

Plant large, showy. Pseudobulbs large, broadly ovoid, unifoliate, clothed at the base on each side by a leaf-bearing sheath. Leaves linear or lorate, shortly

acute, up to 50 cm. long and 4 cm. wide. Scape strict, 1 m. high, terminating in a densely many-flowered panicle consisting of more than 30 remote branches which are up to 5 cm. long and 4- to 8-flowered. Floral bracts ovate, acute, concave, paleaceous, much shorter than the pedicellate ovary which is about 1.5 cm. long. Flowers rather small, golden yellow, with wide-spreading segments, purple-spotted on the lower half. Dorsal sepal clawed, elliptic-lanceolate or linear-lanceolate, acute or acuminate, with a reflexed apex, up to 11 mm. long, 3 mm. wide. Lateral sepals similar but rather longer, free. Petals oblong, about as long as the sepals but markedly wider, oblique, subobtusate. Lip slightly longer and much broader than the other segments, broadly obovate in outline, pandurate-trilobed, about 13 mm. long from the subtruncate base to either side of the retuse apex and about 8 mm. wide near the base; lateral lobes semiovate-triangular or semirhombic, spreading, obtuse without; mid-lobe from a short, broad claw abruptly dilated into a cordate-reniform, bilobed lamina which is 10-11 mm. wide; disc at the base with a crest consisting of 5 longitudinal series, the middle one shorter and linear, with larger tubercles on each side of the middle. Column very short and stout, dilated upward, with a pair of porrect, short, semiovate or dolabriform wings above.

E. Peru: Near the source of the Marañon River, *Warszewicz 25* (type).—Huánuco, fide Schlechter, Fedde Repert. Beih. 9: 174. 1921.

No material of this species was available, but the Ames Herbarium contains a floral analysis from the Reichenbach Herbarium.

Oncidium formosissimum Reichb. f. Bot. Zeit. 10: 694. 1852; Lindl. Fol. Orch. Oncidium 28, no. 92. 1855; Reichb. f. Walp. Ann. 6: 745. 1863; Kränzl. Engler, Pflanzenr. IV. 50 (Heft 80), 174, fig. 15C, a-c. 1922.

Plant rather large and showy. Pseudobulbs oblong-cylindric, ancipitous, unifoliate, 2.5-5 cm. high, clothed below by several leaf-bearing sheaths. Leaves elliptic-oblong to "oblong-lanceolate," acute, shortly narrowed to a complicate base, 9 cm. or more long, about 2 cm. wide. Scape much surpassing the leaves, stout, up to 48 cm. or more tall, terminating in a many-flowered panicle; peduncle suberect, provided with several remote, close, evanescent sheaths; panicle spreading, consisting of several subremote, short branches the lower of which are again branched; rachis fractiflex. Floral bracts very short, triangular, acute, much shorter than the slender, pedicellate ovary. Flowers medium-sized, with wide-spreading segments. Sepals and petals dark brown or purple below and yellow above, with a yellow lip. Dorsal sepal elliptic-lanceolate or "oblong," subobtusate, about 10 mm. long, 3.5 mm. wide. Lateral sepals free, similar to the dorsal sepal but longer and slightly narrower, oblique. Petals "oblong" to elliptic-oblong, apparently as long as the lateral sepals and wider than either sepal (sometimes four times larger, fide Reichenbach), acute or short-acuminate. Lip much larger than the other segments, about 16 mm. long, pandurate-trilobed, about 12 mm. wide across the base and nearly 23 mm. wide in front; lateral lobes small, retrorse, oblong-ovate (sometimes bilobed), rounded at the apex; mid-lobe much larger, from an indistinct, broad isthmus, reniform-cordate, broadly rounded in front and abruptly acute or very obscurely bilobed; disc at the base with a small, low crest which is tridentate in front and altogether covered with minute tubercles. Column short, about 7 mm. high, with a pair of very large, transversely oblong or

dolabriform wings. Sometimes, according to Kränzlin, there occur forms with small, sterile, imperfectly 5-divided flowers which are more numerous than the normal fertile flowers.

Peru(?), fide Schlechter, Fedde Repert. Beih. 9: 174. 1921. Colombia and Ecuador (type).

No specimens of this species were available, but the Ames Herbarium contains sketches of vegetative and floral parts from the Reichenbach Herbarium.

Oncidium gargantua Reichb. f. *Linnaea* 41: 24. 1876. *Cyrtorchilum gargantua* Kränzlin. Notizbl. Bot. Gart. Berl. 7: 91, in key. 1917, *nomen*; Engler, *Pflanzenr.* IV. 50 (Heft 80), 32, fig. 1A, a-c. 1922.

Pseudobulbs and leaves unknown. Scapes surely very long, stout, climbing, apparently many-branched at intervals of 12-15 cm. (according to Kränzlin), the branches fractiflex, loosely up to 7-flowered, and 21 cm. or less long. Floral bracts conspicuous, triangular-ovate, concave, about half as long as the slender, pedicellate ovary which is up to 4 cm. long. Flowers large with wide-spreading segments, about 6.5 cm. long from the apex of the dorsal sepal to the tip of a lateral sepal, apparently brown, the petals paler with large spots, similar to those of *O. falcipetalum* Lindl. Sepals long-clawed. Dorsal sepal about 28 mm. long; lamina broadly ovate or triangular-ovate, subacute, rounded or subcordate at the base, with undulate margins, about 18 mm. or more wide; claw about 5 mm. long, auricled at the base. Lateral sepals similar but distinctly larger (with a longer claw and a longer and broader lamina), the lamina obliquely suborbicular-ovate, subacute to acute. Petals much smaller than the sepals, shortly clawed, obliquely ovate-lanceolate or oblong-triangular, acuminate, with margins strongly undulate, recurved above. Lip much smaller than the other segments, shortly clawed, the lower portion (nearly to the middle) spreading from the column, then abruptly reflexed and recurved (forming a semicircle when viewed from the side), triangular-lanceolate and about 15 mm. long when expanded; lateral lobes small, triangular, obtuse, deflexed, about 5 mm. long; mid-lobe linear, somewhat dilated above, obtuse or subacute; disc at the base (between the lateral lobes) with a crest consisting of 2 keels (the rear one bicarinate and papillose in front), the forward one consisting of 2 short lamellae with 1 or 2 small papillae on each side. Column rather small, apparently about 8 mm. high, dilated below with a pair of semiorbicular processes, near the middle with a pair of linear, spreading wings which are abruptly angled near the apex with an ascending tip.

Southern Peru: Habitat not recorded, *Pearce* 835, 598 (according to Kränzlin).

No example of this species was accessible, but the Ames Herbarium contains a drawing of the inflorescence from the Reichenbach Herbarium.

Oncidium globuliferum HBK. *Nov. Gen. et Sp.* 1: 347. 1816; Reichb. f. *Gard. Chron.* (1871) 1678; Kränzlin. Engler, *Pflanzenr.* IV.

50 (Heft 80), 167. 1922. *Oncidium globuliferum* β *costaricense* Reichb. f. Gard. Chron. (1871) 1678. *Oncidium scansor* Reichb. f. Linnaea 22: 844. 1849; Reichb. f. Walp. Ann. 6: 742. 1863. *Oncidium convolvulaceum* Lindl. & Paxt. Paxt. Fl. Gard. 1: 102, sub t. 21. 1850-51. *Oncidium Wercklei* Schltr. Fedde Repert. Beih. 19: 68. 1923.

Plant extremely variable, with a very long-creeping, twining stem which is smooth, often branching and up to 5 m. long (according to Kränzlin). Pseudobulbs small, commonly more or less distant (rarely approximate), up to 27 cm. or more apart, apparently ancipitous, ellipsoid (rarely obovoid) to suborbicular, up to 3 cm. high, unifoliate, invested below by 2 pairs of conduplicate sheaths of which the upper ones are leaf-bearing. Leaves oblong or elliptic-oblong to oval, rounded or subacute with a minute apiculate at the apex, shortly cuneate or subrounded at the complicate base, up to 8 cm. long and 2.5 cm. wide (usually smaller); those of the pseudobulb commonly the largest and most persistent. Scapes very short, arising both from the base of the pseudobulbs (in the axils of sheaths) and from the stem (at remote intervals), 1- to 3-flowered, apparently up to 3 cm. high, the peduncle wholly concealed by imbricating, scarious sheaths and the rachis strongly fractiflex. Floral bracts ovate-lanceolate, concave, much shorter than the slender pedicellate ovary which is 6 cm. or less long. Flowers very variable in size (medium-sized to large), with wide-spreading segments, yellow usually barred or spotted with red-brown at the base of the segments. Dorsal sepal oblong-elliptic or obovate-oblong, obtuse to acute, 11.5-17 mm. long, 5-9 mm. wide. Lateral sepals distinctly longer and narrower, obliquely oblanceolate-oblong, shortly clawed below, acute to obtuse. Petals obovate-oblong, oblique and somewhat sigmoid, rounded and minutely apiculate at the apex, about as long as the dorsal sepal or a little longer, commonly somewhat broader. Lip much larger than the other segments, quadrate-obovate to suborbicular in outline, pandurate-trilobed, cordate at the base, retuse to bilobed (sometimes with a pair of small supplementary lobules) at the apex, 22-32 mm. long from the base to either side of the bilobed apex, 10-13.5 mm. wide across the lateral lobes and 23-41 mm. wide across the mid-lobe; lateral lobes small, auriculate-spreading, suborbicular, passing into a broad, subquadrate claw; mid-lobe many times larger, cordate-reniform, bilobed; disc between the lateral lobes with a more or less plurituberculate callus which terminates in a triangular point flanked on each side by a small, semiobovate lamella. Column small, stout, about 5.5-6.5 mm. high, above with a pair of short, broad, subdolabriform wings which are more or less crenulate.

Amazonas, fide Schlechter, Fedde Repert. Beih. 9: 175. 1921.—Cuzco: Prov. of Calca, Lares Valley, between Huallhuayoj and Calca, 1900 meters, in "shrubwood," *Weberbauer 7922*. Prov. of Urubamba, Machu-Picchu, 2000 meters, on cliffs, *Vargas 1892*. Also Colombia (type of *O. globuliferum*), Venezuela (types of *O. scansor* and *O. convolvulaceum*), Bolivia, fide Schlechter, Fedde Repert. Beih. 10: 78. 1922, Costa Rica (types of *O. globuliferum* var. *costaricense* and *O. Wercklei* Schltr.), and Panama.

Oncidium glossomystax Reichb. f. Bot. Zeit. 10: 696. 1852; Walp. Ann. 6: 714. 1863; Cogn. Martius Fl. Bras. 3, pt. 6: 432, t. 62, fig. 2. 1906; Kränzl. Engler, Pflanzenr. IV. 50 (Heft 80), 98. 1922.

Plant very small, epiphytic, with an abbreviated rhizome, consisting of a suborbicular-flabelliform cluster of leaves whose bases are imbricating. Leaves more or less numerous, ensiform, equitant, linear or oblong, often lightly oblique, acute or subacute, 1 to rarely 4 cm. long, 2 to rarely 6 mm. wide. Scapes usually somewhat exceeding the leaves, simple, commonly very slender, about 2-3 (rarely 5 cm. long), erect to arcuate, 1- to 3-flowered above. Floral bracts minute, ovate-triangular, concave, much shorter than the pedicellate ovary which is 8 mm. or less long. Flowers large for the plant, yellow, with wide-spreading, membranaceous segments. Dorsal sepal suborbicular-obovate or broadly elliptic, rounded at the apex, dorsally carinate with the keel produced into a mucro, 2.3-4 mm. long, 1.6-2.3 mm. wide. Lateral sepals free, obliquely elliptic-lanceolate, acute, with the dorsal keel extended into a mucro, about as long as the dorsal sepal and nearly half as wide. Petals very broadly oblong or narrowly obovate, obliquely rounded or truncate at the apex, about as long as the dorsal sepal and slightly narrower (often a little broader). Lip much larger than the other segments, suborbicular in outline, sharply 3-lobed, deeply bilobed in front, about 9.5-13 mm. long from the base to the apex of an apical lobule, about equally broad across the mid-lobe in front and across the lateral lobes at the base; lateral lobes relatively small, wide-spreading, obliquely spatulate, abruptly round-dilated from a narrow claw, irregularly crenate without; mid-lobe much larger, abruptly dilated from a broad subquadrate claw, cordate-reniform, deeply bilobed in front and sharply indented on each side (thus 4-lobed) with the apical lobules oblong-suborbicular and the outer lobules much larger and obliquely semiorbicular; disc near the base with 2 pairs of broadly oblong lamellae terminating in deep fringes (one pair in front of the other) the apical pair more or less coalescent. Column minute, porrectly dilated on each side below, with a pair of broadly dolabriform, crenulate wings above.

Peru: Habitat not recorded, *Mathews s.n.*, fide Cogn. Tocache, in dry places, *Poeppig 857*.—Cuzco: Prov. of Paucartambo, Victoria, Asunción, 700-800 meters, *Vargas 5151*.—Junín: Puerto Bermúdez, about 395 meters, epiphyte in dense forest, *Killip & Smith 26519a*.—Loreto: Near Moyobamba, 800-900 meters, *Weberbauer 4511*.—Madre de Dios: Iberia, Río Tahuamana, 330 meters, *Seibert 1947*.—San Martín: Near Moyobamba, 860 meters, *Scolnik 1206*. Also Mexico, Guatemala, Nicaragua, Colombia, Venezuela, French Guiana, Brazil, and Ecuador (type).

Oncidium gracillimum Rolfe, Kew Bull. (1898) 197.

Plant large, but not showy. Pseudobulb oblong-ovoid, subcompressed, 7.6 cm. long, bifoliate. Leaves linear-oblancoate, acute, gradually long-narrowed below to a slender petioled base, up to 20.3 cm. long, about 2 cm. wide. Scape large, terminating in a spreading, loosely many-branched panicle, about 90 cm. high, the slender fractiflex branches 15-22.5 cm. long. Bracts oblong-lanceolate, concave, much shorter than the slender pedicellate ovary which is 1.1 cm. or less long.

Flowers small, having wide-spreading segments, yellow with a few large brown spots at the base of the perianth-members. Dorsal sepal cuneate-spatulate or oblanceolate, subobtusate, about 6 mm. long, 2 mm. wide. Lateral sepals similar but a little longer and narrower, lightly oblique. Petals "spatulate-oblong" or broadly oblong from a clawed base, obtuse, apparently a little shorter and wider than the dorsal sepal. Lip larger than the other segments, deeply 3-lobed with the mid-lobe bilobed, spreading from the base of the column, lightly reflexed above, about 8 mm. long from the base to the apex of a terminal lobule, nearly 7.5 mm. wide at the base across the lateral lobes; lateral lobes divaricate or lightly retrorse, broadly oblong, rounded at the apex; mid-lobe larger, oblong or more usually obovate-oblong, somewhat larger than the lateral lobes, bifid with ovate-rounded, slightly spreading lobules; disc at the base with a 6-lobed crest. Column sigmoid in lateral view, about 4 mm. high, with an elongate beaked rostellum, bearing a pair of oblong, unequally 3-denticulate wings, the posterior tooth falcate-recurved.

Peru: Habitat not recorded; imported by Messrs. F. Sander & Company.

No example of this species was available, but the Ames Herbarium contains a photograph of the type.

Oncidium heteranthum Poepp. & Endl. Nov. Gen. ac Sp. 1: 34, t. 60. 1836; Cogn. Martius Fl. Bras. 3, pt. 6: 378, t. 87. 1905; Kränzl. Engler, Pflanzenr. IV. 50 (Heft 80), 175. 1922. *Oncidium bryolophotum* Reichb. f. Gard. Chron. (1871) 738. *Oncidium inops* Cogn. & Rolfe, Journ. des Orch. 3: 346. 1893 and 4: 74. 1893. *Oncidium megalous* Schltr. Fedde Repert. 9: 30. 1911.

Plant small to large, extremely variable throughout, with an abbreviated rhizome. Pseudobulbs aggregated, ovoid or ellipsoid to pyriform or cylindric in the dried specimen, 1- or more- (commonly 2-) leaved, up to 6.5 (rarely 8.5) cm. long, angulate, complanate or ancipitous, surrounded at the base by 1 to 3 pairs of evanescent, conduplicate sheaths of which the upper ones are leaf-bearing. Leaves elliptic or elliptic-oblong to linear-oblong (rarely obovate-oblong), acute or acuminate, more or less narrowed to a complicate, petioled base, up to 34.5 cm. long (commonly much shorter), 8 mm.-3.4 cm. wide, the largest and most persistent on the pseudobulb. Scape usually much exceeding the leaves, up to 120 cm. long, often flexuous or arcuate above; peduncle (often very short) up to 25 cm. long, with a very few close, remote, short sheaths; inflorescence loosely paniculate with numerous short or rather short, compound branches having a fractiflex rachis. Floral bracts minute, triangular-lanceolate, much shorter than the pedicellate ovary of the fertile flowers which is 1.5 cm. or less long. Flowers of 2 kinds; sterile flowers much more numerous, smaller (often much so), of 3-6 linear to oblanceolate segments, one of which is sometimes partially developed into a lip; fertile flowers medium-sized for the genus, with wide-spreading segments, yellow with brown blotches or bars on the lower portion of the perianth parts. Dorsal sepal narrowly oblanceolate or spatulate-oblanceolate, rounded or obtuse and often apiculate at the apex, 7.2-8.8 (rarely 10) mm. long, 2-2.6 (rarely 3) mm. wide. Lateral sepals free, sometimes a little shorter or longer than the dorsal sepal but about equally broad, very obliquely oblanceolate-spatulate, subacute to apiculate.

Petals obovate-oblong, distinctly broader than the sepals, oblique especially at the rounded to subtruncate-retuse apex. Lip much larger than the other segments, sessile, pandurate-trilobed, with a bilobed apex, 9.5–12.5 mm. long from the base to the tip of an apical lobule, 9–10 (rarely 11) mm. wide near the base and 9 (rarely 7)–13 mm. wide near the apex, rather abruptly narrowed near the middle or above the middle; basal part more or less semiorbicular with the dorsal margin cordate and often lobulate, about equaling or distinctly larger than the anterior part (mid-lobe); mid-lobe sessile to very shortly clawed, reniform, deeply bilobed; disc at the base with a multilobulate callus terminating in 3 usually recurved lobules and often surrounded by 1 or more separate papillae. Column very short, 5–6 mm. high at the back including the erect wings, somewhat sigmoid when viewed from the side, dilated upward, provided with a pair of spreading, more or less retuse, fleshy dilations below and with a pair of transversely oblong wings above which are commonly recurved and rounded at the apex, but sometimes angular and acute or acuminate above.

Eastern Peru: Habitat not recorded, *Mathews 1917*.—Cuzco: Near Río Yanamayo, below Pillahuata, 2000–2300 meters, epiphyte in forest, *Pennell 14051, 14078*. Prov. of Convención, Hda. Potrero, Sapan-Sachayoc, 2200 meters, epiphyte in forest, *Vargas 2531*.—Huánuco: Near Cuchero (Cohero) and Pampayaco (Pampayacu), *Poeppig 1619* (type of *O. heteranthum*), *Kanehira 333*.—Junín: Chanchamayo Valley, 1500 meters, *Schunke s.n.* Prov. of Tarma, Utcuyacu, 1900 meters, common on trees, *Woytkowski 35359*. Also Colombia (type of *O. inops*), Venezuela, and Bolivia in South America and Costa Rica (type of *O. bryolophotum*, *O. megalous*) and Panama in Central America.

Oncidium hians Lindl. Bot. Reg. 24, Misc. 65, no. 124. 1838; Fol. Orch. *Oncidium* 36, no. 122. 1855; Reichb. f. Walp. Ann. 6: 775. 1863; Regel, Gartenfl. 36: 345, t. 1250, figs. *a, b*. 1887; Cogn. Martius Fl. Bras. 3, pt. 6: 416. 1906; Kränzl. Engler, Pflanzenr. IV. 50 (Heft 80), 155. 1922. *Oncidium leucostomum* Hoffmgg. Verz. Orch. 58. 1843. *Oncidium quadricorne* Kl. Allg. Gartenz. 20: 249. 1852. *Oncidium maxilligerum* Lem. Illustr. Hort. 3, Misc. 43, fig., 1856.

Plant small, inconspicuous. Pseudobulbs very small, ovoid, more or less compressed, unifoliate, 1–1.5 cm. high. Leaf small, oblong or linear-oblong, subobtusely to abruptly acute or acuminate, long-attenuate to a complicate base, 3–7 cm. long, 8–13 mm. wide. Scape much exceeding the leaves, very slender, erect or ascending, 12–25 cm. long; peduncle provided with a few very remote, short sheaths; inflorescence simple or slightly branched, with the branches erect-spreading, short, filiform, loosely 2- to 4-flowered. Floral bracts very small, ovate-triangular, much shorter than the filiform pedicellate ovary which is 8–13 mm. long. Flowers very small, with wide-spreading segments, dull yellowish brown. Dorsal sepal oval (“obovate”), rounded at the apex, 5–5.5 mm. long, 3.2 mm. or less wide. Lateral sepals free, very similar to the dorsal sepal but slightly smaller, oblique. Petals

broadly oblong or obovate, oblique especially at the rounded apex, distinctly smaller than the dorsal sepal. Lip much surpassing the sepals and petals, pandurate, obovate-subquadrate in outline, sessile at the subcordate base, more or less retuse at the apex, 6–8 (sometimes 10) mm. long, 2.5–3.5 mm. wide near the base, 4–4.5 mm. wide near the apex; disc at the base with a large, fleshy, erect callus which is bilobed at the apex and prominently dentate on each side (thus 4-lobed). Column very short and stout, about 2 mm. high, with a pair of conspicuous, semi-ovate, falcate-ascending wings.

Peru(?), fide Schlechter, Fedde Repert. Beih. 9: 175. 1921. Brazil (type).

Oncidium hieroglyphicum Reichb. f. Allg. Gartenz. 22: 274. 1854; Lindl. Fol. Orch. *Oncidium* 29, no. 94. 1855; Reichb. f. Walp. Ann. 6: 745. 1863; Kränzl. Engler, Pflanzenr. IV. 50 (Heft 80), 240. 1922.

Plant apparently large. Pseudobulbs caespitose, oval or ovoid to disc-shaped, sharply ancipitous, unifoliate. Leaf oblong or ligulate, obtusely acute, up to 11.5 cm. long and 5 cm. wide, undulate. Raceme simple or with a few very short (apparently 2-flowered) branches below, very loosely several-flowered. Floral bracts minute, lanceolate, acuminate, much shorter than the pedicellate ovary which is apparently about 20 mm. long. Flowers medium-sized for the genus, with wide-spreading segments, the sepals and petals greenish-yellow with dull brown spots except near the apex, and the lip pale yellow with a large brown spot near the base. Sepals free, about equal, elliptic-lanceolate ("oblong"), acuminate ("acute"), undulate on the margins, about 12 mm. or more long, 5–6 mm. wide. Petals similar but definitely broader. Lip longer and much broader than the sepals and petals, from a short claw abruptly obovate-subquadrate in outline, sharply pandurate-trilobed, cordate at the base, bilobed in front, about 15 mm. long from the base to the apex of an apical lobule and slightly broader in front; lateral lobes horizontally spreading, oblong-obovate or saddle-shaped, rounded without; mid-lobe abruptly spreading from a conspicuous narrow claw, cordate-reniform, bilobed; disc at the base with an oval, downy, 7-lobed crest. Column very short, rhombic-dilated on each side below, having 3 pits below the stigma, with an apical pair of semiovate, retuse wings, the upper lobe much smaller than the lower.

Peru: Habitat not recorded, *Warscewicz s.n.* (living original in Herr Jenisch's garden).

No specimen of this species was available, but the Ames Herbarium contains several sketches of the plant and flower from the Reichenbach Herbarium.

Oncidium hirundo Reichb. f. Bot. Zeit. 15: 158. 1857; Kränzl. Engler, Pflanzenr. IV. 50 (Heft 80), 216, fig. 19B, *a-b*. 1922.

Plant large. Pseudobulbs and leaves not recorded. Scape high, more than 65 cm. in length, loosely paniculate above; panicle about 30 cm. or more long, very loosely several-flowered; floral branches 5 to 6 cm. apart, short, laxly 2- to 4-flowered almost to the base, with a fractiflex rachis. Floral bracts ovate-lanceolate,

acute or acuminate, much shorter than the slender pedicellate ovary which is apparently 20–25 mm. long. Flowers medium-sized, with wide-spreading segments, sepals and petals yellow marked with chestnut-brown throughout, lip yellow with chestnut spots below. Dorsal sepal elliptic-oblancoolate, relatively short-clawed, acute, 16–20 mm. long, about 5–7 mm. wide. Lateral sepals free, obliquely oblancoolate, acuminate, diverging like a swallow's tail, apparently much longer (with longer claw) and somewhat narrower than the dorsal sepal. Petals oblong-lanceolate ("oblong"), obtuse, slightly subhastate below, markedly shorter and somewhat wider than the dorsal sepal. Lip much shorter than the sepals, subquadrate-obovate in outline, pandurate-trilobed near the middle, sessile, emarginate in front, about 13 mm. or more long from the base to an apical lobule and 10 mm. or more wide in front (across the mid-lobe); basal portion rhombic, with rounded-triangular, spreading lateral lobes, about 8 mm. wide; mid-lobe abruptly dilated from a short claw into a reniform lamina; disc at the base with a suborbicular, pluridentate crest. Column very small, with a dentiform process in front below and with a pair of retuse wings above.

Peru: Habitat not recorded, *Warscewicz s.n.*, fide Kränzl. (l.c.).

The Ames Herbarium contains a drawing of the scape with a floral analysis from the Reichenbach Herbarium, but no material was available.

Oncidium incarum (Kränzl.) C. Schweinf. Bot. Mus. Leaflet. Harvard Univ. 14: 70. 1949. *Cyrtochilum incarum* Kränzl. Engler, Pflanzenr. IV. 50 (Heft 80), 58. 1922.

Plant large. Rhizome almost 2 m. long, with very long roots. Pseudobulbs very distant, narrowly ovoid, compressed, bifoliate, up to 15 cm. long, clothed below by several long, leaf-bearing sheaths. Leaves linear, acuminate, shortly complicate below, plicate, 20–60 cm. long, 3 cm. or more wide. Scape up to 4 m. long, climbing; peduncle 2.5 m. long; panicle about 1.5 m. long, with elongate branches which are slender, flexuous and several- to many-flowered. Bracts broadly cymbiform, ovate, subacute, about a third as long as the pedicellate ovary which is almost 3 cm. long. Flowers large for the genus. Sepals yellowish-brown. Dorsal sepal spatulate-oblong, long-clawed, 3 cm. long; lamina oblong, obtuse, about 2 cm. long and 1.5 cm. wide; claw 1 cm. long. Lateral sepals connate at the very base, rather shortly clawed, about as long as the dorsal sepal; lamina oblong, subacute, as wide as the dorsal sepal. Petals shortly and broadly clawed, markedly shorter than the sepals; lamina ovate, subcordate-retuse at the base, acute, slightly narrower than the sepals, the basal third yellow-brown, the upper part first white, then violet. Lip deflexed, much shorter than the other segments, about 1.6 cm. long and 1.3 cm. wide, from a broad base suborbicular or very broadly rhombic with obtuse tip, apiculate in front, brown-violet; disc at the base with a crest consisting of irregularly placed tubercles having 5 divergent teeth in front. Column slender, linear, strict, 6–7 mm. high, capitate above, with a pair of very narrow wings.

Peru: Huacapistana, *Weberbauer 2136*.

No example of this species was available.

Oncidium ionopterum Reichb. f. *Linnaea* 41: 20. 1876. *Cyrtorchilum ionopterum* Kränzl. *Notizbl. Bot. Gart. Berl.* 7: 97, in key. 1917, *nomen*; Engler, *Pflanzenr.* IV. 50 (Heft 80), 70, fig. 7C, *a-d*. 1922.

Plant delicate, probably elongate. Pseudobulbs and leaves not described, the former said to be small. Peduncle and rachis of the inflorescence lacking. Panicle slender, climbing, the existing part about 40 cm. long; branches 4–8 cm. distant, flaccid, up to 4 cm. long, provided near the base with abortive flowers and at the apex with 2 or 3 normal fertile flowers, the rachis becoming fractiflex. Bracts minute. Pedicellate ovary of the normal flowers up to 10 mm. long. Abortive flowers composed of 5 linear segments about 2.5 mm. long. Color of normal flowers: sepals yellow-green, petals brown with a white apex, lip violet on each side, brown in the center and with a white tip in front. Dorsal sepal oblong-cuneate or oblong-oblancheolate with a long claw, acute, 7 mm. long, 2 mm. wide. Lateral sepals free, oblong-oblancheolate, with a long claw, oblique, acute, distinctly longer than the dorsal sepal but equally wide. Petals oblong-obovate from a narrow-cuneate base, acute, oblique, a little shorter and notably broader than the dorsal sepal. Lip simple, sessile, broadly triangular-ovate, abruptly acute in front, convex, with the rounded sides denticulate or crenulate, apparently subtruncate at the base, about 5 mm. long and 8 mm. wide; disc velutinous, with a large central crest consisting of several finger-like tubercles, terminating in a pair of larger, elongate, outcurved tubercles in front and with a separate, bilobed papilla on either side. Column small, with an angular plate on either side below and a pair of large transversely oblong or semiorbicular, lobulate wings above.

Piura: Near Huancabamba, 3076 meters, *Wallis s.n.* (type).—Cajamarca, fide Schlechter, *Fedde Repert. Beih.* 9: 175. 1921.

No material of this species was available, but the Ames Herbarium contains drawings of the type from the Reichenbach Herbarium.

Oncidium Kienastianum Reichb. f. *Gard. Chron. n.s.* 9: 558. 1878. *Oncidium trilingue* Sander, *Orch. Guide* 193. 1901, not Lindl. *Cyrtorchilum Kienastianum* Kränzl. *Notizbl. Bot. Gart. Berl.* 7: 91, in key. 1917, *nomen*; Engler, *Pflanzenr.* IV. 50 (Heft 80), 33, fig. 1D, *a-b*. 1922.

Plant large. Pseudobulbs aggregated according to Kränzlin, oblong-ovoid or ellipsoid, more or less ancipitous, bifoliate, about 8 cm. high, clothed at the base by several pairs of conduplicate, leaf-bearing sheaths. Leaves oblanceolate-oblong ("linear"), acute or acuminate, more than 50 cm. long and 2.5 cm. wide according to Kränzlin. Scape very long, twining, paniculate above, the short, few-flowered branches described as 3–4 cm. long. Bracts small, oblong-ovate, acute, more than a third as long as the pedicellate ovary which is about 3.5 cm. long. Flowers rather large, with wide-spreading segments. Sepals brown with pale yellow margins, at length becoming dark purple, crisped. Dorsal sepal clawed, 1.5 cm. long; lamina triangular-ovate, acute, about 1 cm. wide; claw relatively short. Lateral sepals longer-clawed, distinctly longer than the dorsal sepal and about as wide, cuneate-oblong, acute. Petals shortly and broadly clawed, as long as the dorsal sepal and

nearly as wide; lamina ovate, acuminate ("acute"), with crisped margins and a reflexed apex, yellowish with brown spots or bars, at length purple. Lip triangular-lanceolate in outline, lightly 3-lobed, about 1.5 cm. long and 1.2 cm. wide across the lateral lobes near the base, yellowish with brown or purple spots at the base and on the margins; lateral lobes relatively small, subquadrate-auriculate, spreading, sometimes divided in the middle; mid-lobe much larger, "triangular" or triangular-ovate, acute or acuminate, recurved above, with the margins strongly crisped-undulate; disc at the base with a 3-carinate crest, the central keel highest, the lateral ones semilunate-curved with 3 lamellae on each side. Column short and stout, sigmoid when viewed from the side, purple, with a pair of angular, fleshy processes below and a pair of minute, ascending, curved wings above.

Northern Peru or Colombia, habitat not recorded, *Roezl s.n.*

No example of this species was available, but in the Ames Herbarium there are sketches and floral analyses from the Reichenbach Herbarium.

Oncidium leopardinum Lindl. *Fol. Orch. Oncidium* 28, no. 93. 1855; Williams, *Orch.-Grow. Man.* ed. 7: 618. 1894.

Plant apparently large, with no record of the pseudobulbs, leaves or complete scape. Panicle very loose, about 90 cm. high (according to Williams), the branches often very remote, apparently short, compound and with a strongly fractiflex rachis. Floral bracts minute, much shorter than the pedicellate ovary which is about 20 mm. or less long. Flowers rather small, with wide-spreading or reflexed segments, yellow with distinct, dark brown bands on the sepals, petals and base of the lip. Sepals apparently oblong and free, the lateral ones (which alone show clearly in the photograph of the type) narrowly oblong, acute or obtuse, about 9 mm. long and 2 mm. wide. Petals markedly broader than the lateral sepals, ovate-oblong from a short, subunguiculate base, apiculate at the broadly obtuse to retuse apex. Lip nearly equaling the lateral sepals, about 9 mm. long, subequally wide in front and slightly narrower near the base, pandurate-trilobed, sessile; lateral (basal) lobes small, auriculate-rounded; mid-lobe cordate-reniform, bilobed in front, separated from the basal portion by a rather long, abrupt claw; disc at the base with a multilobulate callus which terminates in 5 distinct tubercles the three middle ones longer, with a longer outcurved tubercle on each side in front. Column very short and stout, with a terminal pair of large wings which are broadly dolabriform, lightly 3-lobulate and falcate at the summit.

Peru: Sources of the Marañon River, *Warszewicz s.n.*

No specimens of this species were available, but the Ames Herbarium contains sketches from the Reichenbach Herbarium.

Oncidium Leopoldianum Rolfe, *Gard. Chron.* ser. 3, 8: 556. 1890; *Lindenia* 6: 71, t. 274. 1891; Williams, *Orch.-Grow. Man.* ed. 7: 618. 1894. *Cyrtochilum Leopoldianum* Kränzl. *Notizbl. Bot. Gart. Berl.* 7: 94, in key. 1917, *nomen*; Engler, *Pflanzenr.* IV. 50 (Heft 80), 55, fig. 5B, *a-b.* 1922.

Plant large and showy. Rhizome long-creeping, stout according to Kränzlin. Pseudobulbs more or less distant, about 12.7 cm. or less long, narrowly oblong-ovoid to ovoid-cylindric, 1- or 2-leaved, clothed at the base by several pairs of sheaths which are mostly leaf-bearing. Leaves on the sheaths larger than those on the pseudobulbs (according to Kränzlin), oblanceolate, gradually narrowed below, acute or acuminate, up to 20 cm. long and 3 cm. wide, those on the pseudobulbs oblanceolate ("lanceolate"), up to 16 cm. long and 2 cm. wide according to Kränzlin. Scapes elongate, climbing, paniced above, many-branched, the existing portion about 2.5 m. long, clothed at the base by several leaf-bearing sheaths, the branches about equally long and up to 12 cm. in length. Bracts small, broadly ovate, about one fourth as long as the pedicellate ovary which is 2.5 cm. long. Flowers rather large, with wide-spreading segments, about 4.5 cm. across; sepals and petals white with a crimson-purple lower central portion, lip violet-purple with the basal crest and part of the column yellow. Dorsal sepal very shortly clawed, exauriculate at the base, about 2.3 cm. long; lamina broadly elliptical (or oval), obtuse, about 1.1 cm. wide. Lateral sepals very similar, somewhat broader than the dorsal sepal, or narrower according to Kränzlin. Petals elliptic-ovate, subsessile, subacute, shorter and narrower than the sepals, or broader according to Kränzlin. Lip much smaller than the sepals and petals, triangular-lanceolate, lightly 3-lobed near the base, fleshy, about 1.3-1.5 cm. long, 7-10 mm. wide across the lateral (basal) lobes, subacute to acuminate; lateral lobes rounded; disc at the base with a crest consisting of 3-5 short, fleshy, parallel ridges, the central one highest. Column short, with a pair of short, rounded, fleshy wings.

South America: Habitat and collector not recorded; introduced by Messrs. Linden of Brussels (type).—Loreto: Mountains east of Moyobamba, 1300-1400 meters, transitional country between the savanna woods and the upland evergreen woods, *Weberbauer 4732*.

No material of this species was available.

Oncidium lineoligerum Reichb. f. & Warsc. Bonpl. 2: 109. 1854; Kränzlin. Engler, Pflanzenr. IV. 50 (Heft 80), 280. 1922.

Plant large. Pseudobulbs and leaves not recorded. Scape incomplete in the type specimen, loosely paniced above and then racemose near the apex; panicle stout, about 73 cm. long including the terminal racemose portion; branches 4-6 cm. apart, loosely 2- to 3-flowered, with a fractiflex rachis. Bracts lanceolate-ovate, cucullate, much shorter than the slender pedicellate ovary which appears to be about 3 cm. long. Flowers rather small, with wide-spreading or reflexed segments, yellow or orange with an irregular brown band across the middle of the lip. Dorsal sepal oblong or ligulate, obtusely acute, cuneate at the base, undulate, about 16 mm. long and 5 mm. wide according to Kränzlin. Lateral sepals similar but slightly larger, free. Petals about as long as the dorsal sepal, elliptic, obtuse, very shortly clawed below, slightly wider than the lateral sepals according to Kränzlin. Lip subquadrate in outline, pandurate-trilobed, about 18 mm. long, sessile at the subtruncate base, bilobed in front; lateral (basal) lobes relatively small, triangular-auriculiform, spreading, rounded without, rather abruptly narrowed into a prominent, subquadrate isthmus; mid-lobe cordate-reniform, retuse to bilobed, about 22 mm. wide; disc with a basal crest which is divided into a depressed, plurisulcate

lower portion and an anterior rhombic-ovate callus which is rostrate in the center, with 3 to 5 sharp teeth on each side. Column small, above with a pair of short, broad, repand or unequally bilobed wings.

Peru: Habitat not recorded, *Warszewicz s.n.* (type).—Amazonas: Near Chachapoyas, *Overstuijs s.n.*

A sketch of this species from the Reichenbach Herbarium is in the Ames Herbarium.

Oncidium Lucasianum Rolfe, Kew Bull. (1894) 185; Sander, Orch. Guide 185. 1901; Kränzl. Engler, Pflanzenr. IV. 50 (Heft 80), 141. 1922.

Plant large. Pseudobulbs ovoid, subcompressed, bifoliate, 2.5–5 cm. high. Leaves linear-lanceolate, acute, 5–8 cm. long. Scape arcuate, several-jointed with swollen joints according to Kränzl, few-flowered and 15–20 cm. long, or many-flowered, paniculate and 65–120 cm. long according to Sander. Bracts small, triangular, acute, much shorter than the pedicellate ovary which is up to 2 cm. long. Flowers of variable structure, rather large, about 3 cm. across, entirely yellow. Dorsal sepal obovate-oblong from a very narrow base, obtuse, dorsally carinate, undulate, about 17 mm. or more long, 8 mm. or less wide. Lateral sepals similar, subfree or connate to the middle. Petals broadly oblong from a shorter claw, obtuse, about as long as the sepals but somewhat wider. Lip pandurate-trilobed, about 20 mm. long and 21 mm. or more wide; lateral lobes small, obovate-oblong, auriculiform; mid-lobe large, suborbicular-reniform, bilobed, cordate at the base, about 25 mm. wide; disc with a 5-lamellate callus of which the lamellae are verrucose and are surrounded by warts. Column short, with a pair of rather large, semi-ovate, erose wings.

Habitat originally uncertain. Peru: Without locality, fide Sander and Kränzl.

No example of this species was accessible.

Oncidium luridum Lindl. Bot. Reg. 9: t. 727. 1823; Hook. Bot. Mag. 64: t. 3603. 1837. *Oncidium luridum* var. *guttatum* Lindl. Bot. Reg. 25: t. 16. 1839, not *Epidendrum guttatum* L. *Oncidium guttatum* Reichb. f. Walp. Ann. 6: 782. 1863; Cogn. Martius Fl. Bras. 3, pt. 6: 411, t. 83. 1906. Kränzl. Engler, Pflanzenr. IV. 50 (Heft 80), 110. 1922. Figure 173.

Plant large, extremely variable and widespread. Rhizome very short. Pseudobulbs minute or small, ovoid, unifoliate, more or less compressed, rarely up to 3.5 cm. high, entirely concealed and surpassed by several imbricating, scarios sheaths. Leaf very variable, oval to elliptic-oblong or oblong, acute, more or less narrowed to a complicate base, very thick and fleshy, 15 (rarely smaller)–77 cm. long, 2.2 (rarely)–13 cm. wide. Scape much longer than the leaves, erect or nodding, loosely paniculate and many-flowered above, 30–180 cm. long; peduncle stout, about 9 cm. (rarely) or more long, provided with remote, short, close, tubular sheaths; panicle large, with remote branches which are short to elongate, simple

or compound, with a more or less fractiflex rachis. Floral bracts very short, ovate-triangular, acute, much shorter than the slender, pedicellate ovary which is up to 3.5 cm. long. Flowers medium-sized, with wide-spreading segments having undulate-crisped margins, usually dull yellowish or greenish, thickly spotted with brown. Dorsal sepal broadly spatulate or obovate-spatulate, rounded at the apex, gradually unguiculate-narrowed below, 12-19 mm. long, 7.5-12 mm. wide. Lateral sepals free, similar to the dorsal sepal but a little narrower and often longer. Petals oblong-obovate with a short or very short broad claw, a little shorter and narrower than the dorsal sepal. Lip slightly longer and much broader than the other segments, suborbicular-obovate in outline, pandurate-trilobed, sessile and subcordate at the base, retuse to bilobed above, 14.6-21 mm. long from the base to the tip of an apical lobule, about 7.8-10 mm. wide near the base and 15-21 mm. wide in front (across the mid-lobe); basal portion ovate-subquadrate with an auriculate, spreading base; anterior portion (mid-lobe) cordate-reniform, abruptly dilated from a scarcely perceptible claw; disc at the base with a large plurituberculate callus having 2 larger, more or less oblong, irregular tubercles below and 3 smaller ones in front. Column very short and stout, 4-5 mm. high, with a pair of transversely oblong-subquadrate, unequally bilobed wings above.

Peru: Habitat not recorded, *Pavón s.n.* Also Florida (U.S.A.), the West Indies, Mexico and Central America, South America (type), Colombia, Venezuela, British Guiana and Brazil.

Oncidium macranthum Lindl. Gen. & Sp. Orch. 205. 1833; Fol. Orch. *Oncidium* 4, no. 1. 1855; Hook. f. Bot. Mag. 94: t. 5743. 1868. *Cyrtochilum macranthum* Kränzl. Notizbl. Bot. Gart. Berl. 7: 95, in key. 1917, *nomen*; Engler, Pflanzenr. IV. 50 (Heft 80), 55, fig. 5C, a-c. 1922.

Plant large and showy. Pseudobulb ovoid to conic-cylindric, more or less compressed, 7-15 cm. tall, bifoliate, clothed at the base with 3 or 4 pairs of imbricating, conduplicate sheaths (progressively larger upward) of which the upper ones are leaf-bearing. Leaves very variable in size but apparently larger on the pseudobulb, oblanceolate or linear-oblanceolate to oblong, acute or short-acuminate, gradually narrowed below (often much so) to a complicate base, mostly 25-52.5 cm. long and 2.5-5 cm. wide above. Scape elongate, climbing, 60-300 cm. long, loosely branching (paniculate) above; peduncle stout, with very remote, short, close, tubular sheaths; branches of the panicle very remote, about 33 cm. or less long, mostly concealed below by tubular sheaths, loosely 2- to 5-flowered above. Floral bracts large, cymbiform, obtuse to acute, about half as long as the slender pedicellate ovary which is up to 7 cm. or more long. Flowers very large for the genus, with wide-spreading segments, about 7-10 cm. across from the apex of the dorsal sepal to the tip of a lateral sepal. Sepals dull yellowish brown, somewhat undulate on the margins. Dorsal sepal about 3.5-4 cm. long, prominently clawed; lamina suborbicular, rounded and slightly retuse at the apex, subcordate at the base, about 2.5-3 cm. long and 2.4-3.1 cm. wide, concave; claw narrow, auriculate on each side at the base, about 7-10 mm. long. Lateral sepals distinctly longer, prominently clawed; lamina oval or subquadrate-oval, broadly rounded or retuse at the apex, narrowed to the claw, distinctly narrower than the dorsal sepal; claw similar to that of the dorsal sepal, auriculate at the base without. Petals suborbicular-ovate,

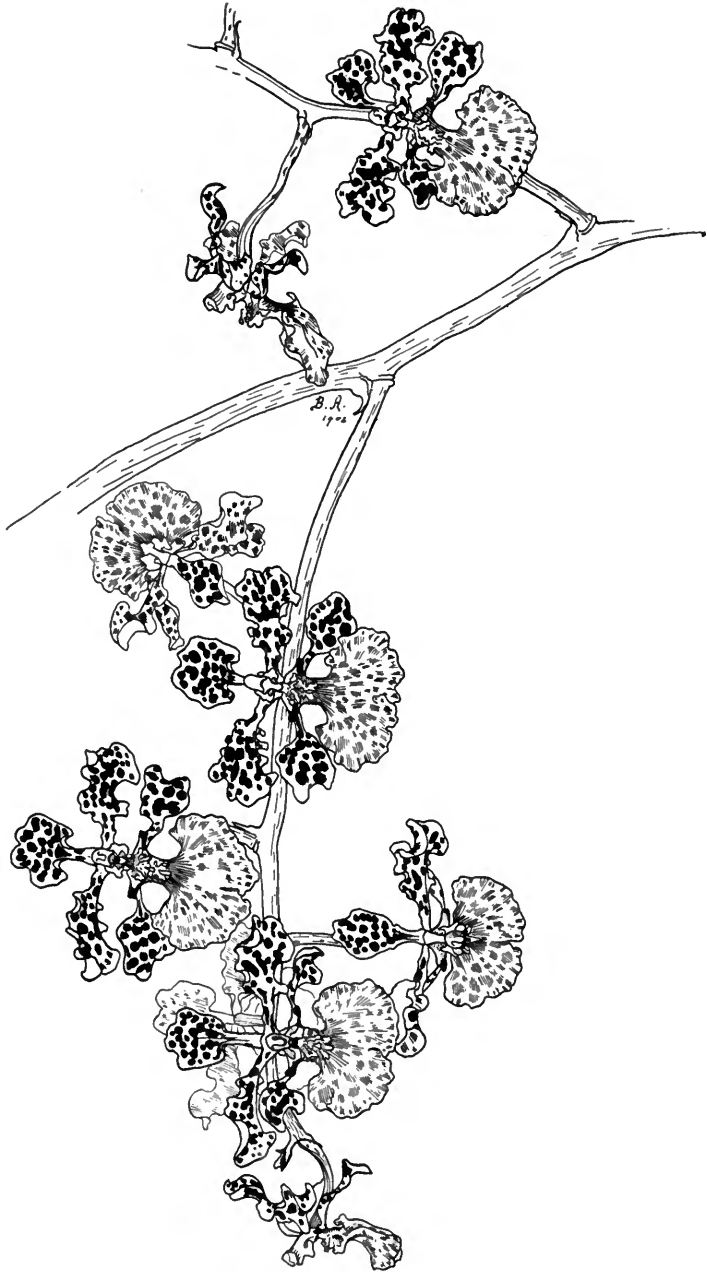


FIG. 173. *Oncidium luridum* Lindl. Flowers from a many-flowered panicle; $\times 1$.

very shortly and broadly clawed, rounded at the apex, strongly crisped-undulate, distinctly shorter than the dorsal sepal but about equally wide, golden yellow. Lip much smaller than the other segments, triangular in outline, spreading from the base of the column and sharply reflexed near the deeply cordate base, acuminate toward the recurved apex, subsimple with small, rounded and subacute, retrorse, basal (lateral) lobules, nearly 2.5 cm. long when expanded and 1.9 cm. wide at the base, brownish purple on the sides and cream-color in the center; disc with a stout, retrorse tubercle consisting of 3 basally confluent subequal lamellae and in front with 3 smaller tubercles. Column short, stout, constricted in the middle, about 1 cm. high, with a pair of small, fleshy wings which are flabellate-semiorbicular and irregularly bilobed or retuse above.

Peru: Habitat not recorded, *Pavón s.n.*, *Mathews 1919*.—Amazonas: East of Chachapoyas between Tambos Bagazón and Almirante, 2400 meters, *Weberbauer 4441*. Sources of the Marañon, *Warszewicz 131*. Chuquiribamba, *André 4498*. Also Colombia and Ecuador (type).

***Oncidium macranthum* Lindl. var. *hastiferum* (Reichb. f. & Warsc.) C. Schweinf., comb. nov. *Oncidium hastiferum* Reichb. f. & Warsc. Bonpl. 2: 102. 1854.**

This concept, of which no example was available, differs from the species in having at the base of the lip 1 large median keel flanked on each side by a smaller prostrate lamella and in having a pair of narrow, ligulate wings on the column.

Peru(?), fide Schlechter, *Fedde Repert. Beih. 9: 175. 1921*. Ecuador (type).

***Oncidium Mathieuanum* Reichb. f. & Warsc. Allg. Gartenz. 24: 321. 1856; Kränzlin. Engler, *Pflanzenr. IV. 50 (Heft 80), 260, fig. 21E, a-b. 1922*.**

Plant large. Pseudobulb oblong-ovoid, ancipitous, deeply sulcate in the dried specimen, about 8 cm. high, obliquely bifoliate, adorned with violet lines and spots. Leaves unknown. Scape about 90 cm. long, slender, flexuous to arcuate, paniculate above; branches numerous, about 4.5–6 cm. distant, short, 1- to 2-flowered, about 3 cm. or less long. Floral bracts very minute. Pedicellate ovary up to 2 cm. long. Flowers rather small, with wide-spreading segments having a cinnamon central and lower portion with yellow margins. Sepals free, obovate, obtusely acute, cuneate below, about 10 mm. long, 4.5–5 mm. wide. Petals markedly larger, undulate, oblong and obtuse according to Kränzlin. Lip prominently 3-lobed, about 13 mm. long and 8–9 mm. broad near the base (according to Kränzlin), rounded at the sessile base; lateral lobes small, auriculiform, round-obovate; mid-lobe broadly cuneate from a short, broad, semiorbicular claw, lightly retuse at the truncate apex; disc between the lateral (basal) lobes with a high callus which is "ligulate," divergently angled on each side at the base and tridentate in front with the lateral teeth decurrent. Column medium-sized, with a pair of broadly dolabriform ("subtriangular") wings above.

Northern Peru: Habitat not recorded, *Warscewicz s.n.*

In the Ames Herbarium there is a drawing of this orchid with floral analysis from the Reichenbach Herbarium.

Oncidium mentigerum (Reichb. f. & Warsc.) Lindl. Fol. Orch. Oncidium 34, no. 115. 1855; Cogn. Martius Fl. Bras. 3, pt. 6: 371. 1905. *Odontoglossum mentigerum* Reichb. f. & Warsc. Bonpl. 2: 100. 1854. *Cyrtochilum mentigerum* Kränzl. Notizbl. Bot. Gart. Berl. 7: 98, in key. 1917, *nomen*; Kränzl. Engler, Pflanzenr. IV, 50 (Heft 80), 78. 1922.

Plant large. Pseudobulbs and leaves unknown in the type. According to Kränzl (l.c.), the pseudobulbs are numerous, aggregated and obliquely ovoid, and the leaves are narrowly lanceolate or oblanceolate, acuminate, revolute on the margins and up to 20 cm. long and 1.8 cm. wide. Scape robust, elongate, terminated by an elongate panicle. Panicle loosely many-branched, pyramidal, about 54 cm. high; branches wide-spreading with a fractiflex rachis, about 5–15 cm. long, the lower branches several-branched. Floral bracts minute, triangular-lanceolate, very acute. Pedicellate ovary filiform-clavate, up to 12 mm. long. Flowers very small, with wide-spreading membranaceous segments. Sepals and petals ochraceous. Dorsal sepal oblanceolate, short-acuminate, long-narrowed below, about 7 mm. long, 2–2.5 mm. wide. Lateral sepals free, very similar to the dorsal sepal but somewhat longer and narrower, slightly oblique. Petals oblanceolate-obovate, acute, long-attenuate below, shorter than the dorsal sepal but about as wide. Lip about half as long as the lateral sepals, simple, narrowly ovate, acute or short-acuminate, rounded at the sessile base, lightly concave, yellow, 4.5–5 mm. long, 2.5 mm. wide; disc through the lower half with 2 approximate, erect crests or keels which are contiguous below and attenuate and slightly diverging above. Column short, stout, about 3 mm. high, with a pair of short ("obsolete"), triangular wings.

Peru: Sources of the Marañon River, *Warscewicz s.n.* (type of *Odontoglossum mentigerum*). Also Ecuador and Colombia.

In the Ames Herbarium there is a photograph of the type from the Lindley Herbarium.

Oncidium minax Reichb. f. Linnaea 41: 22. 1876. *Cyrtochilum minax* Kränzl. Notizbl. Bot. Gart. Berl. 7: 91, in key. 1917, *nomen*; Kränzl. Engler, Pflanzenr. IV. 50 (Heft 80), 33, fig. 1C, a–d. 1922.

Plant apparently large. Pseudobulbs, leaves and scape not recorded. Scape probably elongate and climbing. Branches (only 2 separate ones present in the type) stout, 13–16 cm. long, apparently once-branched below, loosely several-flowered. Floral bracts conspicuous, ovate, acute or acuminate, apiculate, deeply concave. Pedicellate ovary slender, spreading, 3–3.5 cm. long, about twice as long as the subtending bracts. Flowers rather large with spreading segments, apparently brown with the paler petals barred. Dorsal sepal clawed, about 24 mm. long; lamina broadly triangular-ovate, obtuse, cordate at the base, about 16 mm. long and equally wide; claw slender, auriculate at the base. Lateral sepals mark-

edly longer than the dorsal sepal, longer-clawed; lamina oblong-ovate, subacute, cuneate at the base, a little longer and narrower than that of the dorsal sepal. Petals ovate-triangular, abruptly dilated from a short broad claw, crisped on the margin, apparently definitely smaller than the sepals. Lip about 13 mm. long according to Kränzlin, with a prominent narrow claw, deeply 3-partite; lateral lobes erect, obliquely linear or oblanceolate-linear, acute; mid-lobe larger, oblong-linear ("ligulate"), acute; disc at the base of the mid-lobe with 3 rhombic, crenate keels. Column small, angled on each side at the base, with a pair of minute triangular wings above.

Southern Peru: Habitat not recorded, *Pearce s.n.*

The Ames Herbarium contains a drawing of the type from the Reichenbach Herbarium.

Oncidium nanum Lindl. Bot. Reg. 28, Misc. 37, no. 30. 1842; Lindl. & Paxt. Paxt. Fl. Gard. 2: 8, fig. 130. 1851-52; Cogn. Martius Fl. Bras. 3, pt. 6: 375. 1905; Kränzl. Engler, Pflanzenr. IV. 50 (Heft 80), 114. 1922. *Oncidium patulum* Schltr. Orchis 8: 18, t., 1914.

Plant small to medium-sized. Pseudobulbs caespitose, very small, thick-cylindric, up to 7 mm. high, unifoliolate, concealed by 1 or 2 pairs of small, imbricating, evanescent sheaths. Leaf broadly elliptic to elliptic-oblong or oblong, acute, more or less long-narrowed to a complicate, channelled, petiole-like base, 7-23.5 cm. or more long, 2- (rarely) 7 cm. wide. Scape shorter or longer than the leaves, reflexed to arcuate-suberect, about 9-24 cm. long, loosely branched nearly to the base; peduncle up to 8 cm. long, with about 3 very short, amplexicaul, concave sheaths; panicle up to 14 cm. long, with several remote, short, simple branches, the latter densely several- to many-flowered. Floral bracts ovate or ovate-lanceolate, concave, distinctly shorter than the slender pedicellate ovary which is 10 mm. or less long. Flowers very small, with wide-spreading segments. Sepals and petals yellow or orange, spotted with purplish brown or violet. Dorsal sepal spatulate to obovate, broadly rounded at the apex, concave above, about 7-9 mm. long, 5-6.5 mm. wide. Lateral sepals similar but a little longer and narrower, free, oblique, broadly obtuse. Petals obovate-oblong, oblique, broadly rounded and retuse at the apex, slightly shorter than the dorsal sepal and more or less narrower than either sepal. Lip when expanded slightly longer and much wider than the sepals, suborbicular-obovate in outline, pandurate-trilobed, lightly retuse at the apex, sessile at the base, about 8.6-9.5 mm. long from the base to the apex on either side of the retuse middle; basal portion oblate-suborbicular when expanded with revolute, semiorbicular sides (lateral lobes), 4-7.6 mm. wide when expanded; mid-lobe transversely oblong or reniform, retuse, sessile or nearly so, about 6-10.5 mm. wide, yellow; disc between the lateral lobes with a fleshy callus consisting of 2 approximate, suborbicular or triangular-ovoid lobes at the base and an oval-ovate, bisulcate (tricarinate) lobe in front. Column very short and stout, about 2.5-4 mm. high at the back, with a pair of small, obliquely triangular-dentiform wings.

Loreto: Mishuyacu, near Iquitos, 100 meters, epiphyte in forest, *Klug 1296, 10006*.—San Martín: Juan Juí, Alto Río Huallaga, about 400 meters, epiphyte in forest, *Klug 3871*. Also British Guiana (type) and Brazil.

Oncidium nubigenum Lindl. Gen. & Sp. Orch. 197. 1833; Gard. Chron. (1867) 376; Cogn. & Goos. Dict. Icon. Orch. *Oncidium* t. 30. 1900; Kränzl. Engler, Pflanzenr. IV. 50 (Heft 80), 130. 1922. *Oncidium cucullatum* Lindl. Sert. Orch. sub t. 21. 1838; Lindl. & Paxt. Paxt. Fl. Gard. 3: t. 87. 1852-53; Lindl. Fol. Orch. *Oncidium* 22, no. 69. 1855; Cogn. & Goos. Dict. Icon. Orch. *Oncidium* t. 23. 1899. *Oncidium cucullatum* var. *nubigenum* Lindl. Fol. Orch. *Oncidium* 22, no. 69. 1855; Hook. f. Bot. Mag. 94: t. 5708. 1868.

Plant medium-sized to large, variable. Rhizome abbreviated. Pseudobulbs aggregated, narrowly ovoid to pyriform-cylindric, somewhat compressed, 1- or commonly 2-leaved, 3-10 cm. high, clothed below by about 2 pairs of imbricating sheaths of which the upper ones are sometimes leaf-bearing. Leaves linear-elliptic to narrowly oblong or oblanceolate, acute or acuminate, 5-26 (rarely 41) cm. long, up to 1.5 (rarely 4) cm. wide. Scape slender, suberect or nodding, up to 25 (rarely 60 or more) cm. long, loosely racemose (rarely paniculate) above; peduncle up to about 22.5 (rarely 53) cm. long, with a few (up to 6) remote, tubular, evanescent sheaths; raceme (rarely compound or paniculate) loosely 3- to 10-flowered or each branch few-flowered. Floral bracts minute, triangular-infundibuliform. Pedicellate ovary 2-2.5 cm. long. Flowers rather small to medium-sized, with wide-spreading segments. Sepals and petals of variable color, either white and purple spotted or brownish or olive with yellow margins. Dorsal sepal oblong-oval or obovate-oblong ("oblong"), acute to truncate and abruptly acute at the apex, cucullate, about 7.2-15 mm. long, up to 8 mm. wide. Lateral sepals semiconnate or usually connate into a suborbicular-obovate lamina which is slightly longer and distinctly broader than the dorsal sepal, the free apices semiorbicular and apiculate. Petals broadly or narrowly obovate, acute or obtuse at the apex, a little shorter than the dorsal sepal but about as broad or slightly broader. Lip much larger, especially wider, than the other segments, obovate-suborbicular in outline, pandurate-trilobed, retuse in front, cordate at the sessile base, 16-18 mm. long from the base to the tip of an apical lobule, yellowish white more or less spotted with rose, or crimson spotted with purple; basal portion transversely oblong, 9-16 mm. wide, on each side produced into a small, spreading, auriculiform lateral lobe; mid-lobe much larger, broadly flabellate to reniform, retuse and more or less indented on each side in front, cordate or subcuneate below, about 22 (rarely 28) mm. or less wide; disc with a small, 3- or 5-lobulate callus at the base. Column very short and stout, wingless above, about 3 mm. or less high at the back.

Peru: Habitat not recorded, *Lobb s.n.*, according to Lindley. Also Ecuador (type of *O. nubigenum* and *O. cucullatum*) and Colombia.

Oncidium obryzatum Reichb. f. & Warsc. Bonpl. 2: 108. 1854; Lindl. Fol. Orch. *Oncidium* 29, no. 95. 1855; Regel, Gartenfl. 27: t. 925. 1878; Kränzl. Engler, Pflanzenr. IV. 50 (Heft 80), 239, fig. 20B, *a-d*. 1922.

Plant medium-sized to large, variable, apparently without a long-creeping rhizome. Pseudobulbs ovoid to cylindric-pyriform, strongly compressed, 1- or 2-leaved, about 4-8 cm. high, clothed at the base by 3 or 4 pairs of imbricating

sheaths which are progressively larger upward, the upper ones leaf-bearing. Leaves very variable in size, linear-elliptic to linear-oblong, the largest ones 28–52.5 cm. long and 2–2.8 cm. wide, acute, narrowed below to a conduplicate base. Scape commonly elongate, about 24–150 cm. or more long, paniculate above; peduncle about 16–27 cm. or much more in length, commonly stout, provided with several remote, short, close sheaths; panicle about 8.5–100 cm. long, with 4 to numerous branches which are 2–6.5 cm. distant, mostly short and loosely few-flowered with a fractiflex rachis. Floral bracts rather small, ovate, concave, scarious. Flowers small or medium-sized, with wide-spreading segments, yellow with reddish brown spots or bars on the lower half. Dorsal sepal spatulate-cuneate or obovate-oblong, abruptly acute, broadly rounded or subtruncate and retuse at the apex, about 11–14 mm. long, 4.2–6 mm. wide above. Lateral sepals similar but longer and more or less narrower, oblique, free, obtuse to truncate-retuse at the apex. Petals obovate-oblong, very similar to the dorsal sepal but more or less wider, and not so long-attenuate below, oblique, undulate. Lip longer and much wider than the other segments, subquadrate-obovate in outline, pandurate-trilobed, sessile at the subcordate base, prominently bilobed in front, about 12.2–20 mm. long from the base to the tip of an apical lobule, about 8–10 mm. wide at the base (across the lateral lobes) and 11.9–18 mm. wide in front across the anterior lobe; basal portion triangular-subquadrate, from the auriculate, spreading lateral lobes gradually narrowed (clawed) to the mid-lobe; mid-lobe reniform, commonly much wider than the basal part; disc with a small, many-lobed callus at the base. Column small, sigmoid in side view, 4.1–6 mm. high with a pair of prominent, porrect, angulate processes below, and a pair of dolabriform to obliquely subquadrate (often long-acuminate) wings above.

Peru: Habitat not recorded, *Warszewicz s.n.* (type).—Cajamarca, Prov. of Cutervo, above Socota, on Socota River, 2800 meters, epiphyte, *Stork & Horton 10152*. Also Colombia, Venezuela, and Ecuador.

Oncidium ochmatochilum Reichb. f. Bot. Zeit. 10: 698. 1852; Lindl. Fol. Orch. Oncidium 55, no. 193. 1855; Kränzl. Engler, Pflanzenr. IV. 50 (Heft 80), 219, fig. 19D, *a-c*. 1922. *Oncidium cardiochilum* Lindl. Fol. Orch. Oncidium 27, no. 87. 1855. *Odontoglossum cardiochilum* Kränzl. Engler, Pflanzenr. IV. 50 (Heft 80), 286, 288. 1922.

Plant large, stout, up to 2 m. or more tall, variable, without a long-creeping rhizome. Pseudobulb complanate-cylindric or ovoid, bifoliate, about 6–12.5 cm. tall, mostly enveloped by several (up to 5) pairs of imbricating, conduplicate sheaths which are successively larger upward and mostly leaf-bearing. Leaves oblong-linear or lorate to oblanceolate-oblong, acute or acuminate, more or less narrowed below, up to 67.5 cm. long and 5.6 cm. wide (often much smaller). Scape commonly large, stout, 45–240 cm. long, more or less erect and usually much surpassing the leaves, paniculate above; peduncle 8–41 cm. or more long, commonly with remote, very short, close, tubular sheaths; panicle 37 cm. or much more in length, loosely many-branched, with the branches short or elongate, simple or compound, several- to many-flowered, with a very fractiflex rachis. Floral bracts minute, concave, acute. Pedicellate ovary about 3.5 cm. or less

long. Flowers small, variable, with wide-spreading, subfleshy segments, fragrant, green mottled with reddish brown, with white on the lip. Sepals and petals recurved above. Dorsal sepal narrowly elliptic-lanceolate, acuminate, about 13–20 mm. long and 3–5 mm. wide. Lateral sepals obliquely linear-lanceolate or linear-elliptic, acute or acuminate, dorsally carinate, free, a little longer and narrower than the dorsal sepal. Petals ovate-lanceolate or elliptic-lanceolate, acuminate, distinctly shorter than the dorsal sepal but nearly twice as wide. Lip shorter than the sepals, suborbicular-ovate in outline, deeply pandurate-trilobed, sessile at the subcordate base, abruptly apiculate at the rounded or sometimes lightly retuse apex, about 9.8–17 mm. long, about 9.6–15.6 mm. across near the base and 6–14.6 mm. wide in front; lateral lobes small, spreading, auriculi-form, rounded, curved forward, abruptly contracted into a broad triangular-subquadrate claw or isthmus; mid-lobe cordate-semiorbicular to reniform, broadly rounded and commonly apiculate at the apex; disc at the base with a large, fleshy, plurituberculate callus. Column short and stout, about 5–6.2 mm. high at the back, with a pair of low, fleshy, porrect angles below and a pair of very inconspicuous, short, broad wings above.

Huánuco: 6 km. south of Tingo María, near highway, about 738 meters, epiphyte in moist forest valley, flowers very fragrant, *Seibert 2259*.—San Martín: Zepelacio, near Moyobamba, 1100–1200 meters, epiphyte in forest, “fls. white, golden-yellow, violet and brown-spotted,” *Klug 0.24*. Also Mexico and Guatemala to Panama (type of *O. ochmatochilum*) and Colombia (type of *O. cardiochilum*).

Oncidium onustum Lindl. Gen. & Sp. Orch. 203. 1833; Fol. Orch. *Oncidium* 12, no. 35. 1855; L. Linden in *Lindenia* 11: 39, t. 498. 1895; Kränzl. Engler, *Pflanzenr.* IV. 50 (Heft 80), 208. 1922. *Oncidium holochrysum* Reichb. f. *Hamb. Gartenz.* 18: 33. 1862; Williams, *Orch.-Grow. Man.* ed. 7: 612. 1894.

Plant medium-sized. Pseudobulbs aggregated, ovoid or oblong-ovoid, compressed, 1- or sometimes 2-leaved, commonly green mottled with brown, 2–4 cm. high, clothed below by 2 or 3 pairs of imbricating sheaths which are successively larger upward, the uppermost leaf-bearing. Leaves oblong or linear-oblong, often conduplicate in the dried specimen, acute, very slightly narrowed toward the base, fleshy, very variable in size, 5–12.7 cm. long (according to collector's notes) and 1–1.8 cm. (2.5 cm. according to Kränzlin) wide. Scape much surpassing the leaves, about 18 to more than 40 cm. long, racemose or rarely paniculate above, commonly nodding toward the summit; peduncle up to 22 cm. or more long, provided with several short, close, tubular sheaths; inflorescence densely several- to many-flowered, often secund, up to 20 cm. long. Floral bracts very minute. Pedicellate ovary slender, commonly 1.5–2 cm. long. Flowers medium-sized, with wide-spreading segments, entirely yellow. Dorsal sepal strongly cucullate, ovate or ovate-elliptic, acute or acuminate, 7–7.4 mm. long, nearly 6 mm. wide when forcibly expanded. Lateral sepals free, very similar to the dorsal sepal but slightly longer and narrower, oblique, acute and apiculate. Petals nearly twice as large as the sepals, suborbicular, broadly rounded or lightly retuse and apiculate

at the apex, with an undulate margin. Lip larger than the petals, suborbicular in outline, deeply 3-lobed near the base, sessile at the broadly cuneate base, emarginate in front, about 19 mm. or less long from the base to the tip of an apical lobule, about 20 mm. wide near the base and across the middle; lateral (basal) lobes relatively small, spreading, obliquely obovate-oblong, broadly rounded and often subcrenate at the apex; mid-lobe much larger, nearly sessile, reniform-semiorbicular; disc at the base with a 3-lobulate callus of which the lateral lobules are large, semioval and flat or cochleate and the mid-lobule small and ancipitous. Column very short and stout, about 2 mm. high at the back, with a pair of large, obliquely semilunate, obtuse wings.

Piura: Negritos, Cerro Negro, Cerro Prieto, 12-20 miles east of Cape Pariñas, about 730 meters or more, on crevices of cliffs, on trees or cacti or at the base of tree trunks, *Haught 123, 184, 0466*. Also Panama and western Colombia (type), and Ecuador.

Oncidium ovatilabium C. Schweinf. Am. Orch. Soc. Bull. 14, no. 9: 384, t., 1946. Figure 174.

Plant epiphytic, medium-sized. Rhizome stout, concealed by sheaths. Pseudobulbs apparently rather remote, very slender, cylindrical, gradually narrowed upward, complanate, 1- or 2-leaved, about 7 cm. or more high, surrounded on each side by 4 or 5 distichous sheaths which are imbricating, conduplicate, successively longer upward and mostly leaf-bearing. Leaves linear-oblancoelate to narrowly elliptic-oblong, acute or short-acuminate, more or less narrowed below (those on the pseudobulb very gradually narrowed to a conduplicate, petiole-like base), up to 27 cm. long and 2 cm. wide. Scapes in the axil of a sheath, stout, suberect, more or less surpassing the leaves; peduncle 19-33 cm. long, with 2 or 3 remote, very short and close, tubular sheaths; inflorescence a virgate panicle 16-49 cm. long, consisting of 6-14 short, densely flowered, wide-spreading branches, the lower ones 4.5-9.2 cm. distant; main rachis above and that of branches strongly fractiflex. Floral bracts conspicuous, round-ovate, deeply concave, obtuse. Flowers numerous, very small for the genus, fragrant, with wide-spreading or reflexed segments, brownish yellow with the central part [lip] dark red or reddish brown. Dorsal sepal spatulate or oblong-spatulate, rounded at the apex, adnate to the column below, the free part 7-7.4 mm. long, about 3 mm. wide. Lateral sepals oblanceolate, more or less oblique, subacute, dorsally carinate above, distinctly longer and commonly narrower than the dorsal sepal. Petals obliquely oval or obovate-oval, broadly obtuse or rounded at the apex, obliquely adnate to the column, about equally long with the dorsal sepal but markedly wider. Lip simple, strongly convex, ovate, sessile at the rounded base, obtuse at the concave apex, about 8 mm. long, 6.4-7.8 mm. wide when forcibly expanded; disc through the lower half with a broadly oblong, lightly bisulcate (i.e., tricarinate) thickening. Column relatively large, stout, acute at the tip, without distinct wings, about 3-3.9 mm. high at the back.

Huánuco: Yanano, about 1800 meters, on mossy tree, *Macbride 3844* (type). Huacachi, near Muña, about 2000 meters, in "montaña," *Macbride 4102*.

ONCIDIUM

ovatilabium C. Schweinf.



FIG. 174. *Oncidium ovatilabium* C. Schweinf. 1, plant; $\times \frac{2}{3}$. 2, flower from front, natural position; $\times 3$. 3, column and lip, oblique view; $\times 4$. 4, lip somewhat expanded, from above; $\times 4$.

Oncidium Papilio Lindl. Bot. Reg. 11: t. 910. 1825; Hook. Bot. Mag. 55: t. 2795. 1828; Cogn. & Goos. Dict. Icon. Orch. *Oncidium* t. 3. 1896; Cogn. Martius Fl. Bras. 3, pt. 6: 424, t. 91. 1906; Kränzlin. Engler, Pflanzenr. IV. 50 (Heft 80), 170. 1922.

Plant large, showy. Pseudobulbs aggregated, rather small, suborbicular, strongly compressed, about 3–5 cm. high, unifoliate, clothed at the base by several pairs of evanescent, ovate-triangular, scarious sheaths. Leaf oval to elliptic-oblong, coriaceous, acute, rather long-narrowed to a complicate base, about 12–22 cm. long, 4–7 cm. wide, green mottled with brown. Scape many times longer than the leaves, ascending or spreading, 60–120 cm. long; peduncle elongate, not thickened at the joints but terete and clothed below with numerous remote, short, close, evanescent, tubular sheaths, above dilated, strongly compressed and often bialate; inflorescence simple or somewhat branched, each branch densely few-flowered with 1 or 2 flowers opening at once. Floral bracts short, broadly triangular, strongly concave. Pedicellate ovary abbreviated. Flower very large, with wide-spreading, membranaceous segments. Dorsal sepal oblanceolate-linear, acute, with slightly undulate margins, purplish-brown, sparsely mottled with greenish yellow, about 8–13 cm. long and 5–7 mm. wide. Lateral sepals free, oblong-lanceolate, falcate-decurved, obtuse to short-acuminate, strongly crisped-undulate on the margins, much shorter and about three or more times as wide as the dorsal sepal, brown and yellow in transverse bands. Petals very similar to the dorsal sepal but apparently slightly shorter and narrower. Lip slightly shorter and much broader than the lateral sepals, broadly obovate in outline, pandurate-trilobed below the middle, truncate-subcordate at the sessile base, commonly lightly emarginate in front, 3.5–6 cm. long from the base to either side of the apex, 1.8–2.7 cm. wide across the lateral lobes at the base and 3–6 cm. wide across the mid-lobe in front; lateral lobes relatively small, spreading, semi-orbicular to semiovate, more or less abruptly narrowed in front to the short broad claw, somewhat undulate on the margins; mid-lobe much larger, suborbicular to transversely suborbicular-oval, with the margins strongly crisped-undulate, yellow and reddish-brown more or less mottled with yellow and the center yellow; disc at the base with a fleshy ovate or ovate-lanceolate, obscurely 3-lobed callus. Column small, slender, 7–10 mm. high, with a pair of prominent, porrect wings which have the posterior lobe linear-subulate and capitate at the tip and the anterior lobe relatively large, obliquely triangular-ovate and lacinate in front.

Loreto: Tarapoto, 400 meters, epiphyte, *Ule 6607*. Also Panama(?), Trinidad (type), Venezuela, and northern Brazil.

Oncidium pardothyrsus Reichb. f. & Warsc. Bot. Zeit. 15: 158. 1857; Kränzlin. Engler, Pflanzenr. IV. 50 (Heft 80), 273, fig. 23A, a–b. 1922.

Plant large, showy. Pseudobulbs (according to Kränzlin) large, flat, ridged, resembling those of *O. suavis* Lindl. Leaves unrecorded. Scapes probably 90 cm. or more long, not climbing, paniculate above; peduncle provided with distant, scarious, short sheaths (according to Kränzlin); panicle narrow and elongate, many-flowered, with numerous short, remote branches which are 6 cm. or less

distant, about 4 cm. long (up to 10 cm. long, according to Kränzlin), simple, apparently 2- to 4-flowered. Floral bracts rather conspicuous, ovate, acute or acuminate. Pedicellate ovary 2.5 cm. or less long. Flowers rather small, with wide-spreading segments. Dorsal sepal with a short narrow claw, apparently about 10 mm. long; lamina broadly oblong-ovate, obtuse, about 5 mm. wide, strongly undulate, chestnut-brown with a yellow border near and at the apex. Lateral sepals free, similar but somewhat shorter and longer-clawed according to Kränzlin. Petals similar to the lateral sepals. Lip much shorter than the sepals, obovate-suborbicular in outline, pandurate-trilobed near the middle, 7 mm. long, 5.5 mm. wide near the base and 6 mm. wide in front according to Kränzlin, sessile with a subtruncate base, retuse in front, yellow with a broad chestnut band across the basal half; lateral lobes short, semiovate-triangular, broadly obtuse without, narrowed above to a short broad isthmus; mid-lobe cordate-reniform ("transversely oblong"); disc at the base with a large, velvety, multituberculate callus which is 3-lobulate in front. Column very short and stout, with a pair of short, fleshy angles below and a pair of short, subquadrate wings above.

Peru: Habitat not recorded, *Warszewicz s.n.* (type). Also *Wallis s.n.*, according to Kränzlin.

The Ames Herbarium contains a sketch of this species, with several floral analyses.

Oncidium pentadactylon Lindl. Ann. & Mag. Nat. Hist. 15: 383. 1845; Fol. Orch. *Oncidium* 42, no. 136. 1855; Kränzlin. Engler, Pflanzenr. IV. 50 (Heft 80), 181. 1922.

Plant large, epiphytic, forming large clumps. Pseudobulbs ovoid to narrowly ovoid, more or less compressed, bifoliate, up to 7 cm. high, clothed below by 1 or 2 pairs of slightly longer, scarios sheaths of which the upper ones are occasionally leaf-bearing. Leaves lanceolate-elliptic, up to 17.6 cm. long and 3.4 cm. wide (up to 30 cm. long and 2 cm. wide according to Kränzlin), acute or short-acuminate, gradually narrowed to a complicate base. Scape elongate, up to 79 cm. long (said to reach 3 m. in length), much surpassing the leaves, suberect to arcuate, loosely paniculate above; peduncle about 21 cm. or more long, provided with 2 or 3 remote, short, close tubular sheaths; panicle very long with branches more or less remote (up to 8.5 cm. distant), loosely few- to many-flowered, the lower ones compound and the rachis of all fractiflex. Floral bracts lanceolate-triangular, concave, scarios. Pedicellate ovary 1.7 cm. or less long, much surpassing the subtending bract. Flowers of two kinds, all with wide-spreading or reflexed segments, yellow blotched with brownish purple in the lower part. Sterile flowers very small, with 5 oblong-oblancheolate, subequal segments. Fertile flowers much larger, medium-sized for the genus. Dorsal sepal oblancheolate-oblong, abruptly acute, about 10.2–11.5 mm. long (7 mm. long according to Kränzlin) and 3–3.8 mm. wide. Lateral sepals obliquely linear-oblancheolate, abruptly acute at the apex, commonly lightly falcate, markedly longer (rarely shorter) and somewhat narrower than the dorsal sepal. Petals lanceolate-oblong or pandurate-oblong, slightly shorter (rarely longer) and broader than the dorsal sepal, oblique. Lip commonly shorter than the lateral sepals, pandurate-trilobed, sessile at the minutely auriculate base, retuse or lightly emarginate and often apiculate in front, about 11.6–14 mm.

long (9–10 mm. long and 6 mm. wide according to Kränzlin) from the base to the tip of an apical lobule, about 8.6–14 mm. wide across the basal portion (lateral lobes) and 10.4–16 mm. wide across the anterior part (mid-lobe); lateral lobes oblong-auriculate or round-auriculate, retrorse, unguiculate-narrowed to the mid-lobe; mid-lobe much larger than the lateral lobes, transversely oval-oblong to cordate-reniform; disc at the base with a multituberculate callus, usually having 3 tubercles in front. Column very small, sigmoid when viewed from the side, about 3.2 mm. high at the back, below with a pair of porrect, fleshy angles and above with a pair of conspicuous, dolabriform or transversely oblong, more or less bilobed wings.

Cajamarca, fide Schlechter, Fedde Repert. Beih. 9: 176. 1921. Ecuador (type), Colombia and Venezuela.

Oncidium pictum HBK. Nov. Gen. et Sp. 1: 346, t. 81. 1816; Lindl. Gen. & Sp. Orch. 201. 1833; Fol. Orch. *Oncidium* 28, no. 89. 1855; Kränzlin. Engler, Pflanzenr. IV. 50 (Heft 80), 193. 1922. *Oncidium falcicornis* Reichb. f. in sched., fide Kränzlin. l.c.

Plant large. Pseudobulb oblong-ovoid, subcompressed, bifoliate, about 7.5–8 cm. high, clothed below by several pairs of imbricating, conduplicate sheaths which are progressively larger and leaf-bearing upward. Leaves linear or linear-oblong, obtuse to acute, gradually narrowed below to a complicate base, about 25–30 cm. long and 2.5 cm. wide. Scape erect, about twice as long as the leaves, paniculate above, about 60 cm. long; peduncle with several remote, close, short sheaths; panicle many-flowered, with several subremote branches which are spreading, short, simple and few- (2- to 3-) flowered, with a fractiflex rachis. Bracts triangular or ovate-lanceolate, acuminate, concave, much shorter than the pedicellate ovary which is about 2 cm. long. Flowers medium-sized, with wide-spreading segments, yellow with red or purplish spots. Dorsal sepal oblanceolate, acute, lightly undulate on the margins, 1.3 cm. long and about 3 mm. wide (according to Kränzlin). Lateral sepals similar but apparently a little narrower, free, oblique. Petals oblong or ligulate, obtuse, about equally long but somewhat wider than the sepals. Lip slightly exceeding the sepals, pandurate-trilobed, sessile at the cordate base, retuse at the apex, subquadrate in outline, about 1.5 cm. long, 6–7 mm. wide across the lateral lobes at the base and 1.5 cm. wide in front according to Kränzlin; lateral lobes small, triangular-semiovate, apparently abruptly narrowed to a rather long isthmus; mid-lobe much larger, cordate-reniform; disc at the base with a large crest consisting of 7–8 minute tubercles. Column small, sigmoid when viewed from the side, below with a pair of prominent, porrect, semiobovate plates and above with a pair of erect-ascending, narrowly triangular or subulate wings.

Peru: Habitat not recorded, *Mathews 1920*, fide Lindley. Also Colombia (type) and Ecuador.

Oncidium polyadenium Lindl. Fol. Orch. *Oncidium* 27, no. 86. 1855. Kränzlin. Engler, Pflanzenr. IV. 50 (Heft 80), 241. 1922.

Plant large. Pseudobulbs, leaves and lower part of the scape unknown in the type. Scape stout, adorned with several short, close, remote sheaths, the portion present up to about 15 cm. high; inflorescence a large pyramidal panicle, many-flowered, about 24 cm. high; branches spreading, simple, up to 10 cm. long, few-flowered above, with a fractiflex rachis. Floral bracts small, triangular, acuminate, much shorter than the slender pedicellate ovary which is up to 3 cm. long. Flowers rather large, with wide-spreading segments, apparently whole-colored, yellow. Dorsal sepal cuneate-obovate, retuse or broadly obtuse, about 12.5 mm. long and 7 mm. wide. Lateral sepals similar but a little longer, free, oblique. Petals similar to the dorsal sepal but much longer and broader than either sepal, oblong-obovate, retuse. Lip about as long as the lateral sepals or longer, pandurate-trilobed, sharply indented at about the middle of each side, subquadrate or oblong-obovate in outline, sessile at the cordate base, retuse at the apex, about 14–17 mm. long from the base to the tip of an apical lobule, about 9–12 mm. wide across the basal portion and 11–21 mm. wide in front; lateral lobes indistinct, spreading, semiorbicular with undulate-crenate margins; mid-lobe broader, reniform or transversely oval; disc at the base with a large, multipapillose callus (papillae in 5 rows) extended in front into several crenate-dentate keels, and with several separate warts on each side. Column small, with a pair of spreading semiobovate dilations below and with a pair of semioval-dolabriform, retuse or crenate wings above.

Two collections from Ecuador (*Espinosa 1607, 1793*), which have been referred to this species, furnish the following vegetative characters: Plant rather large, forming rosettes, 50–80 cm. tall. Pseudobulbs small, entirely concealed by several pairs of imbricating, conduplicate sheaths which are mostly leaf-bearing and are progressively larger upward. Leaves oblong or elliptic-oblong, up to 55 cm. long and 5 cm. wide, acute or subacuminate.

Peru: Habitat not recorded, *Lobb s.n.* (type).—Amazonas: Chapachapoyas, Cerro Puma Urco, *Soukup 4094*. Also Ecuador.

The Ames Herbarium contains a photograph of the type, with an analysis of the lip and column.

Oncidium pusillum (L.) Reichb. f. Walp. Ann. 6: 714. 1863; Cogn. Martius Fl. Bras. 3, pt. 6: 430, t. 62, fig. 1. 1906; Kränzl. Engler, Pflanzenr. IV. 50 (Heft 80), 99. 1922. *Epidendrum pusillum* L. Spec. Pl. ed. 2. 1352. 1763. *Cymbidium pusillum* Sw. Nov. Act. Ups. 6: 74. 1799. *Oncidium iridifolium* HBK. Nov. Gen. et Sp. 1: 344. 1816. Figure 175.

Plant small, caespitose, very variable, up to 8 cm. high. Stems abbreviated, entirely concealed by a flabelliform or suborbicular cluster of leaves which are imbricated at the base. Leaves equitant, more or less oblique and falcate, linear, linear-oblong to oblong-elliptic or rarely elliptic (often slightly broader above the middle), acute or rarely obtuse, up to 7 cm. long and (rarely) 1.2 cm. wide. Scapes subequaling the leaves, axillary and often several to a plant, more or less flattened and narrowly bialate above, terminating in an abbreviated 1- to 6-flowered raceme. Floral bracts short, conduplicate-triangular, dorsally carinate, shorter than the



FIG. 175. *Oncidium pusillum* (L.) Reichb. f. Plant; $\times 1$.

pedicellate ovary which is 6-winged and 8 mm. or less long. Flower variable, large for the plant, membranaceous, with wide-spreading segments, yellow often with orange, red-brown or purplish spots. Dorsal sepal relatively small, elliptic to obovate or suborbicular, acute, apiculate to broadly rounded at the tip, dorsally carinate, 5-6 mm. long, 2.2-4.5 mm. wide. Lateral sepals obliquely lanceolate, acute or acuminate, apiculate, concave, dorsally carinate, a little shorter (longer according to Cogniaux) and much narrower than the dorsal sepal. Petals much longer and broader than the dorsal sepal, elliptic-oblong to obliquely round-ovate, acute, apiculate or rounded at the apex, undulate. Lip much larger than the other segments, pandurate-trilobed, sessile with an auriculate base, retuse to bilobed at the apex, about 13.2-18.5 mm. long from the base to the tip of an apical lobe, about 12-18 mm. wide across the lateral lobes near the base and 10.8-22 mm. wide across the mid-lobe; lateral lobes relatively small, spreading, suborbicular or obovate-suborbicular; mid-lobe much larger, from a short broad claw semiorbicular, more or less indented in the middle of each side (and thus 4-lobed); disc at the base with a prominent, 3-lobed callus of which the lateral lobes are broad, lobulate and flat and the mid-lobe longer and convex. Column very short and stout, about 1.5-2 mm. or more high at the back, semi-

orbicular-dilated on each side below, with a pair of prominent, semiorbicular-flabellate, crenulate or deeply dentate wings above.

Peru: Habitat not recorded, *MacLean s.n.*—Huánuco, fide Schlechter, Fedde Repert. Beih. 9: 176. 1921.—Junín: Along Río Perene, near "Hacienda 3," Colonia Perene, about 600 meters, in forest, *Killip & Smith 25171*. Colonia Perene, 590 meters, *Hitchcock 22105*. Chanchamayo Valley, 1000 meters, *Schunke 556*; 700 meters, *Schunke 1665*. Hacienda Schunke, La Merced, about 1230 meters, *Macbride 5600*. Puerto Bermúdez, about 375 meters, epiphyte in dense forest, *Killip & Smith 26519*.—Loreto: Bajo Amazonas, Gamitanacocha, Río Mazán, 100–125 meters, *Schunke 135*; *Vargas 4673*. Caballo-Cocha on the Amazon River, *Williams 2028*. Lower Río Huallaga, Fortaleza, Yurimaguas, 155–210 meters, *Williams 4326*. Mishuyacu, near Iquitos, 100 meters, epiphyte in dense forest, *Killip & Smith 29896*; *Klug 393*; *Pebas, Rand s.n.* Vicinity of Iquitos, 100 meters, *Klug 10102*. Vicinity of Iquitos, Rancho Indiana, 110 meters, *Mexia 6436*.—San Martín: Prov. of Lamas, Trocha Agua Blanca-Desquite, on road to Tarapoto, 600–800 meters, in tropical forest, *Ferreyra 7973*. Prov. of Mariscal Cáceres, "Frente a Puerto Huicte, entre Tingo María y Juanjui," in tropical forest, 500–550 meters, *Ferreyra 4409*. Also Mexico, through Central America and the West Indies to Surinam (type of *Epidendrum pusillum*), Colombia, Brazil, Bolivia and Peru.

Oncidium pyramidale Lindl. Ann. & Mag. Nat. Hist. 15: 384. 1845; Fol. Orch. *Oncidium* 29, no. 98. 1855; Veitch, Man. Orch. Pl. 8: 73. 1892; Kränzl. Engler, Pflanzenr. IV. 50 (Heft 80), 195, fig. 16J, *a-c*. 1922. *Oncidium chrysopyramis* Reichb. f. & Warsc. Bonpl. 2: 108. 1854; Lindl. Fol. Orch. *Oncidium* 29, no. 97. 1855; Veitch, Man. Orch. Pl. 8: 25. 1892; Kränzl. Engler, Pflanzenr. IV. 50 (Heft 80), 196, fig. 16F, *a-d*. 1922.

Plant medium-sized. Pseudobulbs aggregated (according to Kränzlin), ovoid to narrowly ovoid-cylindric, compressed, 1- to 3-leaved, 2.5–7.3 cm. high, clothed at the base with 2 or 3 pairs of scarios, imbricating, conduplicate sheaths (often evanescent), which are successively larger upward, the uppermost leaf-bearing. Leaves elliptic-oblong to oblanceolate, acute or short-acuminate, more or less long-narrowed to a complicate base, 11–21.5 cm. long, 1.5–3 cm. wide, those on the pseudobulb largest. Scape from the axil of a basal sheath, much longer than the leaves, 32–45 (sometimes 60) cm. long, suberect, often somewhat arcuate above, terminating in a rather narrow, loose, many-flowered panicle; peduncle 16–24.5 cm. long, provided with a few remote, short, close sheaths; panicle about 16–32 cm. long, with numerous branches which are short or very short and either simple and few-flowered or branched and many-flowered, with a fractiflex rachis. Floral bracts minute, triangular, much shorter than the slender pedicellate ovary

which is 10 mm. or less long. Flowers small, yellow, fragrant, with wide-spreading or reflexed segments. Dorsal sepal oblanceolate-oblong, "oval," broadly obtuse, about 7.5 mm. long (5–6.5 mm. long according to Kränzlin) and 2.7 mm. wide. Lateral sepals free, linear-oblanceolate, oblique, acute or subacute, narrower and slightly longer than the dorsal sepal. Petals oblong-ovate, commonly abruptly acute or apiculate, about as long as the dorsal sepal but nearly twice as broad. Lip much larger than the other segments, pandurate-trilobed, sessile at the abruptly auriculate base, bilobed in front, about 10.5–12.5 mm. long (8 mm. long according to Kränzlin) from the base to the apex of an anterior lobule, about 9.8–11.3 mm. wide across the lateral lobes near the base and about 7.5–8.5 mm. wide across the mid-lobe; lateral lobes suborbicular-auriculate, reflexed, gradually narrowed to the claw in front; mid-lobe reniform or obovate-reniform, rather abruptly dilated from the claw, bilobed in front; disc at the base with a large, plurituberculate callus having 3 prominent tubercles in front. Column small, strongly sigmoid when viewed from the side, about 3.4 mm. high at the back, below with a pair of porrect, semiorbicular plates, above with a pair of narrowly cuneate, more or less divergently bilobed wings and with a prominent, recurved, linear-triangular, rostellar process.

Cajamarca, fide Schlechter, Fedde Repert. Beih. 9: 176. 1921. Also Colombia (type of *O. pyramidale* and *O. chrysopyramis*) and Ecuador.

The Ames Herbarium contains a photograph of the type of *O. pyramidale* and drawings of the type of *O. chrysopyramis*.

Oncidium retusum Lindl. Bot. Reg. 23: sub t. 1920, no. 6. 1837; Lindl. & Paxt. Paxt. Flow. Gard. 2: 9, no. 265, fig. 136. 1851–2; Lindl. Fol. Orch. *Oncidium* 42, no. 138. 1855; Kränzlin. Engler, Pflanzenr. IV. 50 (Heft 80), 185, fig. 16D. 1922.

Plant variable, medium-sized to large. Pseudobulbs often crowded, ellipsoid to fusiform-cylindric or pyriform-cylindric, commonly 2-leaved (rarely 1-leaved), strongly compressed, 3–8 cm. high, concealed below by several pairs of imbricating, conduplicate, scarious sheaths (later evanescent) which are successively larger upward, and frequently leaf-bearing above. Leaves oblanceolate to oblong-oblanceolate (rarely elliptic), 8–50 cm. long, 2.1–4.5 cm. wide, (much larger on the pseudobulb), acute to short-acuminate, commonly gradually narrowed below to a conduplicate, often petiole-like base. Scape much exceeding the leaves, about 34–94.5 (up to 120, fide collector's notes) cm. long, suberect, paniculate and many-flowered above; peduncle about 18–32 cm. long, with 2–4 remote, short, close sheaths; panicle more or less elongate, about 20–68 cm. long, with remote, short branches which are simple or compound, few- to many-flowered, with the rachis strongly fractiflex. Floral bracts very small, triangular or triangular-lanceolate, concave, much shorter than the pedicellate ovary which is 1.7 cm. or less long. Flowers of two kinds; sterile flowers more or less numerous, relatively small, with 5 subequal, spatulate-cuneate segments, yellow with purplish-red blotches; fertile flowers much larger, with wide-spreading or reflexed segments, yellow or greenish yellow mottled or blotched with purplish red. Dorsal sepal cuneate-spatulate, broadly rounded or lightly retuse at the apex, about 11.3–12.6 mm.

long, 3.9–4.4 mm. wide. Lateral sepals similar, slightly shorter and narrower, broadly rounded or slightly retuse and dorsally mucronate at the apex, free, suboblique. Petals obovate-oblong, lightly clawed, retuse and apiculate or dorsally mucronate at the apex, oblique, slightly shorter and distinctly wider than the dorsal sepal, with the margins lightly undulate. Lip much larger than the other segments, pandurate-trilobed, sessile at the subtruncate base, bilobed in front with lightly overlapping lobules, about 12–13.2 mm. long from the base to the tip of an apical lobule, 11–11.6 mm. wide across the lateral lobes at the base, 12–12.2 mm. wide across the terminal lobe; lateral lobes semitriangular, broadly rounded and spreading without, much narrowed in front forming a claw-like isthmus; mid-lobe cordate-reniform, deeply bilobed; disc at the base with a large, plurituberculate callus terminating in 3 prominent tubercles. Column very short, dilated upward, more or less sigmoid when viewed from the side, about 4 mm. high at the back, below with a pair of porrect, bluntly angular plates and above with a pair of broadly dolabriform, lacerate-dentate, more or less bilobed wings.

Amazonas: Near Mt. Pariahuanca, *Mathews 1066* (type).—Cajamarca: Prov. of Chota, near Huambos, 2200 meters, in low woods, *Ferreyra 8408*.—Cuzco: Prov. of Urubamba, between Sta. Rita and Tuncapata, 2200 meters, on open grassy slope, *Vargas 2639*.—Huánuco: Cani, "7 miles N.E. of Mito," about 2460 meters, on tree trunk, *Macbride 3434*.—Junín: Huacapistana, about 1800 meters, epiphyte in densely forested valleys, *Killip & Smith 24287*. Also Bolivia.

Oncidium Sanderæ Rolfe, Gard. Chron. ser. 3, 48: 67. 1910; Bot. Mag. 137: t. 8374. 1911; Kränzl. Engler, Pflanzenr. IV. 50 (Heft 80), 171. 1922.

Plant medium-sized to large. Pseudobulbs often aggregated, orbicular-ovoid to oblong-ovoid, more or less compressed, 2.5–6 cm. high, unifoliate, clothed when young by several pairs of evanescent, imbricating sheaths. Leaf elliptic to oblong-elliptic or oblong, acute to rounded at the apex, complicate at the sessile base, brown-reticulated, 10–45 cm. long, 3.1–8 cm. wide. Scape suberect to arcuate, much exceeding the leaves, about 25–80 cm. long, densely few- to several-flowered at the apex, terete below, compressed and sometimes dilated above, with 5 or more, not swollen joints producing short, close, evanescent sheaths. Floral bracts oblong-lanceolate, acuminate, concave, much shorter than the pedicellate ovary which is about 2.5–5 cm. long. Flowers large and showy, with wide-spreading segments, successive. Dorsal sepal linear-ob lanceolate, acute or short-acuminate, about 5.5–10 cm. long, 5.5–8 mm. wide above, reddish brown. Lateral sepals decurved, free, lanceolate-oblong, acute, oblique, crisped-undulate on the margins, yellow with red spots, 4–7 cm. long, about 1–2 cm. wide. Petals very similar to the dorsal sepal but somewhat shorter and narrower, oblique, acute or short-acuminate, reddish brown. Lip much shorter and broader than the other segments, pandurate-trilobed, sessile at the subtruncate base, broadly rounded in front, about 3–4 cm. long, about 1.5 cm. or more broad across the lateral lobes, and 2–3 cm. broad across the mid-lobe; lateral lobes semiorbicular,

spreading, crisped-undulate, yellow with red-brown spots; mid-lobe suborbicular with a pronounced claw, crisped-undulate, yellow with reddish brown spots near the margin; disc at the base with a small, 5-lobed callus. Column very short, clavate, 8–10 mm. high, above with a pair of broad wings which are long-pectinate with glandular tips.

Junín: Chanchamayo Valley, 1200 meters, *Schunke s.n.*, 1304.—
Loreto: Moyobamba district, *Forget s.n.* (type). Pongo de Manseriche, 160 meters, in rain-forest, *Tessmann 4159*. Puerto Meléndez, below Pongo de Manseriche, 155 meters, in rain-forest, *Tessmann 4752*.

Oncidium Schillerianum Reichb. f. Bonpl. 2: 91. 1854; Cogn. Martius Fl. Bras. 3, pt. 6: 400. 1906; Kränzlin. Engler, Pflanzenr. IV. 50 (Heft 80), 280, fig. 23J, *a-b*. 1922.

Plant large, climbing. Pseudobulbs rather distant on an obliquely creeping rhizome, subtetragonous (according to Kränzlin), oblong-ovoid, bifoliate, about 5 cm. high, clothed at the base by 2 pairs of imbricating sheaths of which the upper one is leaf-bearing. Leaves oblong, subacute and obliquely bilobed at the apex, narrowed at the complicate base, up to 15 cm. long, 3.3 cm. wide. Scape very long, climbing, much exceeding the leaves, 60–120 cm. long, terminating in an elongate narrow, very loose panicle which becomes flexuous above; branches lax, short, mostly 2- to 4-flowered, often twice or three times branching. Floral bracts minute, triangular, acute, much shorter than the slender, pedicellate ovary which is about 2 cm. long. Flowers numerous, small, with wide-spreading or reflexed segments, greenish yellow transversely mottled with brown. Dorsal sepal oblong or oblanceolate-oblong, subacute or apiculate, narrowed below, about 15 mm. long and 4–5 mm. wide. Lateral sepals similar but a little longer, narrower and more acute, free. Petals similar to the dorsal sepal but a little wider, oblong or oblanceolate-oblong, acute or obtuse, undulate on the margin. Lip longer and much broader than the other segments, pandurate-trilobed, sessile at the broad base, emarginate to bilobed in front, about 18 mm. long and more than 20 mm. wide near the front (according to Kränzlin); lateral lobes semitriangular or semi-ovate, rounded at the subretorse outer margin, retuse on the posterior margin, narrowed in front to form a short, broad claw; mid-lobe much larger, cordate-reniform, retuse; disc at the base with a large, multituberculate callus with 3 tubercles in front. Column small, lightly sigmoid when viewed from the side, dilated on each side near the base, above with a pair of broadly dolabriform, lobulate or dentate wings which are acute at each end.

Cajamarca: Prov. of Chota, between Huambos and Montán, 2300–2600 meters, epiphytic on (and between) bushes, *Weberbauer 4210*, fide Kränzlin, l.c. Habitat of type uncertain; introduced by Consul Schiller.

No material of this species was available, but the Ames Herbarium contains sketches of the plant with floral analyses from the Reichenbach Herbarium.

Oncidium serpens Lindl. Gen. & Sp. Orch. 204. 1833; Lindl. & Paxt. Paxt. Flow. Gard. 2: 8, no. 254, fig. 125. 1851-52; Lindl. Fol. Orch. Oncidium 36, no. 121. 1855; Kränzl. Engler, Pflanzenr. IV. 50 (Heft 80), 168. 1922.

Plant small, slender, with an elongate, filiform, creeping and flexuous stem or rhizome. Pseudobulbs about 8-12 cm. distant, unifoliate, oblong-ovoid, apparently 2 cm. or less high (2.5-3 cm. high, according to Kränzlin), clothed below by several relatively large, unequal, sometimes leaf-bearing sheaths. Leaves elliptic or oblong-elliptic, acute, narrowed below to a complicate, often petiole-like base, up to 5 cm. long, 1.3-1.7 cm. wide (those on the pseudobulbs much the largest). Scapes a little exceeding the leaves, diffuse, loosely 2- to 3-flowered above. Floral bracts very minute, concave, much shorter than the slender pedicellate ovary which is about 1.5 cm. long. Flowers small, with wide-spreading segments, yellow, mottled with chestnut-brown. Dorsal sepal oblong-obovate, obtuse, 10-15 mm. long, about 5 mm. wide above. Lateral sepals obliquely oblanceolate-oblong, a little longer and distinctly narrower than the dorsal sepal. Petals very similar to the dorsal sepal, about equally long and wide or wider, oblique. Lip simple, pandurate-oblong, truncate-obtuse or lightly retuse in front, about 12 mm. long and 7 mm. wide near the apex; disc at the base with 2 parallel keels which are obtuse-angled when viewed from the side. Column small, marginate, clavate, about 4 mm. high, apparently wingless.

Peru(?): Patacocha, on the road to Esmeraldas, about 1800 meters, on tree trunks, *Hall s.n.*

The Ames Herbarium contains a photograph and pen and ink drawing of this species from the Lindley Herbarium.

Oncidium serratum Lindl. Sert. Orch. sub t. 48, no. 17. 1842; Lindl. & Paxt. Paxt. Flow. Gard. 1: 28, no. 42, fig. 15. 1850-51; Batem. Bot. Mag. 93: t. 5632. 1867; Veitch, Man. Orch. Pl. Oncidium 8: 77. 1892. *Oncidium Sanderianum* Rolfe, Kew Bull. (1893) 337. *Cyrtochilum serratum* Kränzl. Notizbl. Bot. Gart. Berl. 7: 93, in key. 1917, *nomen*; Kränzl. Engler, Pflanzenr. IV. 50 (Heft 80), 45. 1922.

Plant very large. Pseudobulbs often aggregated and set obliquely on a stout rhizome, oblong-ovoid or pyriform-cylindric (more rarely oval), more or less compressed, bifoliate (rarely unifoliate), 8-13 cm. high, clothed at the base by 2 or 3 pairs of imbricating sheaths which are successively larger upward, the upper ones leaf-bearing. Leaves linear-oblanceolate, acute or short-acuminate, long-narrowed to a channelled, petioled base, about 40-57 cm. long and 4 cm. wide. Scape elongate, twining, up to 4 m. long, very loosely paniculate above, the branches 13-25 cm. apart, loosely few- (3- to 6-) flowered, with a fractiflex rachis. Floral bracts ovate-oblong, strongly concave, more or less obtuse, much shorter than the slender pedicellate ovary which is 4-6 cm. long. Flowers large, with wide-spreading or reflexed segments. Sepals brown with yellow tips and margins. Dorsal sepal abruptly clawed, about 1.6-2.7 cm. long; lamina cordate-reniform or semiorbicular, rounded at the apex, denticulate on the strongly crisped-undulate

margin, about 1.3–2.2 cm. long, 2.4–3.3 cm. wide; claw rather short, auricled on each side at the base. Lateral sepals much longer than the dorsal sepal and longer-clawed; lamina obliquely ovate or rhombic-ovate, obtuse, denticulate on the strongly crisped-undulate margins, much longer and narrower than the lamina of the dorsal sepal; claw rather gradually dilated into the lamina, auricled at the base on the outer side. Petals much smaller than the sepals, connivent in natural position, from a short, broad claw oblong-ovate, broadly obtuse or rounded at the apex, shortly fimbriate on the strongly undulate margins, brown below with the upper portion yellow. Lip relatively very small, 3-lobed, broadly lanceolate in outline, about 1.5 cm. long and 1 cm. wide across the lateral lobes, purplish-brown with a white margin; lateral lobes small, obliquely triangular, acute, wide-spreading, reflexed, in front narrowed with bulging sides and then constricted to form the mid-lobe; mid-lobe much larger, oblanceolate, acute or obtuse; disc at the base with a large, rectangular crest which is outwardly denticulate, consisting of 3–5 more or less distinct parallel keels and with a fleshy callus below on the median line. Column very small, 5–8 mm. high, with a pair of fleshy, rounded projections below and with a pair of narrowly cuneate or falcate-linear, apically denticulate wings above.

Peru: Habitat not recorded, *Ruiz & Pavón s.n.* (type of *O. serratum*). Habitat unknown, imported by F. Sander & Co. (type of *O. Sanderianum*).—Cajamarca, Huánuco, fide Schlechter, Fedde Repert. Beih. 9: 177. 1921. Also Ecuador.

The Ames Herbarium contains a drawing of the type with floral analyses from the Lindley Herbarium.

Oncidium sessile Lindl. & Paxt. Paxt. Flow. Gard. 1: 101, t. 21. 1850–51; Warner & Williams, Orch. Alb. 5: t. 228. 1886; Veitch, Man. Orch. Pl. *Oncidium* 8: 78. 1892; Kränzl. Engler, Pflanzenr. IV. 50 (Heft 80), 256. 1922.

Plant large and showy. Pseudobulbs more or less aggregated, oblong-ovoid, compressed, bifoliate, 5–10 cm. high, clothed at the base with 2 or 3 pairs of imbricating sheaths which are successively larger upward, the upper ones leaf-bearing. Leaves linear-oblong or lorate, subacute to acute (acuminate, according to Kränzlin), slightly narrowed to a complicate base, about 20–37.5 cm. long, up to 2.5 cm. wide, those on the pseudobulb much the larger. Scape erect, stout, surpassing the leaves, about 30–60 cm. tall, paniculate through the upper half; panicle loose, with short, spreading, loosely few- (3- to 5-) flowered branches. Floral bracts short, triangular-ovate, concave, acute, much shorter than pedicellate ovary which is 3–4 cm. long. Flowers rather small, with wide-spreading segments, yellow with numerous reddish brown spots through the lower half. Sepals oblong or obovate-oblong, obtuse, with lightly undulate margins, about 13–17 mm. long and 4–5 mm. wide, the dorsal sepal slightly broader than the free lateral sepals. Petals very similar to the sepals, but slightly shorter and broader according to Kränzlin. Lip much larger than the sepals and petals, pandurate-trilobed, sessile at the base, lightly retuse in front, nearly 20 mm. long, 14 mm. wide across the lateral lobes at the base and 25 mm. wide in front according to Kränzlin; lateral lobes relatively small, auriculiform-rounded, rather abruptly narrowed in front to form a short

broad claw; mid-lobe much larger, reniform-semiorbicular, retuse to shallowly bilobed; disc at the base with an excavated, 3-lobed callus which is bilamellate in front. Column short and stout, from the middle dilated toward the base, above with a pair of short, broad wings of which the apical margin is truncate and denticulate.

Peru(?), fide Schlechter, Fedde Repert. Beih. 9: 177. 1921. Colombia (type) and Venezuela.

No material of this species was available.

Oncidium superbiens Reichb. f. *Linnaea* 22: 843. 1849; Hook. f. *Bot. Mag.* 98: t. 5980. 1872; Warn. & Will. *Orch. Alb.* 6: t. 276. 1887. *Oncidium aemulum* Reichb. f. & Warsc. *Bonpl.* 2: 102. 1854; Kränzl. *Engler, Pflanzenr.* IV. 50 (Heft 80), 47. 1922. *Oncidium inferlobum* Hort. ex Gard. *Chron.* (1872) 904, in synonym. *Oncidium undulatum* Warn. & Will. *Orch. Alb.* 8: t. 368. 1889, not *O. undulatum* (HBK.) Lindl. *Cyrtochilum aemulum* Kränzl. *Notizbl. Bot. Gart. Berl.* 7: 93, in key. 1917, *nomen*; Kränzl. *Engler, Pflanzenr.* IV. 50 (Heft 80), 47, fig. 3C, *a-e*. 1922. *Cyrtochilum superbiens* Kränzl. *Notizbl. Bot. Gart. Berl.* 7: 93, in key. 1917, *nomen*; Kränzl. *Engler, Pflanzenr.* IV. 50 (Heft 80), 49, fig. 3E, *a-f*. 1922.

Plant very large, variable, with an elongate rhizome. Pseudobulbs commonly aggregated, elongate-ovoid, subcompressed, about 6–10 cm. high, commonly 2-leaved, clothed below by several imbricating sheaths which are successively larger upward and mostly leaf-bearing. Leaves linear-oblancoate, acute or short-acuminate, up to 68 cm. long and 6 cm. wide, long-narrowed below to a complicate, petiole-like base. Scape very elongate, twining, about 3–6 m. long, loosely paniculate above with the branches remote in varying degrees (13 cm. or much more apart); branches commonly short (up to 20 cm. long) and very loosely few-flowered above, with a flexuous rachis. Floral bracts broadly ovate, obtuse or subacute, cymbiform, much shorter than the pedicellate ovary which is about 3–4.5 cm. long. Flower large, with wide-spreading segments. Sepals brown with the apex and the margin partly yellow. Dorsal sepal clawed, about 1.6–3 cm. long; lamina ovate-suborbicular, broadly rounded and sometimes lightly retuse at the apex, subcordate at the base, with the margins crisped-undulate, about 1.6–2 cm. long and 1.8–2.8 cm. wide; claw short, with a large auricle on each side at the base. Lateral sepals much longer, long-clawed, minutely connate at the base; lamina obliquely suborbicular-ovate, broadly rounded or subtruncate above, very similar to the lamina of the dorsal sepal but somewhat longer and either narrower or broader; claw auricled at the base without, more or less cuneate-dilated into the lamina above. Petals commonly smaller than the dorsal sepal, oblong-ovate to suborbicular-ovate from a very short broad claw, rounded at the apex, with the margins strongly crisped-undulate, yellow (rarely white) with transverse brown bars on the lower half. Lip much shorter than the dorsal sepal and a little shorter than the petals, making a right angle with the column at the base, then abruptly recurved, auricled or rarely 3-lobed at the base, about 2 cm. long when forcibly expanded, purple; auricles or lateral lobes short, obliquely ovate-triangular, broadly

obtuse, not retrorse, reflexed, commonly about 4.5–7 mm. long; mid-lobe much longer, oblong-lanceolate or oblanceolate, commonly more or less acute and concave at the apex, 1–1.5 cm. long, usually 5–6 mm. wide where broadest; disc at the base with a long, fleshy ridge which is dilated in front into a plurituberculate crest and has a transverse bifurcate ridge on the lateral lobes. Column very short and stout, 7–10 mm. high at the back, with a pair of porrect, semielliptic dilations below, and a pair of falcate-ligulate to cuneate-dolabriform wings above.

Peru: Páramo de la Vuelta, 4000 meters, *Wallis s.n.*, fide Kränzl.
—Cajamarca: Prov. of Chota, near Huambos, *Weberbauer 4196*.—
Huánuco: Yanano, about 1800 meters, on mossy tree, *Macbride 3850*.
—Junín: Prov. of Tarma, mountains west of Huacapistana, *Weberbauer 2103*. Also Colombia (type of *O. superbiens*), Venezuela and Ecuador.

Oncidium tigratum Reichb. f. & Warsc. Bonpl. 2: 109. 1854; Lindl. Fol. Orch. *Oncidium* 40, no. 129. 1855.

Plant apparently medium-sized. Pseudobulbs and leaves not described. Scape slender, loosely paniculate above; peduncle more than 12 cm. long, with several remote, close, short, evanescent sheaths; branches of the panicle remote, compound, loosely several-flowered, with a strongly fractiflex rachis, apparently about 9.5 cm. or less long. Floral bracts minute, linear-triangular, much shorter than the slender pedicellate ovary which is about 1.5 cm. long. Flowers small, with wide-spreading or reflexed segments, deep yellow, with crimson blotches except on the anterior part of the lip. Dorsal sepal cuneate-oblong, apiculate, apparently about 8 mm. long. Lateral sepals obliquely cuneate-oblong, apparently free, a little longer and narrower than the dorsal sepal. Petals flabellate from a cuneate base, rounded, lightly retuse and often apiculate at the apex, twice as wide as the sepals. Lip much wider than the sepals and petals, pandurate-trilobed, sessile at the subcordate base, lightly emarginate in front; basal half transversely rhombic, acute on each side, abruptly narrowed to a very short narrow claw; mid-lobe cordate-reniform, retuse, a little broader than the basal portion; disc at the base with a verrucose callus having 3 short keels in front. Column very short, recurved, clavate, below with a pair of bilobulate, porrect dilations and above with a pair of broad, deeply bilobed column-wings which appear to be sublunate when the lobes are taken together.

Peru: Habitat not recorded, *Warscewicz s.n.* (type).—Huánuco, fide Schlechter, Fedde Repert. Beih. 9: 177. 1921.

The Ames Herbarium contains sketches of this species with floral analysis from the Reichenbach Herbarium.

Oncidium tipuloides Reichb. f. Bot. Zeit. 10: 856. 1852; Lindl. Fol. Orch. *Oncidium* 43, no. 142. 1855; Cogn. Martius Fl. Bras. 3, pt. 6: 391. 1906; Kränzl. Engler, Pflanzenr. IV. 50 (Heft 80), 269, fig. 22E, *a-c*. 1922.

Plant large. Pseudobulbs not described. Leaves (but one recorded) long-petioled; lamina oblong or elliptic-oblong, acute or short-acuminate, cuneate below, about 20–27 cm. long, 3–4 cm. wide; petiole elongate, stout, conduplicate, 10–12 cm. long. Scape much exceeding the leaves, erect or ascending, rather stout, loosely paniculate, many-branched and many-flowered above; branches rather short, widely spreading and often decurved, simple or sometimes compound, loosely few-flowered, 3–4 cm. distant, with a more or less fractiflex rachis. Floral bracts minute, narrowly triangular-ovate, subulate at the apex, much shorter than the slender, pedicellate ovary which is 1–1.5 cm. long. Flowers medium-sized, with spreading or reflexed segments, yellow, sparingly spotted with red-brown. Dorsal sepal cuneate-spatulate, obtuse to subacute, more or less undulate or repand on the margins, 13–14 mm. long, about 3 mm. wide. Lateral sepals similar but a little narrower, oblanceolate, free, suboblique, subacute. Petals oblong-obovate or spatulate-obovate, subobtuse to acute, somewhat undulate on the margin, a little shorter and broader than the dorsal sepal, suboblique. Lip longer and much wider than the other segments, broadly obovate in outline, pandurate-trilobed, subtruncate at the base, emarginate at the apex, 17–18 mm. long, about 9 mm. wide across the lateral lobes at the base and 16–18 mm. wide across the mid-lobe in front; lateral lobes small, semitriangular-auriculiform, rounded without, contracted in front into a long, narrow claw; mid-lobe much larger, abrupt, cordate-reniform, strongly emarginate; disc at the base with a small, transverse, semilunate ridge having an obtuse lobule on each side and a narrow central keel in front. Column small, about 4 mm. high, sigmoid when viewed from the side, with a pair of prominent, obliquely subquadrate, retuse plates below, wingless above.

Huánuco: Near Cuchero (Cohero), on trees, *Poeppig 1635*.

The Ames Herbarium contains a sketch of this species from the Reichenbach Herbarium.

Oncidium trilingue Lindl. & Paxt. Paxt. Flow. Gard. 1: 42. 1850–51; l.c. 2: 125, t. 63. 1851–52; Lindl. Fol. Orch. *Oncidium* 4, no. 5. 1855. *Cyrtochilum trilingue* Kränzl. Notizbl. Bot. Gart. Berl. 7: 92, in key. 1917, *nomen*; Kränzl. Engler, Pflanzenr. IV. 50 (Heft 80), 38, fig. 24, *a-c*. 1922.

Plant apparently large. Pseudobulbs and leaves not recorded. Scape very long, climbing, the upper portion (which alone exists in the type) about 80 cm. long (according to Kränzl), paniculate in the lower part with short, few- (3- to 6-) flowered branches having a fractiflex rachis. Floral bracts broadly ovate, deeply concave, obtuse to acute, shorter than the pedicellate ovary which is 2.5–3 cm. long. Flowers large, loose, with wide-spreading or reflexed segments, about 1.5–5.3 cm. apart, dark or light brown with yellow margins on the sepals and petals and a yellow crest on the lip. Dorsal sepal clawed, about 17 mm. long; lamina broadly ovate or triangular-ovate, obtuse and apiculate, with the margins strongly crisped-undulate, the upper portion recurved in natural position, about 12 mm. long and 10.5 mm. wide when expanded; claw short, channelled, with a rounded, fleshy auricle on each side at the base, rather abruptly dilated into the lamina. Lateral sepals much longer and slightly narrower above, obliquely oblanceolate,

obtuse (acuminate, according to Kränzlin), with the claws (which are auriculate at the base) connate below and gradually dilated into the lamina, dorsally carinate above, somewhat undulate on the margins. Petals obliquely elliptic-lanceolate with a short, indistinct claw, acute or acuminate, strongly crisped-undulate on the margins, with the apex recurved, about as long as the dorsal sepal when expanded, but somewhat narrower. Lip spreading from the column, with the upper part circinate-recurved, about 18 mm. long when expanded, auriculate-dilated on each side at the base, with the subtriangular, lobulate dilations reflexed; terminal portion longer, elliptic-lanceolate, undulate-crisped on the margins, obtuse and apiculate (acuminate, according to Kränzlin); disc at the base with a stout callus terminating in 3 fleshy, ovoid teeth (the middle tooth largest) and in front with 3 flat teeth of which the lateral ones are smaller and oblong-lanceolate and the middle one ovate, convex and often lobulate above. Column very short and stout, dilated above, about 6 mm. high, with a pair of porrect, angular dilations below and a pair of small, obliquely oblong, falcate, spreading wings in the middle.

Peru: Near the source of the Marañon River, *Warscewicz s.n.* (type).—Huánuco, fide Schlechter, Fedde Repert. Beih. 9: 177. 1921. Also Bolivia, fide Kränzlin.

A flower of apparently typical material has been examined.

Oncidium tripterygium Reichb. f. Bot. Zeit. 10: 694. 1852; Xen. Orch. 1: 192, t. 69, fig. III, 8–9. 1856; Kränzl. Engler, Pflanzenr. IV. 50 (Heft 80), 128. 1922.

Pseudobulbs, leaves and inflorescence not described. Flower (a single one present) medium-sized, with wide-spreading segments, brown with a yellow lip. Dorsal sepal ovate-lanceolate or oblong-lanceolate ("ovate"), acute or acuminate, about 16 mm. long and 5–6 mm. wide (according to Kränzlin). Lateral sepals connate to above the middle, forming a lamina which is obovate-oblong in outline, a little longer and broader than the dorsal sepal and deeply bilobed above with acute, diverging lobules which have undulate inner margins. Petals elliptic-lanceolate ("oblong-lanceolate"), about as long as the dorsal sepal but a little broader. Lip pandurate-trilobed, obovate-oblong in outline, about 20 mm. long, 10 mm. wide near the base and 14 mm. wide in front (according to Kränzlin), cordate at the base, emarginate at the apex, with lightly crenulate margins; lateral lobes small, semiorbicular; mid-lobe much larger, sessile or nearly so, obovate-reniform; disc at the base with a short denticulate keel divided in front and surrounded on each side by a solitary callus. Column very short and stout, without wings above.

Amazonas: fide Schlechter, Fedde Repert. Beih. 9: 177. 1921. Also Ecuador (type).

The Ames Herbarium contains sketches of the type from the Reichenbach Herbarium.

Oncidium trulla Reichb. f. & Warsc. Bonpl. 2: 101. 1854; Lindl. Fol. Orch. *Oncidium* 9, no. 24. 1855. *Cyrtochilum trulla* Kränzl.

Notizbl. Bot. Gart. Berl. 7: 96, in key. 1917, *nomen*; Kränzl. Engler, Pflanzenr. IV. 50 (Heft 80), 66, fig. 6F, *a-b*. 1922.

Plant large, slender, forming dense clusters. Pseudobulbs aggregated, elongate-ovoid to narrowly fusiform-cylindric, one- or two-leaved, commonly 3.5–5 cm. high (6–8 cm. high, according to Kränzlin), clothed below with several pairs of imbricating, evanescent, long sheaths (successively larger upward), which are leaf-bearing. Leaves linear-oblong to linear or linear-oblancoelate, acute or acuminate, up to 26 cm. long (40–45 cm. long, according to Kränzlin), about 0.8–1.5 cm. wide, very variable in size. Scape very long, 1 m. or more in length, often climbing, loosely paniculate above; peduncle slender, up to 47 cm. long, with several remote, very short, close sheaths; panicle with more or less remote, short branches which are loosely few-flowered, the rachis strongly fractiflex in age. Floral bracts minute, triangular, concave, much shorter than the slender, pedicellate ovary which is 1.5–2.2 cm. long. Flowers very small, with widely spreading segments, cinnamon-color or old rose with white tips. Dorsal sepal oblancoelate, acute, with a recurved tip, 6–9.5 mm. long when expanded, 1.5–3 mm. wide. Lateral sepals similar but rather longer and sometimes a little narrower, connate near the base, dorsally carinate near the apex. Petals elliptic-ovate or obovate-oblong, acute, shorter and broader than the dorsal sepal, lightly oblique. Lip subequalling the petals, convex, simple, triangular in outline, subtruncate at the broad base, abruptly acute above with an obtuse tip, having the outer sub-basal angles more or less prominent and obtuse, about 5–7.6 mm. long and nearly as wide at the base; disc at the base with a plurituberculate callus which is tridentate in front, the central tubercle longer than the lateral ones. Column very short, about 4 mm. high at the back, without prominent wings but with a pair of small, fleshy angles below.

Huánuco: Yanano, about 1800 meters, on mossy trees, *Macbride 3841*.—Piura: Prov. of Huancabamba, near Huancabamba, 1800–2000 meters, on rocky banks of stream between bushes, *Weberbauer 2 ser. 6062*. Also Colombia (type).

Oncidium ventilabrum Reichb. f. & Warsc. Bonpl. 2: 101. 1854; Lindl. Fol. Orch. Oncidium 6, no. 12. 1855; C. Schweinf. Bot. Mus. Leaf. Harvard Univ. 14: 73. 1949. *Cyrtochilum undulatum* HBK. Nov. Gen. et Sp. 1: 349, t. 84. 1816; Kränzl. Notizbl. Bot. Gart. Berl. 7: 95, in key. 1917, *nomen*; Kränzl. Engler, Pflanzenr. IV. 50 (Heft 80), 57. 1922. *Oncidium undulatum* Lindl. Sert. Orch. sub t. 48, no. 1. 1842; Fol. Orch. Oncidium 7, no. 15. 1855; Reichb. f. & Warsc. Bonpl. 2: 108. 1854, not *O. undulatum* Salisb. 1812. *Cyrtochilum ventilabrum* Kränzl. Notizbl. Bot. Gart. Berl. 7: 92, in key. 1917, *nomen*; Kränzl. Engler, Pflanzenr. IV. 50 (Heft 80), 39, fig. 2C, *a-c*. 1922.

Plant large, variable, with a stout, creeping rhizome which reaches 2 m. in length. Pseudobulbs 5–30 cm. distant (according to Kränzlin), oblong-cylindric

to ovoid or ellipsoid, subcompressed, up to 8 cm. high, 1- or 2-leaved, clothed below by 2 or 3 pairs of stout, imbricating, leaf-bearing sheaths which are successively larger upward. Leaves very variable in shape and size, oblong to oblong-ob lanceolate (rarely the small outer ones subelliptic), commonly 19.5–60 cm. long and 3–6 cm. wide, acute, usually long-narrowed to a conduplicate base. Scape elongate, 1 m. or more long (4 m. long according to Kränzlin), twining, loosely paniculate above, the branches (often compound in the lower portion) very distant (up to 12 cm. or more apart), about 32 cm. or less long, loosely few- (about 5-) to many-flowered, with the rachis lightly fractiflex. Floral bracts relatively small, broadly triangular-ovate, deeply concave, much shorter than the pedicellate ovary which is 2.5 cm. long. Flowers rather large, with wide-spreading segments, brownish often with a narrow yellow border, the petals dull yellow above. Dorsal sepal clawed, about 21–25 mm. long; lamina elliptic-ovate to suborbicular, abruptly acute, about 16–18 mm. long, 12–16 mm. wide, with the margins undulate; claw narrow and channelled below, exauriculate at the base, rather gradually dilated above and passing into the lamina. Lateral sepals similar, a little longer and narrower, subacute, slightly oblique. Petals markedly smaller than the sepals, obliquely elliptic-ovate from a short, broad, indistinct claw, acute or short-acuminate. Lip relatively small, prominently recurved above, triangular-ligulate in outline, about 12–14 mm. long (8–9 mm. long, according to Kränzlin) when expanded, rose outside, yellow with red and white spots within, sessile at the subtruncate base, subacute at the complicate apex, triangular-dilated or subquadrate-dilated (sometimes bilobed) and reflexed on either side of the base, the anterior portion oblong-lanceolate or elliptic-lanceolate; disc near the base with a large, plurituberculate callus terminating in 3 narrow plates, with an undulate ridge curving onto the basal dilations. Column small, sigmoid when viewed from the side, clavate, about 6 mm. high at the back, adnate to the base of the lip, with a pair of small, decurved, falcate-linear or lanceolate wings near the middle.

Peru: Habitat not recorded, *Warscewicz s.n.* (type of *O. ventilabrum*).—Junín, ex Kränzlin, fide Schlechter, Fedde Repert. Beih. 9: 177. 1921. Also Colombia (type of *Cyrtochilum undulatum*).

The Ames Herbarium contains drawings of *Oncidium ventilabrum* with floral analyses from the Reichenbach Herbarium.

Oncidium volubile (Poepp. & Endl.) Cogn. Martius Fl. Bras. 3, pt. 6: 289. 1905. *Cyrtochilum volubile* Poepp. & Endl. Nov. Gen. et Sp. 1: 35, t. 61. 1836; Kränzlin. Notizbl. Bot. Gart. Berl. 7: 95, in key. 1917, *nomen*; Kränzlin. Engler, Pflanzenr. IV. 50 (Heft 80), 59. 1922. *Oncidium corynephorum* Lindl. Sert. Orch. sub t. 25. 1838; Fol. Orch. *Oncidium* 8, no. 19. 1855.

Plant large, with an elongate, stout, creeping, simple rhizome. Pseudobulbs commonly aggregated in scattering clusters, narrowly oblong-cylindric, attenuate above, bifoliate, subcompressed, 4–5 cm. high, clothed below by a few pairs of evanescent, long, leaf-bearing sheaths. Leaves linear-ob lanceolate, acute or short-

acuminate above, more or less long-narrowed below to an often petiole-like, conduplicate base, about 30–45 cm. long, 3–4 cm. wide. Scape elongate, climbing or twining, stout, about 5–7 m. long, loosely paniculate above; branches remote (about 19 cm. or less apart), simple, loosely few- (3- to 5-) flowered, with the fractiflex rachis about 5–12 cm. long. Floral bracts small, triangular-ovate, clasping, obtuse, much shorter than the pedicellate ovary which is up to about 2 cm. long. Flowers large, with wide-spreading segments. Sepals about equally long, long- and narrow-clawed, free, about 20–26 mm. long, cinnamon-brown; lamina of the dorsal sepal suborbicular-oval, obtuse, about 12–14 mm. wide; lamina of the lateral sepals a little longer than that of the dorsal sepal, subacute, lightly oblique. Petals distinctly shorter than the sepals, shortly and broadly clawed; lamina obliquely ovate, acute, markedly narrower than the sepals, pale cinnamon-brown with snow-white above the middle. Lip about half as long as the sepals, pandurate-obovate, sessile, broadly rounded in front, 12–14 mm. long, 12–13 mm. wide near the apex, rose-purple with the basal third white or cinnamon-brown; disc at the base with a small, apically 3-dentate callus surrounded by several free, short tubercles. Column small, slender, clavate, wingless, about 5 mm. high.

Huánuco: In the mountains of Cassapillo near Cuchero (Cochero), on stout trees, *Poeppig 1636* (type of *Cyrtochilum volubile*).— Loreto: Near Moyobamba, *Mathews 1918* (type of *O. corynephorum*).

The Ames Herbarium contains photographs of the type of *Oncidium corynephorum*.

Oncidium Weberbauerianum Kränzl. Engler, Bot. Jahrb. 37: 389. 1906. *Cyrtochilum Weberbauerianum* Kränzl. Notizbl. Bot. Gart. Berl. 7: 95, in key. 1917, *nomen*; Kränzl. Engler, Pflanzenr. IV. 50 (Heft 80), 60, fig. 5H, a–c. 1922.

Plant large, with a stout, long-creeping rhizome. Pseudobulbs linear-cylindric, compressed-ancipitous, up to 10 cm. high, unifoliate, up to 20 cm. distant, clothed below by numerous, densely imbricating, long, leaf-bearing sheaths. Leaves on the pseudobulbs oblong or oblanceolate-oblong, obtusely acute, long-complicate below, up to 20 cm. long and 4.5 cm. wide. Scape (incomplete in the type) apparently simple, not twining, below clothed with a few very remote, small sheaths, terminating in a subdensely few- (about 12-) flowered raceme. Floral bracts rather long, sheathing, about half as long as the pedicellate ovary which is 2.5–2.8 cm. in length. Flowers large, brown with yellow spots in the center. Dorsal sepal elliptic-oblong (“oblong”), obtuse, sessile, lightly undulate on the margin, 15 mm. long, 10–12 mm. wide. Lateral sepals free, clawed, much (nearly twice) longer; lamina similar to that of the dorsal sepal. Petals a little smaller than the sepals, obovate-oblong, obtuse, lightly undulate. Lip about equaling the dorsal sepal, pandurate-trilobed, 15 mm. long, about 5–7 mm. wide across the basal and apical portions, yellow above the middle; lateral lobes relatively minute, rounded, reflexed; mid-lobe cuneate, obscurely lobulate in front; disc at the base with a prominent callus of which the posterior part is verrucose and obscurely 5-tuberculate and the anterior part dilated and lightly complicate with a reflexed

apex. Column very short, stout, above with broad, membranaceous wings connate into a cup and below with a pair of small, oblong, porrect wings.

Amazonas: Molinopampa, east of Chachapoyas, 2000–2300 meters, among sclerophyllous vegetation in open places, *Weberbauer 4358* (type). Also Colombia.

No record of this species has been seen.

Oncidium xanthodon Reichb. f. Gard. Chron. (1868) 1338; Hook. f. Bot. Mag. 95: t. 5756. 1869. *Cyrtochilum xanthodon* Kränzl. Notizbl. Bot. Gart. Berl. 7: 94, in key. 1917, *nomen*; Kränzl. Engler, Pflanzenr. IV. 50 (Heft 80), 54. 1922.

Plant large, with a stout, creeping rhizome. Pseudobulbs separated on the rhizome, oblong-ovoid to ellipsoid, compressed, unifoliate (bifoliate, according to Kränzl), about 10–12.7 cm. long, clothed at the base by several pairs of densely imbricating, leaf-bearing sheaths which are successively longer upward. Leaves oblanceolate, acute (acuminate, according to Kränzl), long-narrowed below to a complicate base, about 40–60 cm. long, 5–6.4 cm. wide. Scape elongate, climbing, 2–2.7 m. or more long (5 m. long, according to Kränzl), with distant, appressed sheaths below, terminating in an elongate, loose panicle; branches (lower ones compound) at least 11.5 cm. distant, loosely few- (about 3- to 5-) flowered, with the rachis lightly fractiflex. Floral bracts ovate-lanceolate, acute or acuminate, concave, much shorter than the pedicellate ovary which reaches nearly 5 cm. in length. Flowers large, with wide-spreading segments which are recurved above, chocolate-brown with yellow, crisped-undulate borders. Dorsal sepal conspicuously clawed; lamina broadly ovate (“oblong”), acute, about 15–20 mm. long and almost as wide near the broadly rounded or subhastate base; claw stout, linear, about 5 mm. long. Lateral sepals similar but markedly longer, with a somewhat longer claw, free. Petals similar to the dorsal sepal but markedly smaller, with a short broad claw, acute. Lip smaller and narrower than the petals, strongly recurved above, pandurate-trilobed or oblong-pandurate, about 12 mm. long, 5 or 6 mm. broad at the base when forcibly expanded, brown with a yellow callus; basal portion (with reflexed lateral lobes) subquadrate or subhastate, sessile, bilobed above; anterior portion (mid-lobe) cuneate-spatulate, acute, recurved; disc at the base with a large, fleshy crest consisting of a central rostrate ridge and several surrounding tubercles. Column small, sigmoid when viewed from the side, adnate to the base of the lip, with a pair of minute wings above.

Junín (ex Kränzl), fide Schlechter, Fedde Repert. Beih. 9: 178. 1921. Ecuador (type) and Colombia.

No material of this species has been accessible.

Oncidium xanthornis Reichb. f. ex Linden Catal. no. 21: 16. 1867; Kränzl. Engler, Pflanzenr. IV. 50 (Heft 80), 201. 1922. *Cyrtochilum xanthornis* Kränzl. Notizbl. Bot. Gart. Berl. 7: 97, in key. 1917, *nomen*; Kränzl. Engler, Pflanzenr. IV. 50 (Heft 80), 72, fig. 7F, a–c. 1922.

Plant apparently medium-sized. Pseudobulbs, leaves, and the lower part of the scape not described. Inflorescence paniculate, up to 25 cm. tall; branches (sometimes compound) irregularly diverging, partly springing from the lower part of the peduncle, fractiflex in age. Floral bracts very short, much exceeded by the pedicellate ovary which is about 8 mm. long. Flowers small. Sepals similar, cuneate-spatulate, retuse at the rounded apex, about 7 mm. long and 2.5 mm. wide above. Petals suborbicular, short-clawed, a little longer than the sepals and more than twice as broad. Lip short-clawed, very broadly triangular in outline, sublunate at the base, about 6 mm. long and 10 mm. wide below, obscurely 3-lobed; lateral lobes large, rounded, recurved at the back; mid-lobe shortly triangular, obtuse; disc with a crest consisting of 2 bipartite keels (the anterior portion higher) with an interjected cluster of warts (the middle ones longer). Column sigmoid, with a pair of large, dolabriform wings and a prominent infrastigmatic plate.

Piura(?): Huancabamba, *Linden* 4, 7. Ecuador, fide Kränzlin.

No record of this species was accessible.

Oncidium zebrinum (Reichb. f.) Reichb. f. Bonpl. 2: 12. 1854; Gard. Chron. (1872) 1355, fig. 304; Hook. f. Bot. Mag. 100: t. 6138. 1874; Cogn. & Goos. Dict. Icon. Orch. *Oncidium* t. 9. 1897. *Odonoglossum zebrinum* Reichb. f. *Linnaea* 22: 849. 1849. *Cyrtochilum zebrinum* Kränzlin. Notizbl. Bot. Gart. Berl. 7: 94, in key. 1917, *nomen*; Kränzlin. Engler, Pflanzenr. IV. 50 (Heft 80), 54. 1922.

Plant large, with a stout, long-creeping rhizome. Pseudobulbs more or less large, ovoid, compressed, up to 12 cm. high according to Kränzlin, bifoliate, about 7-15 cm. apart, clothed at the base and often entirely concealed by several (about 5) pairs of closely imbricating, leaf-bearing sheaths which are successively longer upward. Leaves oblong or elliptic-lanceolate, acute or acuminate, apparently long-narrowed to a complicate base, very variable in size, up to 30 or 40 cm. long, 2.5-4 cm. wide. Scape elongate, climbing, up to 4 m. long, trailing over bushes, very loosely paniculate above; branches simple above and often branched near the base, loosely few- to several-flowered, about 26 cm. or less long, about 14 cm. or less apart, with a more or less fractiflex rachis. Floral bracts small, lanceolate-ovate or ovate, acute or obtuse, deeply concave, much shorter than the pedicellate ovary which is 2-4 cm. long. Flowers small for the section, with wide-spreading segments. Sepals and petals similar, white with numerous transverse, violet or brownish bars. Dorsal sepal elliptic-lanceolate or oblanceolate, acute or acuminate, gradually unguiculate-narrowed below, strongly crisped-undulate on the margins, 19-20 mm. long and 8-9 mm. wide (28 mm. long and 15 mm. wide, according to Kränzlin). Lateral sepals similar (or oblanceolate-elliptic), slightly longer and narrower than the dorsal sepal, free, lightly oblique. Petals oblong-ovate, acuminate, oblique, crisped-undulate on the margin, markedly shorter than the dorsal sepal and slightly narrower. Lip spreading from the base of the column, then abruptly reflexed, triangular-lanceolate in outline, with the convex basal portion irregularly triangular-dilated on each side, 13-15 (rarely 10) mm. long when expanded, the anterior part oblong-lanceolate or ovate-lanceolate and acute or acuminate; disc at the base with a yellow crest which is 3-lobed above and con-

sists of numerous blunt warts and a central, commonly high, thin, apically dentate keel. Column small, arcuate or sigmoid, clavate, about 6 mm. high, often with a pair of minute lanceolate wings near the middle.

Loreto (ex Kränzlin), fide Schlechter, Fedde Repert. Beih. 9: 178. 1921. Venezuela (type).

SIGMATOSTALIX Reichb. f.

(including *Petalocentrum* Schltr.)

Small to medium-sized epiphytes extending from Guatemala south to Colombia, Brazil, Bolivia, Peru and Argentina.

Stems very short, rarely from a shortly creeping rhizome, pseudobulbous, commonly aggregated, 1- or 2-leaved at the summit, surrounded below by several pairs of distichous, leaf-bearing sheaths. Leaves narrow, elliptic-oblong to linear. Inflorescences lateral, basal in the axil of the sheaths, shorter or more commonly longer than the leaves, racemose or often paniculate with abbreviated branches. Flowers very small to medium-sized, membranaceous, distant. Floral bracts small, infundibuliform. Sepals wide-spreading or reflexed, free, subequal, subacute to acuminate. Petals similar to the sepals, either broader or narrower. Lip sessile to long-clawed, commonly simple or subsimple, either longer than broad or transverse, callose near the base. Column elongate, very slender, dilated and often auricled near the apex. Anther terminal, opercular, incumbent, 1-celled. Pollinia 2, complanate-ovoid, unappendaged, affixed to a linear-triangular stipe.

A1. Lip sessile or nearly so, transverse (i.e., broader than long); petals with a spur-like horn near the base.

S. peruriana (*S. pusilla*, *S. bicornuta*, *Petalocentrum* spp.)

A2. Lip clawed or else distinctly narrowed toward the base; petals without a horn..... I

Ia. Pseudobulbs bifoliate; anterior part of the lip multidenticulate on each side; petals broader than the sepals..... *S. aurosanguinea*

Ib. Pseudobulbs unifoliate; anterior part of the lip not multidenticulate on each side..... 1

1a. Claw of the lip very narrow and elongate; lamina of the lip crescentiform... 2

1b. Claw of the lip broad and short or the base of the lamina long-narrowed; lamina of the lip not crescentiform..... 3

2a. Dorsal sepal fornicate, concave-conduplicate; lip abruptly acute or apiculate, unicallose at the base..... *S. crescentilabia*

2b. Dorsal sepal scarcely cucullate; lip acuminate, bicallose with approximate calli at the base..... *S. bicallosa*

3a. Leaves narrowly linear, about 2 mm. wide; flowers very small, sepals about 2.5 mm. long; lip abruptly short-clawed, base of the lamina truncate.

S. graminea

3b. Leaves linear to elliptic-oblong, 4.5 (rarely) -14 mm. wide; flowers larger, sepals about 5 mm. or more long; lip long-narrowed toward the base.

S. amazonica

Sigmatostalix amazonica Schltr. Beih. Bot. Centralbl. 42, Abt. 2: 148. 1925.

Plant small, slender, variable, 7–25 cm. tall. Pseudobulbs aggregated, 1.4–3.5 cm. high, strongly compressed, narrowly or broadly ellipsoid, unifoliate at the apex, clothed on each side of the base by 1 or 2 pairs of imbricating, conduplicate, leaf-bearing sheaths. Leaves linear to narrowly elliptic-oblong, acute or subacute, more or less narrowed below to a complicate, petiole-like base, up to 15 cm. long (commonly much less), 4.5–14 mm. wide. Inflorescence lateral, basal in the axil of a sheath, erect or spreading, shorter than to much exceeding the leaf, about 5–18 cm. long; peduncle about 3–7 cm. long, with few, remote, close, tubular sheaths; flower-cluster narrowly paniculate with subremote, abbreviated, 1- or 2-flowered branches. Flowers small, membranaceous, with wide-spreading segments, greenish white, olive or yellow spotted or streaked with brown, pink or lilac. Dorsal sepal lanceolate-oblong, acute, 5–7 mm. long, 1.2–2 mm. wide. Lateral sepals similar but a little larger, oblique. Petals similar to the dorsal sepal but slightly shorter. Lip cuneate-obovate, broadly rounded at the apex with an irregular margin, 6–7.2 mm. long, 4–5.9 mm. wide near the apex, long-narrowed toward the base which is occupied by a relatively large, ligulate-subquadrate (or elliptic), apically truncate callus which is free above the base. Column long, very slender, abruptly dilated near the apex, 4.9–7.2 mm. high.

Loreto: Middle Marañón River, at the mouth of the Apaya River, about 145 m., *Tessmann 3849*. Soledad, on Río Itaya, about 110 m., epiphyte in dense forest, *Killip & Smith 29743*. Vicinity of Iquitos, 100 m., *Klug 10101*. Also Brazil (Amazonas), type, and Surinam.

***Sigmatostalix aurosanguinea* Reichb. f. *Linnaea* 41: 68. 1876.**

Plant very small, densely caespitose, apparently about 3.5 cm. high. Pseudobulbs aggregated, ellipsoid, strongly compressed, bifoliate at the apex, apparently about 1 cm. high. Leaves linear, acute, spreading or arcuate-recurved, apparently about 3 cm. long. Inflorescence few-flowered. Floral bracts shorter than the pedicellate ovary. Flowers yellow and blood-red. Sepals lanceolate (“linear”), acuminate (“acute”). Petals broader, lanceolate-ovate. Lip about equally long with the other segments but much wider, broadly clawed; lamina from a broadly cuneate basal portion (claw) abruptly dilated into a larger, reniform anterior portion which is retuse in front with a prominent apicule in the center, and with the outer margins multidentulate; disc apparently callose below. Column slender, with an uncinately-decurved wing on each side of the apex.

Peru: On the summit of Mt. Guayraparina, on trees, *Spruce s.n.*

No example of this species has been available, but the Ames Herbarium contains a drawing from the Reichenbach Herbarium bearing the above data.

***Sigmatostalix bicallosa* Garay, *Arquiv. Jard. Bot.* 11: 57, t. 2. 1951. Figure 176.**

Plant rather large for the genus, erect, slender, up to 30 cm. high. Rhizome abbreviated. Pseudobulb narrowly ovoid, unifoliate, 2.5–3 cm. high, surrounded at the base by 2 pairs of distichous, leaf-bearing, conduplicate sheaths. Leaves linear-lanceolate, obliquely obtuse, apiculate, 8–12 cm. long, 6–7 mm. wide. Scapes

lateral as in the genus, erect; peduncle with a few imbricating sheaths; raceme distantly many-flowered. Floral segments reflexed-spreading. Flower rather large, membranaceous. Sepals and petals pale yellow spotted with dark purple, lip yellow with purple cilia. Dorsal sepal ovate-lanceolate or oblong-lanceolate, scarcely cucullate, acuminate, 10 mm. long, 2 mm. wide. Lateral sepals obliquely ovate-lanceolate, as long as the dorsal sepal but apparently somewhat broader. Petals obliquely lanceolate-oblong, falcate, subacuminate, slightly smaller than the

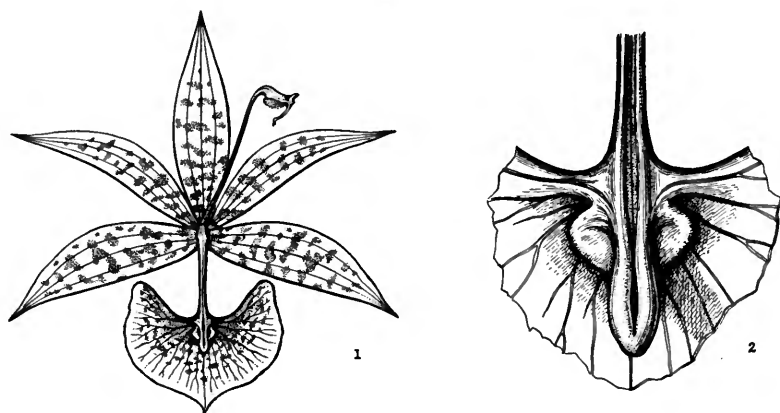


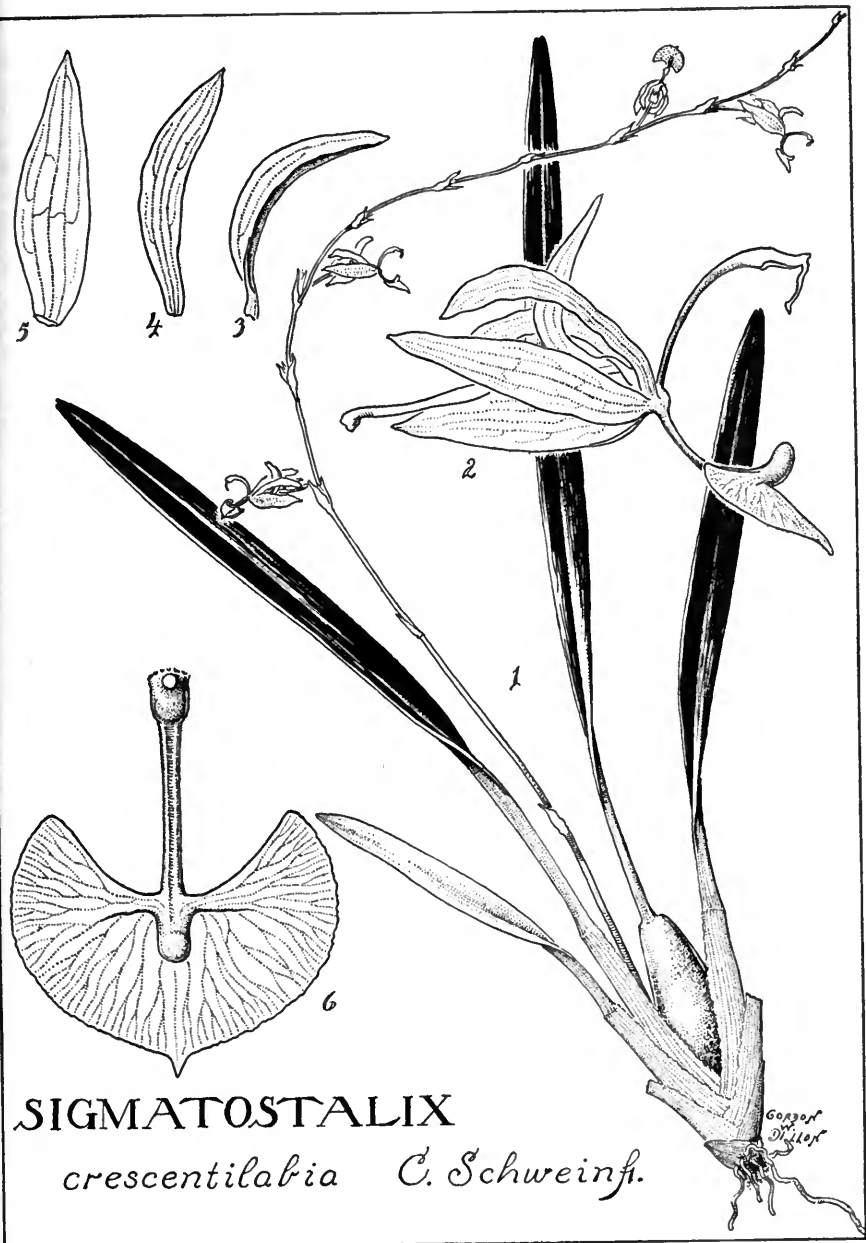
FIG. 176. *Sigmatostalix bicallosa* Garay. 1, flower expanded; $\times 2\frac{1}{2}$. 2, lamina of lip, showing calli; $\times 5$.

dorsal sepal. Lip about as long as the sepals but much broader, long-clawed; claw narrowly linear, subterete, about 4 mm. long; lamina cordate-reniform, deeply cordate at the base, abruptly acuminate at the apex, with the margins (except on the anterior third) ciliate; disc near the base with 2 approximate, semirhombic calli. Column erect, very slender, abruptly inflexed near the apex, about 10 mm. high.

Peru: Chanchamayo, Río Blanco, about 1500 meters, epiphytic on coffee trees, *Koehler s.n.*

***Sigmatostalix crescentilabia* C. Schweinf. Am. Orch. Soc. Bull. 16: 162, t., 1947. Figure 177.**

Plant large for the genus, very variable in size. Pseudobulbs oblong-ellipsoid (sometimes narrowly so), strongly compressed, unifoliate, about 3–4 cm. high, clothed below by about 3 pairs of imbricating, conduplicate, leaf-bearing sheaths which are successively longer upward. Leaves oblong-linear to (rarely) elliptic-oblong, subacute, more or less long-narrowed below with a conduplicate base, up to 15.7 cm. long and 1 cm. wide, the blades on the outer sheaths often very small. Scapes lateral, basal in the axils of sheaths, more or less surpassing the leaves, slender, arcuate or spreading, about 17.5–37 cm. long; peduncle 6–12 cm. long, with very few remote, close, tubular sheaths; inflorescence loosely several- to many-flowered, up to 23.5 cm. long, racemose with each flower arising singly from



SIGMATOSTALIX
crescentilabia C. Schweinf.

FIG. 177. *Sigmatostalix crescentilabia* C. Schweinf. 1, plant; $\times \frac{1}{5}$. 2, flower from side, natural position; $\times 3$. 3, dorsal sepal, natural position; $\times 3$. 4, petal; $\times 3$. 5, lateral sepal; $\times 3$. 6, lip from above, expanded; $\times 5$.

an abbreviated, bracted branch. Flowers large for the genus, membranaceous, with reflexed sepals, petals and lamina of the lip. Dorsal sepal fornicate and concave-concuplicate in natural position, when expanded elliptic-lanceolate (commonly narrowly so), acute or acuminate, up to 12 mm. long and 4 mm. wide. Lateral sepals obliquely elliptic-lanceolate, acute or acuminate, a little shorter than the dorsal sepal but wider. Petals obliquely linear-lanceolate, lightly falcate, acute, a little shorter and markedly narrower than the sepals. Lip long-clawed, about 7.2–11 mm. long; claw very narrow and elongate, filiform-linear, channelled, 3.2–5.9 mm. long; lamina semiorbicular-crescentiform, abruptly acute or mucronate at the rounded apex, 7–9 mm. wide; disc at the base with a large, fleshy, ascending, subcylindric (rarely subglobose) protuberance. Column very slender, arcuate, somewhat dilated near the apex, with a large stigmatic orifice and a prominent linear rostellum which is divergently bifid at the tip.

Junín: Chanchamayo Valley, 1200–1600 meters, *Schunke 526, 1192, 1286, M* (type).

Sigmatostalix graminea (Poepp. & Endl.) Reichb. f. Bot. Zeit. 10: 769. 1852; Xen. Orch. 1: 19, t. 8, fig. III, 11–17. 1854; Cogn. Martius Fl. Bras. 3, pt. 6: 458. 1906. *Specklinia graminea* Poepp. & Endl. Nov. Gen. ac Sp. 1: 51, t. 89 B. 1836.

Plant small, with a rather short, creeping rhizome which is much branched and concealed by sheaths. Pseudobulbs numerous, approximate, very small, oblong-cylindric to cylindric-ellipsoid, strongly compressed, unifoliate, 7–12 mm. high, clothed below by several pairs of imbricating, leaf-bearing sheaths. Leaves small, narrowly linear, acute or subobtuse and obliquely emarginate at the apex, lightly narrowed toward the concave base, mostly strongly arcuate-recurved, 3–5 cm. long, about 2 mm. wide. Scape basal in the axils of sheaths, about equaling the leaves, erect or spreading, 3–6 cm. long, below with 1 or 2 short, acute, appressed sheaths, above laxly racemose and few-flowered. Flowers short-pedicelled, very small, membranaceous, pale yellow with purple spots. Sepals subequal, oblong or elliptic-lanceolate, acute, concave, 2–2.5 mm. long, about 0.66 mm. wide, the lateral sepals subfalcate. Petals narrowly ovate, acute, oblique, about as long as the dorsal sepal but slightly wider. Lip about 2.66 mm. long, shortly and broadly clawed; claw about 0.66 mm. long and 1 mm. wide; lamina broadly trapezoid or ovate-subquadrate, retuse in front, truncate with rounded angles at the base, about 2 mm. long and 3 mm. wide; disc at the base with a small, suborbicular, excavated callus which is longitudinally carinate through the middle. Column short, very slender, clavate, up to 1.25 mm. high, with a pair of rounded-oblong auricles above, the rostellum short-triangular and minutely bidentate.

Huánuco: Near Pampayaco (Pampayacu) and Cuchero (Cochoero), on trees, *Poeppig 1007, 1514*. Cerro de Ponasa, 1300 meters, *Ule G.*

I have seen no record of this concept.

Sigmatostalix peruviana Rolfe, Kew Bull. (1910) 371; C. Schweinf. Bot. Mus. Leaflet. Harvard Univ. 14: 76. 1949. *Sigmatostalix*

stalis pusilla Schltr. Fedde Repert. 10: 392. 1912. *Sigmatostalix bicornuta* Rolfe, Kew Bull. (1913) 342. *Petalocentrum pusillum* Schltr. Fedde Repert. 15: 145. 1918; Kränzl. Engler, Pflanzenr. IV. 50 (Heft 80), 312. 1922; Mansf. Fedde Repert. Beih. 58: t. 59, nr. 235. 1930. *Petalocentrum angustifolium* Schltr. Fedde Repert. 15: 145. 1918; Mansf. Fedde Repert. Beih. 58: t. 59, nr. 234. 1930. *Petalocentrum bicornutum* Schltr. Fedde Repert. Beih. 9: 179. 1921.

Plant very small, caespitose, epiphytic, commonly 5–7 cm. tall. Rhizome short, sometimes branched. Pseudobulbs approximate, ovoid or ovoid-cylindric, more or less compressed, about 1–1.5 cm. high, unifoliate, clothed below with 2 pairs of imbricating, leaf-bearing sheaths. Leaves linear or linear-oblong, sub-obtuse or minutely bilobed at the apex, conduplicate at the scarcely narrowed base, usually 3–5 cm. long, 1.5–3.5 mm. wide. Scapes lateral, basal in the axils of sheaths, slender, loosely few-flowered above (often with abbreviated branches), about 4–5 cm. high. Flowers very small, thin, with wide-spreading segments; sepals and petals light yellow, dorsal sepal and petals with a deep purple band or stripe. Dorsal sepal "oblong" to "linear-lanceolate" or oblong-lanceolate, acute to subobtuse, 3–3.5 mm. long, about 1.2 mm. wide, with a recurved apex. Lateral sepals similar, lightly oblique. Petals oblong or oblong-lanceolate, about equally long with the sepals, more or less acute, near the base with a short, conical tooth. Lip sessile or subsessile, deltoid-reniform or orbicular-reniform, lightly retuse in the center of the broadly rounded, undulate, anterior margin, about 3–4 mm. long and 4–5 mm. wide; disc at the base with a large, lobulate, often shining callus. Column slender, clavate, 2–2.5 mm. high, with a pair of short, decurved auricles at the apex.

Peru: Habitat not recorded, *Forget s.n.* (type of *S. peruviana* and *S. bicornuta*).—Cuzco: Prov. of Quispicanchis, Cadena, 1020 meters, epiphyte, *Vargas 6141*.—Junín: Chanchamayo Valley, Río Blanco, Hacienda St. Teresa, about 1400 meters, on coffee-trees, *Köhler s.n.* (type of *S. pusilla* and *Petalocentrum angustifolium*).

LOCKHARTIA Hook.

Small to medium-sized epiphytes extending from Mexico and Central America southward to Brazil, Bolivia and Peru.

Plant caespitose, without pseudobulbs. Stems simple, leafy. Leaves numerous, distichous, equitant, imbricating, rather short, spreading to suberect, entirely concealing the stem. Peduncles lateral in the axils of the leaves, commonly very short and 1- or 2-flowered, racemose or more rarely loosely paniculate. Flowers long-pedicelled, small or medium-sized, membranaceous with spreading or reflexed segments. Sepals free, subequal. Petals similar to the sepals or larger. Lip simple or deeply 3- or 4-lobed, equal to the sepals or longer, with the disc callose at the base. Column very short and stout, broadly bialate or auricled above. Anther terminal, opercular, incumbent, imperfectly 2-celled. Pollinia 2, ovoid, rather long-acuminate.

- A1. Lip simple to obscurely 4-lobulate; disc with an incurved horn in the middle.
L. hologlossa (*L. unicornis*)
- A2. Lip deeply 3-lobed with linear or linear-lanceolate lateral lobes; disc without an incurved horn in the middle. *L. amoena*

Lockhartia amoena Endres & Reichb. f. Gard. Chron. (1872)
666. *Lockhartia costaricensis* Schltr. Fedde Repert. 3: 81. 1906.

Plant small to large, epiphytic, caespitose, up to 50 cm. tall. Stems erect or spreading from a more or less decumbent base, entirely concealed by the very numerous, densely imbricating, distichous leaves. Leaves equitant, triangular to triangular-lanceolate, commonly ascending (rarely slightly incurved), broadly obtuse to subacute, 1.5–4 cm. long (measured on the lower margin), up to 1 cm. wide across the base. Inflorescences racemose or more commonly loosely paniculate, axillary, rather short. Floral bracts conspicuous, orbicular-cordate, usually apiculate at the rounded apex. Flowers loose, few, small, yellow, lip with brown or red markings. Dorsal sepal oval, more or less rounded at the apex, up to about 6 mm. long and 4 mm. wide. Lateral sepals very similar. Petals ovate-oblong, usually retuse or truncate at the apex, commonly rather larger than the sepals. Lip deeply 3-lobed, very variable, up to 9 mm. long in greatest length and 13 mm. wide across the lateral lobes at the base; lateral lobes oblong-linear or lanceolate-linear, gently recurved, more or less obtuse; mid-lobe much larger, more or less deeply 4-lobed, with the lateral lobules spreading, semiorbicular to triangular and the narrower anterior portion deeply bilobed forming a pair of obovate or broadly oblong lobules, the entire margins more or less irregularly dentate; disc in the center of the base with a subquadrate, excavated, fleshy callus produced into an oblong-subquadrate mass of more or less distinct, verrucose lines. Column minute, stout, with a pair of rounded-dolabriform wings.

Huánuco: Tingo María, 670 meters, epiphytic on trees, *Carpenter 106*. Also Mexico and Central America (Costa Rica, type).

Lockhartia hologlossa Schltr. Fedde Repert. Beih. 7: 199. 1920; Mansf. Fedde Repert. Beih. 57: t. 71, nr. 274. 1929; C. Schweinf. Bot. Mus. Leaflet. Harvard Univ. 17: 57. 1955. *Lockhartia unicornis* Schltr. Fedde Repert. Beih. 7: 200. 1920; Mansf. Fedde Repert. Beih. 57: t. 71, nr. 275. 1929.

Plant epiphytic, or terrestrial on rocks, up to 53.5 cm. high. Stems caespitose, erect-spreading from a decumbent base, entirely concealed by the numerous densely imbricating leaves. Leaves equitant, narrowly triangular-lanceolate, erect-spreading and often slightly incurved above, narrowed to an acute tip, the largest blades (near the middle of the stems) about 3–6.5 cm. long (measured on the lower margin) and 5–8 mm. wide across the base. Inflorescence abbreviated, racemose, in the upper or uppermost axils of the leaves, few- (1- to 6-) flowered. Flowers small, yellow. Sepals concave, apiculate. Dorsal sepal ovate-elliptic, about 5 mm. long and 3 mm. wide. Lateral sepals similar, elliptic-ovate, slightly larger throughout. Petals broadly oval to oblong-oval, considerably larger than the sepals, broadly rounded at the apex with a more or less distinct apicule. Lip suborbicular-ovate, reduplicate in natural position, retuse in front, usually constricted on each side and

thus 3- or 4-lobulate (sometimes simple and merely retuse), broadly rounded at the base, about 6.3–7.5 mm. long from the base to the apex of an anterior lobule and 6.3–7 mm. wide near the base when expanded; disc through the center of the lower half with a prominent, concave, oblong-ovate, fleshy callus which terminates in an upcurved horn. Column very short and stout, with a pair of obliquely semi-ovate, more or less lobulate wings. (The flowers of the typical forms from Colombia were noted as either a little smaller or larger than the Peruvian specimens described.)

Cuzco: Prov. of Quispicanchis, Ttío to Murayaca, Marcapata, on rocks, 1960 meters, *Vargas 3138*. Prov. of Urubamba, Machu-Picchu, on rocks, 2020 meters, *Vargas 5546*.—Junín: Huacapistana, about 1800 meters, epiphyte in densely forested valley, *Killip & Smith 24296* (plants in fruit, and therefore the determination is open to some doubt). Also Colombia (type).

HOFMEISTERELLA Reichb. f.

A monotypic genus, confined to northern South America.

Plant small to medium-sized, epiphytic. Stems abbreviated, not pseudobulbous, leafy. Leaves clustered, imbricating, distichous, linear. Scapes much (often many times) exceeding the leaves, laxly racemose, ancipitous and narrowly bialate, arcuate, more or less fractiflex. Floral bracts distant, conduplicate, erect-spreading or incurved. Flowers relatively large for the plant, with long slender pedicels. Sepals and petals similar, free, lanceolate-linear, strongly reflexed. Lip triangular-lanceolate, simple, long-acuminate, sessile at the cordate or subcordate base, erect-spreading, somewhat longer and much wider than the other segments. Column footless, broadly 2-winged at the base, with a long, rigid, inflexed or de-curved rostellum and an oblong clinandrium. Anther terminal, opercular, incumbent, 1-celled, produced into a linear-triangular appendage. Pollinia 4, complanate, oblong-ovoid, affixed in pairs to the dilated apex of the long, slender stipe.

Hofmeisterella eumicroscopica (Reichb. f.) Reichb. f. Walp. Ann. 3: 563. 1852; Xen. Orch. 1: 41, t. 18, figs. I, II, 1–8. 1854; C. Schweinf. Bot. Mus. Leaflet. Harvard Univ. 8: 50. 1940. *Hofmeisterella eumicroscopica* Reichb. f. De Poll. Orchid. Gen. ac Struct. . . . 30. 1852.

Plant inconspicuous, epiphytic, with an abbreviated rhizome and large, stout, fibrous roots. Stem very short, entirely concealed by the basal cluster of leaves. Leaves several to numerous, deeply imbricating below, linear, equitant, acute, up to 3.5 cm. long and 2 mm. wide in natural position. Scapes lateral in the axils of the leaves, twice to many times longer than the leaves, up to about 27 cm. long, suberect to arcuate, complanate and narrowly bialate, usually simple, few- to many-flowered, laxly racemose, more or less fractiflex. Floral bracts distant, conduplicate, dorsally winged, spreading or incurved. Flowers rather small, membranaceous, the segments greenish yellow or lemon-yellow with purple at the base of the lip, the sepals and petals strongly reflexed. Dorsal sepal linear, conduplic-

cate or with involute margins, acute or short-acuminate, 8.8–13.6 mm. long, 0.6–0.8 mm. wide. Lateral sepals linear from a recurved base, slightly longer and wider than the dorsal sepal. Petals very similar to the lateral sepals, a little shorter than the dorsal sepal but somewhat wider than the lateral sepals. Lip triangular-lanceolate, sessile, cordate or subcordate at the base, 10.8–14.4 mm. long, 4.4–5.8 mm. wide near the base. Column small, recurved, with a pair of broad, semi-ovate dilations at the base adnate to the lamina of the lip, about 4–5.7 mm. high at the back, with an oblique clinandrium and a prominent, elongate, decurved rostellum.

Cuzco: Prov. of Convención, Valle de Santa Ana, *Herrera 3007*.—Huánuco: Yanano, about 1840 meters, on mossy tree, *Macbride 3774*. Also Venezuela and Ecuador (type).

ORNITHOCEPHALUS Hook.

Epiphytic plants extending from Mexico through Central America, some of the West Indies and northern South America.

Plants small to medium-sized. Stems abbreviated, non-pseudobulbous in the Peruvian species, entirely concealed by the deeply imbricating, conduplicate leaf-sheaths. Leaves equitant, elliptic-oblong to linear, fleshy or coriaceous. Scapes lateral in the axils of leaf-sheaths, simple, racemose above, commonly equaling or exceeding the leaves. Flowers small, with wide-spreading segments. Sepals subequal, free, concave. Petals commonly larger than the sepals. Lip sessile, simple (and frequently inflexed above) or 3-lobed with the lateral lobes relatively small and the mid-lobe (in the Peruvian species) commonly large. Column short, stout, wingless, footless, and with a very long, subhorizontal rostellum. Anther terminal, opercular, incumbent. Pollinia 4, affixed in pairs to the slightly dilated apex of the linear stipe.

- A1. Lip distinctly 3-lobed, with horizontally spreading lateral lobes; flowers large for the genus. 1
- A2. Lip simple, at most with a basal callus which sometimes extends beyond the basal margins; flowers commonly small. 1
- Ia. Lateral lobes of the lip many times smaller than the mid-lobe, acute or acuminate, ecallose, paucidentate on the posterior margin near the apex.
O. patenilobus
- Ib. Lateral lobes of the lip a little smaller than the mid-lobe, obtuse, entire, with a pluridentate callus extending across the disc of the lip. *O. polyodon*
- 1a. Outline of the lip ovate, with a conspicuous lobe-like apicule at the apex; disc of the lip apparently ecallose at the base. *O. apiculatus*
- 1b. Outline of the lip oblong, cuneate or ovate-subquadrate, without a lobe-like apicule at the apex; disc of the lip with a conspicuous basal callus. 2
- 2a. Sepals smooth on the back. *O. gladius*
- 2b. Sepals setose on the back. 3
- 3a. Lip more than twice as long as the sepals; basal callus many times shorter than the lip. *O. longilabris*
- 3b. Lip only slightly longer than the sepals; basal callus equaling about half of the lip. *O. avicula*

Ornithocephalus apiculatus Lindl. Ann. Nat. Hist. 4: 383. 1840.

Plant small, up to 7.6 cm. tall. Stem abbreviated, wholly concealed by several dense, imbricating leaf-sheaths. Leaves obliquely linear-oblong. Scape much exceeding the leaves (about three times as long), erect, densely several- to many-flowered above. Flowers apparently deep yellow. Sepals not described. Petals orbicular-obovate ("oblong"), broadly rounded above, coarsely dentate above the middle. Lip ovate, entire, concave, with a conspicuous lobule-like, acute apicule in front, sagittate at the base, markedly longer and narrower than the petals. Column minute, with an elongate, recurved rostellum.

Peru: Habitat not recorded, *Pavón s.n.* (type).—Huánuco(?), fide Schlechter, Fedde Repert. Beih. 9: 179. 1921.

The Ames Herbarium contains a photograph of this species with an analysis of the petals and lip from the Lindley Herbarium.

Ornithocephalus avicula Reichb. f. & Wulschl. ex Reichb. f. Walp. Ann. 6: 495. 1863; Cogn. Martius Fl. Bras. 3, pt. 6: 222, t. 45, fig. 3. 1905.

Plant small for the genus, epiphytic. Stem abbreviated, entirely concealed by numerous, conduplicate leaf-sheaths which are imbricating below and have a scarious band on the upper margin. Leaves spreading, elliptic-lanceolate to oblong, acute, often more or less oblique, 2- (rarely) 5 cm. long, 8-15 mm. wide, obliquely articulated below, about 9 to 13 in each plant. Scape lateral in a leaf-axil, shorter than or somewhat exceeding the leaves, laxly flexuous to arcuate-recurved, about 4-10 cm. long, racemose above, entirely glandular-setulose; peduncle short, with 1 or few spreading, amplexicaul sheaths; raceme loosely several- (7-) to many-flowered, with a fractiflex rachis. Floral bracts semiamplexicaul, concave, ciliate-dentate. Flowers very small, white and green (often various other shades), with wide-spreading, membranaceous segments. Dorsal sepal cuneate-spatulate, concave, rounded at the apex, ciliate-dentate above, subdensely setose without, about 3 mm. long and 2 mm. wide when expanded, 3-nerved. Lateral sepals similar but slightly shorter, oblong-obovate, concave, broadly rounded at the apex, dorsally setose, 1-nerved. Sepals sometimes smaller. Petals suborbicular-obovate, very broadly rounded to subtruncate at the apex, irregularly dentate, 2-nerved with the mid-nerve once branched, about 2.5 mm. long and slightly wider above. Lip somewhat exceeding the rest of the perianth, broadly oblong-pandurate or pandurately ovate-subquadrate, slightly wider at the base, abruptly acute in the middle of the broadly rounded or lightly retuse apex, subcordate at the sessile base, 5- to 7-nerved, with the basal half entirely concealed by a large, fleshy, ovate-suborbicular callus which is concave and 3- to 5-lobulate within, about 3.5-4.5 mm. long and 2-3 mm. wide near the base. Column very small, fleshy-dilated below and at the apex in front, about 1 mm. high at the back, with an elongate, recurved rostellum.

Loreto: Vicinity of Iquitos, 100 meters, *Klug 10022, 10023, 10108*. Also Surinam (type) and Brazil.

Ornithocephalus gladius Hook. Exot. Fl. 2: t. 127. 1824; Cogn. Urban Symb. Antill. 6: 632. 1910. *Ornithocephalus gladius* Hook. var. *peruvianus* C. Schweinf. Bot. Mus. Leaf. Harvard Univ. 14: 77. 1949.

Plant small for the genus, epiphytic. Stems very short, entirely concealed by a cluster of leaf-sheaths which are deeply imbricating, conduplicate and have a broad scarious border on the upper margin. Leaves oblanceolate or linear-oblanceolate to oblong (rarely elliptic-lanceolate), abruptly acute, more or less oblique, up to 6 cm. long and 7 mm. wide (the outer blades much smaller), about 9 to 12 to a plant. Scapes lateral in the axils of leaf-sheaths, shorter than or markedly exceeding the leaves, glabrous and narrowly bialate, about 3–6 cm. long, suberect to arcuate-recurved; peduncle short, with several amplexicaul, spreading sheaths; raceme loosely few- (4- or 5-) flowered. Floral bracts amplexicaul, ovate, concave, ciliate. Flowers small, with membranaceous wide-spreading segments, white with green markings. Dorsal sepal suborbicular, deeply concave, dorsally carinate with the keel extended into a prominent mucro, glabrous without, about 3 mm. long (including the mucro) and 2.5 mm. wide. Lateral sepals very similar but slightly shorter and narrower, oblique. Petals much larger than the sepals, cuneate-obovate, abruptly dilated above, very broadly rounded at the apex, about 3 mm. long and broader above, 2- to 3-nerved with the mid-nerve carinate. Lip simple, sharply inflexed in natural position, navicular-concave, linear-oblong when expanded, slightly narrowed below, abruptly acute (rarely obtuse), about 5.7–6 mm. long, up to 2 mm. wide near the apex, 3-nerved, the entire base concealed (the margins more or less exceeded) by a large, suborbicular-ovate callus which is cordate at the base and depressed-foveate in the center. Column very small, dilated at the base, about 1 mm. high at the back, with a conspicuous, elongate, decurved rostellum.

Huánuco: Prov. of Huánuco, Tingo María, on gravelly bank of Río Huallaga, epiphyte, *Asplund 12372*.—Junín: La Merced, about 610 meters, epiphyte in montaña, *Macbride 5480*. Also Trinidad (type), Grenada and Tobago.

Ornithocephalus longilabris Schltr. Fedde Repert. Beih. 9: 114. 1921; Mansf. Fedde Repert. 57: t. 130, nr. 508. 1929.

Plant epiphytic, rather large for the genus, about 10–12 cm. high. Leaves 8–10, erect-spreading, equitant, linear-elliptic (“linear-ligulate”), acute, sometimes obliquely subfalcate, up to 10 cm. long and nearly 7 mm. wide in the middle. Scapes in the axils of the leaf-sheaths, erect-spreading to arcuate, up to 9 cm. long, entirely muriculate-villous; peduncle 4–5 cm. long; raceme rather loosely 6- to 12-flowered, up to 4.5 cm. long. Bracts broadly ovate, apiculate, ciliate-dentate. Flowers medium-sized for the genus, thin, with wide-spreading segments. Dorsal sepal concave, oblong-elliptic, subacute (“obtuse”), serrate-dentate (“subcrenulate”), sparsely setose on the back, 1-nerved, about 3.25 mm. long and 2.1 mm. wide. Lateral sepals similar but narrower, oblique. Petals obliquely suborbicular-flabellate, about equally long and broad, slightly surpassing the sepals, dentate on the broadly rounded apical margin, sparsely muriculate-papillose and

with an obtuse horn above the middle on the back. Lip narrowly cuneate-oblong (lingulate), slightly dilated above and contracted below, abruptly narrowed to an obtuse apex, 3-nerved, about 8.5 mm. long and 3 mm. wide above; disc at the base with a short, broad, trapezoid-rhombic callus protruding beyond the lateral margins. Column very short, with an elongate, narrow rostellum.

Cajamarca: Habitat not recorded, *Lehmann 3370*.

No material of this species was available.

Ornithocephalus patentilobus C. Schweinf. Am. Orch. Soc. Bull. 16: 510, t., 1947. Figure 178.

Plant large for the genus, epiphytic, up to about 14 cm. high. Stems abbreviated as in the genus, entirely concealed by the crowded, spreading leaf-sheaths which are conduplicate and scarious-margined on the upper edge. Leaves 8-10, equitant, spreading in a suborbicular cluster, narrowly elliptic-lanceolate to linear-oblong or elliptic-oblong, acute (apiculate when young), more or less narrowed to an oblique base, often lightly oblique above, 3.7-10.1 cm. long, 0.8-1.2 cm. wide. Scapes lateral in the axils of leaf-sheaths, spreading or arcuate, subequaling or slightly exceeding the leaves, about 8.2-15 cm. long, setulose throughout (very sparingly so on the basal portion), racemose above; peduncle with 3-5 remote, small, amplexicaul, spreading sheaths; raceme about 4-13 cm. long, loosely 6- to 18-flowered. Floral bracts small, spreading, amplexicaul, broadly ovate, glandular-ciliate. Flowers rather large for the genus, with membranaceous, wide-spreading or reflexed segments, "white and green, striped with dark green (hairy)." Dorsal sepal strongly concave, oblong-obovate, rounded at the apex, irregularly glandular-ciliate or ciliate-dentate, densely glandular-setulose on the outer surface, about 5 mm. long in natural position and subequally wide above. Lateral sepals similar, slightly oblique, as long as the dorsal sepal but slightly narrower. Petals spatulate-obovate or oblong-obovate, broadly rounded at the apex, irregularly dentate, longer and usually slightly wider above than the dorsal sepal. Lip distinctly larger than the other segments, deeply 3-lobed near the base, about 8 mm. long and 9.8 mm. wide across the lateral lobes when expanded; lateral lobes very small, erect in natural position, wide-spreading, triangular-oblong, oblique and lightly retrorse, acute or acuminate, with a few irregular teeth on the posterior margin toward the apex; mid-lobe many times larger, broadly pandurate-oblong, broadly rounded in front, about 7 mm. long and 5 mm. wide near the apex; disc with the entire central basal portion callose-thickened and pluridentate in front. Column small, about 2 mm. high at the back, abruptly dilated at the apex in front, with an elongated, deflexed, linear rostellum.

Loreto: Vicinity of Iquitos, 100 meters, epiphyte in dense forest, *Klug 10038*.

Ornithocephalus polyodon Reichb. f. *Linnaea* 41: 33. 1876; C. Schweinf. Bot. Mus. Leaflet. Harvard Univ. 13: 151. 1948.

Plant rather large and stout for the genus, epiphytic, about 11-19 cm. tall. Stems abbreviated, entirely concealed by 9-11 crowded sheaths of the leaves.

ORNITHOCEPHALUS

patentilobus C. Schweinf.

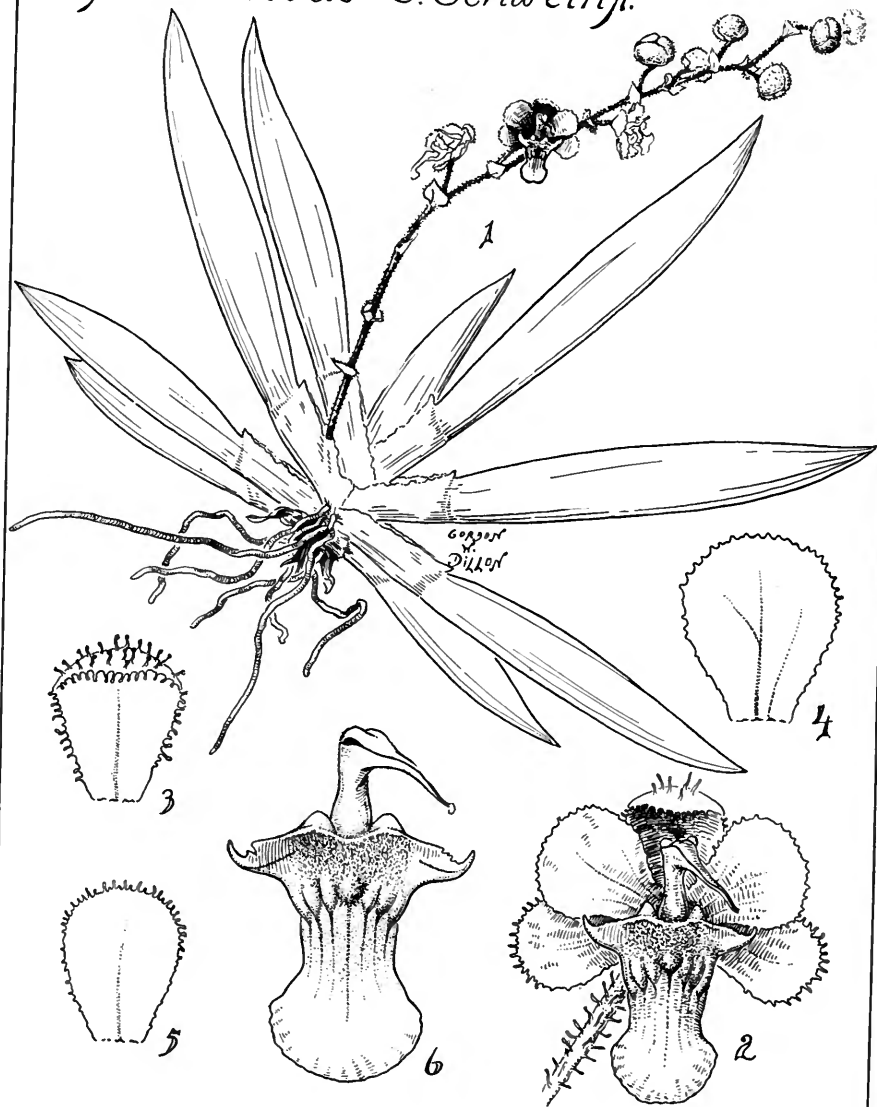


FIG. 178. *Ornithocephalus patentilobus* C. Schweinf. 1, plant; $\times \frac{1}{6}$. 2, flower spread out; $\times 3$. 3, dorsal sepal; $\times 4$. 4, petal; $\times 4$. 5, lateral sepal; $\times 4$. 6, column and lip; $\times 4$.

Leaf-sheaths imbricating, conduplicate, with a scarious border on the upper edge. Leaves elliptic-lanceolate to linear-lanceolate, more or less acuminate, commonly lightly oblique above, somewhat narrowed to the obliquely articulated base, about 3 (outer blades) -16 cm. long, 0.85-1.4 cm. wide. Scapes lateral in the axils of leaf-sheaths, usually 2 to each plant, suberect or flexuous to arcuate, about 9.5-19.5 cm. long, entirely glandular-setulose, racemose above; peduncle short, 4 cm. or more long, with 3 or more remote, spreading, semiamplexicaul sheaths; raceme up to 14.5 cm. long, loose to subdense, several- (8-) to many-flowered. Floral bracts spreading, suborbicular-ovate, semiamplexicaul, glandular-ciliate. Flowers rather large for the genus, with membranaceous, wide-spreading segments. Dorsal sepal deeply concave, suborbicular-obovate, broadly rounded at the apex, irregularly glandular-ciliate, rather densely glandular-setose on the outer surface, about 6 mm. long and 4 mm. wide. Lateral sepals oblong-obovate, broadly rounded above, lightly concave, sparingly serrate, rather densely glandular-setose without, dorsally keeled, a little shorter and narrower than the dorsal sepal. Petals cuneate-flabellate with recurved sides in natural position, oblong-obovate when expanded, broadly rounded at the apex, shorter than the sepals but subequally wide above. Lip deeply 3-lobed, shorter than the other segments in natural position with a saccate base, erect lateral lobes and a recurved mid-lobe, when expanded about 6.5 mm. long and slightly broader across the base; lateral lobes small, divaricate, triangular-oblong, with a recurved, convex apex; mid-lobe larger, subquadrate-ovate when expanded, rather abruptly narrowed above to an acute tip; disc with a transverse, subelliptical, pluridentate callus which extends as a toothed ridge from the base of the lateral lobes, continues in a curved line in front of the lateral lobes and is extended across the base of the mid-lobe. Column very small, clavate, with a reflexed, linear rostellum.

Loreto: Río Mazán, 100-125 meters, *Schunke 391*. Also Ecuador (type).

NOTYLIA Lindl.

A rather small but perplexing genus of very small to medium-sized American epiphytes ranging from Mexico through Central America and the West Indies to Brazil and Argentina.

Rhizome abbreviated. Stems very short, usually developed into pseudobulbs. Pseudobulbs often clustered, small, unifoliate. Leaves commonly flat, linear to oblong or elliptic, or rarely equitant. Scapes lateral, basal, usually arcuate or recurved, racemose or rarely paniculate above. Flowers small, dense or lax. Dorsal sepal free, lanceolate, oblong or ovate-oblong, strongly concave, usually fornicate. Lateral sepals subequal, free or commonly more or less connate, lightly oblique. Petals similar to the sepals, oblique. Lip commonly unguiculate; lamina simple, ovate, lanceolate, pandurate or rarely obovate. Column stout or usually slender, wingless, footless. Anther dorsal, deeply concave. Pollinia 2.

- | | |
|--|-----------------------------|
| A1. Leaves equitant..... | I |
| A2. Leaves flat, not equitant..... | 2 |
| Ia. Leaf-blades articulated to a sheath; lamina of the lip triangular-hastate above..... | <i>N. Wulfschlaegeliana</i> |
| Ib. Leaf-blades not articulated to a sheath; lamina of the lip not triangular-hastate..... | 1 |

- 1a. Leaves numerous, erect or incurved; sepals and petals setaceous-acuminate. *N. coffeicola*
- 1b. Leaves few, more or less recurved; sepals and petals acute or short-acuminate. *N. mirabilis*
- 2a. Lamina of the lateral sepals deeply bidentate with sharply recurved apices; leaves linear or nearly so. 3
- 2b. Lamina of the lateral sepals minutely bidentate, without recurving tips; leaves oblong (rarely linear-oblong) to elliptic-oblong or oval. 5
- 3a. Lip sessile, without a distinct claw, long-acuminate. *N. rhombilabia*
- 3b. Lip distinctly short-clawed, abruptly acute or apiculate. 4
- 4a. Raceme dense; sepals about 4 mm. long; petals acute or short-acuminate; lip subquadrate-ovate. *N. boliviensis*
- 4b. Raceme loose; sepals about 3.5 mm. long; petals obtuse; lip ovate-suborbicular. *N. peruviana* (*Dipteranthus peruvianus*)
- 5a. Lip shorter than the column (usually distinctly so) 6
- 5b. Lip longer than the column (usually distinctly so) 7
- 6a. Leaf 1.4 cm. or less wide; lamina of the lip not sigmoid, cuneate at the base, often gradually merging into the claw. *N. parvilibia*
- 6b. Leaf 2.7 cm. or more wide; lamina of the lip strongly sigmoid when viewed from the side, with an abrupt or subcordate base *N. conduplicans*
- 7a. Petals equally long with the lip; lip obtuse. *N. Koehleri*
- 7b. Petals longer than the lip (often much longer); lip acute to long-acuminate. . 8
- 8a. Flowers fleshy; lip acute or short-acuminate; column stout, short, minutely pubescent. *N. carnosiflora*
- 8b. Flowers membranaceous; lip long-acuminate; column slender, glabrous. *N. Buchtienii* (*N. moyobambae*)

Notylia boliviensis Schltr. Fedde Repert. Beih. 10: 53. 1922; Mansf. Fedde Repert. Beih. 57: t. 141, nr. 553. 1929.

Plant slender, epiphytic, 10.5–12 cm. high. Rhizome abbreviated. Pseudobulbs caespitose, slender, cylindric, compressed, unifoliate, 1–1.5 cm. high, mostly concealed by several pairs of distichous, closely imbricating sheaths of which the upper pair is leaf-bearing. Leaves oblong-linear to elliptic-linear, obtuse and obliquely bilobed with an apicule, cuneate-narrowed to a conduplicate base, 6.3–11 cm. long, 0.7–1.7 cm. wide. Inflorescence lateral, basal, spreading, occasionally once-forked; peduncle slender, 2–4 cm. long, with a few remote sheaths; raceme (or panicle) about 8 cm. long, densely many-flowered. Bracts spreading, linear-lanceolate, about equaling the pedicellate ovary. Flowers small, membranaceous, light yellow, entirely glabrous. Dorsal sepal strongly fornicate, concave, when expanded lanceolate-oblong, obtuse, dorsally conic-apiculate, nearly 4 mm. long, about 1 mm. wide. Lateral sepals connate into an oblong-elliptic, concave lamina which is about as long as the dorsal sepal but twice as wide and is sharply bidentate (often as far as the middle), with recurved apices. Petals obliquely elliptic-lanceolate (“ligulate”), acute (“acuminate”), distinctly shorter and narrower than the sepals. Lip very shortly clawed, about 3.5 mm. long; lamina subquadrate-ovate, abruptly acute or apiculate, truncate at the base, 2.25–3 mm. wide; disc with a low carinate keel extending nearly to the middle (the type description says the lip is ecarinate). Column cylindric, about 2 mm. long.

Loreto: Vicinity of Iquitos, 100 meters, epiphyte beside the river, *Klug 10027*. Also Bolivia (type).

Notylia Buchtienii Schltr. Fedde Repert. 10: 458. 1912; Mansf. Fedde Repert. Beih. 58: t. 55, nr. 217. 1930; C. Schweinf. Bot. Mus. Leaf. Harvard Univ. 12: 198. 1946. *Notylia moyobambae* Schltr. Fedde Repert. Beih. 9: 108. 1921; Mansf. Fedde Repert. Beih. 57: t. 127, nr. 498. 1929.

Plant epiphytic, very variable. Rhizome abbreviated. Pseudobulbs solitary or often approximate, cylindric, compressed, unifoliate, 1.5–2.9 cm. long, invested by several closely imbricating, distichous sheaths of which the upper 1 to 3 pairs are leaf-bearing. Leaves elliptic to elliptic-oblong or oval (rarely oblong-oblongeolate), broadly rounded and sometimes oblique at the apex, cuneate below to a sessile or short-petioled, channelled base, 3–13 cm. long, 1.1–4 cm. wide, coriaceous. Inflorescence spreading, arcuate or recurved, lateral, basal, 12–30 cm. long; peduncle with several short, loose sheaths which are remote above and imbricating at the base; raceme densely many-flowered, 7–19 cm. long. Floral bracts small, linear-lanceolate, spreading or reflexed, much shorter than the pedicellate ovary. Flowers small, membranaceous, pale yellow, or deep yellow and white dotted with orange, entirely glabrous. Dorsal sepal strongly fornicate and concave, when expanded lanceolate or oblong-lanceolate, acute to subacute, 5.5–7 mm. long, 2 mm. wide. Lateral sepals connate into a deeply concave, oblong-lanceolate or elliptic-lanceolate lamina which is shortly bidentate at the apex and is subequal to the dorsal sepal or slightly longer and wider. Petals oblong-lanceolate, acute or acuminate, slightly smaller than the dorsal sepal, more or less oblique and falcate. Lip prominently clawed, about 5 mm. or less long; claw up to 1.6 mm. long, linear, carinate-thickened; lamina triangular-lanceolate, long-acuminate, fleshy-thickened, up to 2.4 mm. wide across the cordate to truncate or rounded base; disc with a keel (extending from the claw) onto the lower part. Column cylindric, slender, glabrous, more or less dilated at the base, reflexed near the apex, up to 3.1 mm. long.

Amazonas: Prov. of Bagua, Río Utcabamba Valley, Cerro Tapur, Hacienda Misqui, 1200 meters, *Hutchison 1517*.—Loreto: Near Moyobamba, *Filomeno s.n.* (type of *N. moyobambae*). Vicinity of Iquitos, 100 meters, in dense forest, *Klug 10051, 10059*.—San Martín: Tarpoto, Alto Río Huallaga, 360–900 meters, *Williams 6183*. Also Bolivia (type of *N. Buchtienii*).

Notylia carnosiflora C. Schweinf. Bot. Mus. Leaf. Harvard Univ. 12: 199, t. 28, figs. 1–7. 1946. Figure 179.

Plant small. Rhizome abbreviated. Pseudobulb short, complanate-cylindric, unifoliate, about 1 cm. high, invested by several distichous, closely imbricating sheaths of which the upper pair is leaf-bearing. Leaves elliptic-oblong, rounded at the apex, shortly cuneate-narrowed below with a complicate base, 4.6–6.2 cm. long, 1.3–1.9 cm. wide, thickly coriaceous. Inflorescence lateral, basal, arcuate-recurved, about equaling the leaves or shorter; peduncle about 3.5 cm. long,

with a few sheaths which are remote above; raceme about 3 cm. long, subdensely several-flowered, with small, reflexed bracts. Flowers small, reflexed, with spreading fleshy segments. Dorsal sepal strongly fornicate and concave, oblong, acute, about 7.5 mm. or less long in natural position, about 2.6 mm. wide when expanded. Lateral sepals connate into an elliptic-oblong, tubular-concave lamina which is minutely bidentate at the apex, about as long as the dorsal sepal but slightly wider. Petals obliquely elliptic-lanceolate or oblong-oblancheolate, falcate-incurved, acute, distinctly shorter and narrower than the dorsal sepal. Lip spreading from the column at a right angle, very shortly clawed, about 3.5 mm. long; claw abbreviated, very fleshy, about 0.75 mm. long; lamina triangular-ovate, acute or short-acuminate, subcordate at the base, about 2.9 mm. long, up to 2 mm. wide at the base; disc with a fleshy, minutely pubescent callus (continued from the claw) through the lower portion. Column short, stout, commonly dilated at the base, about 2.9 mm. high, minutely pubescent.

Junín: Chanchamayo Valley, 1800 meters, *Schunke s.n.* (type in Herb. Chicago Nat. Hist. Mus. No. 571652).

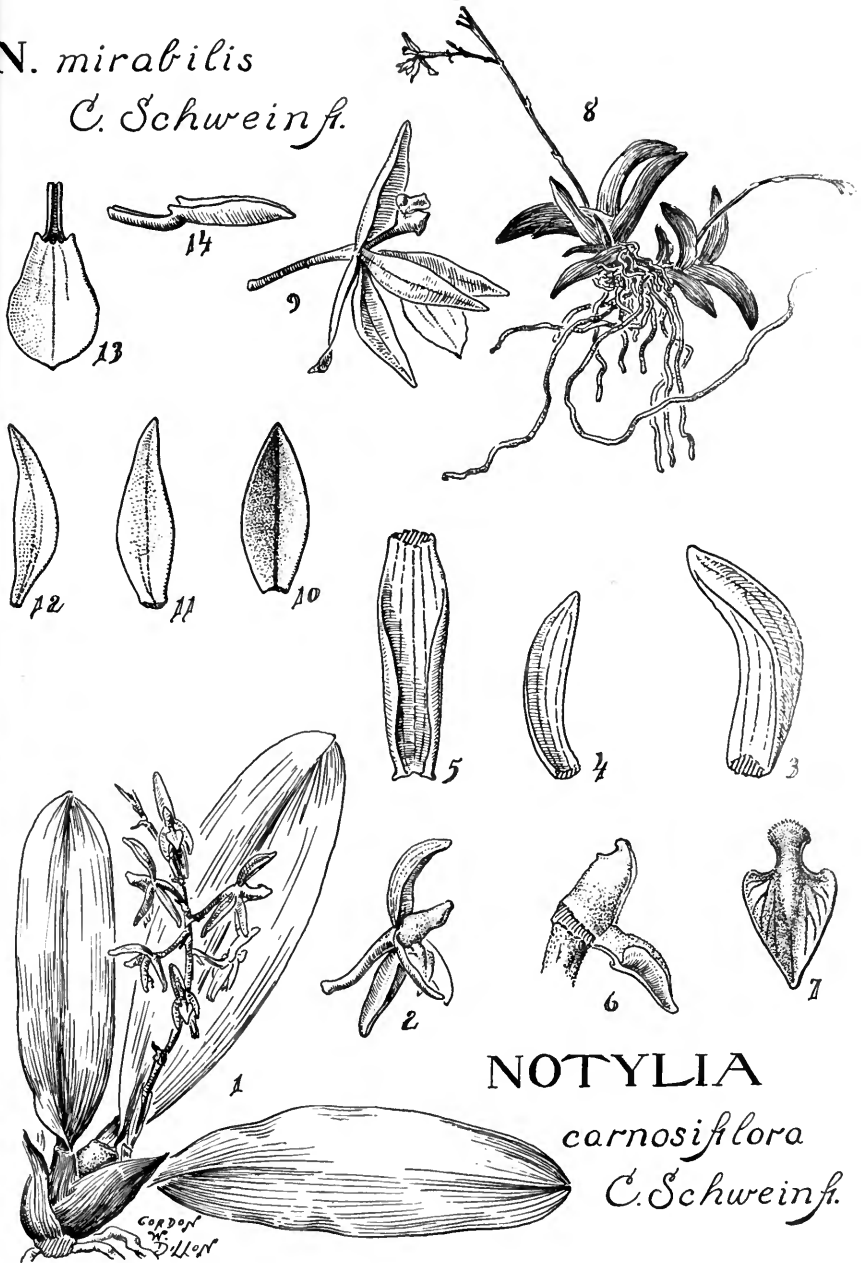
Notylia coffeicola Schltr. Fedde Repert. 10: 393. 1912; Mansf. Fedde Repert. Beih. 58: t. 55, nr. 218. 1930.

Plant small, epiphytic, 3–8 cm. tall. Rhizome and stem much abbreviated, entirely concealed by a suborbicular cluster of leaves. Leaves equitant, closely and radially imbricating, numerous (11 or more), oblong-lanceolate, more or less distinctly falcate-incurved, acute or short-acuminate with a minute mucro, 6–40 mm. long, up to 6.5 mm. wide, coriaceous. Inflorescences lateral, axillary, spreading or recurved, commonly surpassing the leaves; peduncle filiform, with several remote, small, loose sheaths; flower-cluster either an abbreviated, few-to several-flowered, subcapitate raceme or a panicle consisting of a few congested, appressed, few-flowered branches. Flowers large for the plant, spreading, with membranaceous, glabrous, spreading segments. Dorsal sepal fornicate and deeply concave, when expanded linear-lanceolate, setaceous-acuminate, about 9.5 mm. or less long and 1.3 mm. wide. Lateral sepals linear, setaceous-acuminate, connate near the base, a little longer (1.3 cm. or less) and narrower than the dorsal sepal. Petals obliquely linear-lanceolate, setaceous-acuminate, very slightly longer than the dorsal sepal and equally wide. Lip narrowly elliptic-lanceolate in outline, 8.2–9 mm. long, setaceous-acuminate, the basal portion narrowly unguiculate with a pair of minute, fleshy auricles below the middle, the central portion rhombic-lanceolate or ovate and about 2 mm. wide near the middle. Column slender, cylindrical, clavate above, about 4 mm. high.

Junín: Chanchamayo Valley, Río Blanco, Hacienda St. Teresa, about 1400 meters, on coffee trees, *Koehler s.n.* (type). Chanchamayo Valley, 1800 meters, *Schunke 539*. Same locality, 1500 meters, *Schunke 1213, 1214*. *Schunke* Hacienda, above San Ramón, 1300–1700 meters, in dense forest, *Schunke A 51*.

Notylia conduplicans C. Schweinf. Bot. Mus. Leaflet. Harvard Univ. 12: 200, t. 25. 1946. *Notylia Amesii* Smith & Harris, Contrib.

N. mirabilis
C. Schweinf.



NOTYLIA
carnosiflora
C. Schweinf.

FIG. 179. *Notylia carnosiflora* C. Schweinf. 1, plant; $\times 1$. 2, flower; $\times 2$. 3, dorsal sepal; $\times 4$. 4, petal; $\times 4$. 5, lateral sepals; $\times 4$. 6, lip and column from side; $\times 4$. 7, lip from above, expanded; $\times 6$. *Notylia mirabilis* C. Schweinf. 8, plant; $\times 1$. 9, flower; $\times 5$. 10, dorsal sepal; $\times 6$. 11, petal; $\times 6$. 12, lateral sepal; $\times 6$. 13, lip from above; $\times 6$. 14, lip from side; $\times 6$.

Gray Herb. Harvard Univ. 117 (1937), 40, in part (as to color and Peruvian specimens). Figure 180.

Plant medium-sized, 28–33 cm. high, epiphytic. Rhizome abbreviated. Pseudobulbs small, complanate-cylindric, unifoliolate, about 1.5 cm. high, surrounded and mostly concealed by several pairs of distichous, closely imbricating sheaths of which the upper one or two sheaths are leaf-bearing. Leaves oblong or elliptic-oblong, broadly rounded above (often with slightly unequal lobes), more or less narrowed to a cuneate, conduplicate base, 8.2–18.2 cm. long, 2.7–3.1 cm. wide. Inflorescence lateral, basal, gently arcuate-spreading or deflexed; peduncle about 9.5 cm. or less long, bearing several remote, short, tubular sheaths; raceme 21–22 cm. long, densely many-flowered. Flowers reflexed, small, bright green and white, glabrous throughout, with widely spreading, membranaceous segments. Dorsal sepal strongly fornicate and concave, lanceolate-oblong or elliptic-oblong, about 5.6 mm. or less long in natural position and 2.2 mm. wide when expanded, obtuse, carinate above the middle. Lateral sepals connate into a lanceolate-oblong, tubular-concave lamina which is very shortly bidentate at the apex, a little shorter and narrower than the dorsal sepal. Petals obliquely oblong, acute, somewhat shorter than the dorsal sepal and half as wide. Lip adnate to the base of the column, about 3 mm. or less long, prominently clawed; claw narrow, about 1 mm. long, with a high central keel extending onto the middle of the lamina; lamina with conduplicate sides, recurved and sigmoid when viewed from the side, when expanded ovate-cordate, up to 2 mm. in greatest length, about 1.6 mm. wide. Column cylindric, abruptly reflexed near the apex, 3.1–3.9 mm. high at the back.

Loreto: Mishuyacu, near Iquitos, 100 meters, in forest, *Klug 999*. Vicinity of Iquitos, 100 meters, in dense forest, *Klug 10031* (type). Also Venezuela.

Notylia Koehleri Schltr. Fedde Repert. 10: 393. 1912; Mansf. Fedde Repert. Beih. 58: t. 55, nr. 220. 1930.

Plant low, epiphytic, about 6 cm. high. Rhizome abbreviated. Pseudobulbs aggregated, oblong-cylindric, unifoliolate, 1–1.5 cm. high, surrounded and more or less concealed by several pairs of distichous, closely imbricating sheaths of which the upper ones are leaf-bearing. Leaves oblong-elliptic or oblong, obtuse to rounded and often unequally bilobed at the apex, cuneate below with a conduplicate base, 4–5 cm. long, about 8–12 mm. wide. Inflorescence lateral, basal, arcuate, distinctly exceeding the leaves, about 10 cm. long; peduncle about 3.5 cm. long, with several short, remote sheaths; raceme densely many-flowered, about 6.4 cm. long. Flowers small, reflexed, entirely glabrous, with spreading segments. Dorsal sepal strongly fornicate and concave in natural position, when expanded oblong-lanceolate (“narrowly oblong”), obtuse, about 6 mm. or less long and 1.6 mm. wide. Lateral sepals connate into a concave, elliptic-oblong lamina which is lightly retuse at the apex, about as long as the dorsal sepal but broader. Petals obliquely elliptic-lanceolate (“subfalcate-ligulate”), subobtuse, slightly shorter and narrower than the dorsal sepal. Lip shortly clawed, about 5 mm. long and equaling the petals; claw small, mostly occupied by a fleshy carinate callus which extends onto the lower part of the lamina; lamina triangular-lanceolate



FIG. 180. *Notylia conduplicans* C. Schweinf. 1, plant; $\times \frac{1}{5}$. 2, flower from side; $\times 4$. 3, dorsal sepal; $\times 8$. 4, petal; $\times 8$. 5, lateral sepals; $\times 8$. 6, column and lip from side; $\times 8$.

or ovate-lanceolate, obtuse, rounded or subtruncate at the base, about 2.2 mm. wide. Column cylindric, about 3 mm. high.

Junín: Chanchamayo Valley, Río Blanco, Hacienda St. Teresa, about 1400 meters, on coffee trees, *Koehler s.n.*

Notylia mirabilis C. Schweinf. Bot. Mus. Leaflet. Harvard Univ. 12: 202, t. 28, figs. 8-14. 1946. Figure 179.

Plant very small, epiphytic, caespitose, about 2.5-4 cm. high. Rhizome abbreviated. Stems abbreviated, entirely concealed by the flabelliform clusters of leaves. Leaves equitant, closely imbricated, about 6 (3 on each side), obliquely linear-oblong, linear-lanceolate or elliptic-linear, commonly strongly falcate-recurved, acute to subobtuse, unjointed to sheaths at the base, about 1.4 cm. or less long (from the apex to the base on the lower side), 1.5-3.5 mm. wide. Inflorescence filiform, erect to slightly arcuate, much surpassing the clusters of leaves, apparently 2.5-3.5 cm. long, provided near the apex with several ascending to strict, 1- to few-flowered branches. Floral bracts minute, ovate, concave. Flowers small, thinly membranaceous, light lilac and dark violet, with widely spreading segments. Dorsal sepal ovate-oblong or elliptic-ovate, acute, deeply concave, dorsally carinate below, about 3.6 mm. or less long and 2 mm. or less wide. Lateral sepals connate at the very base, obliquely elliptic-lanceolate, acuminate, carinate near the base, longer and much narrower than the dorsal sepal. Petals lanceolate, narrowed to an acute apex, about as long as the lateral sepals and slightly wider. Lip about equaling the lateral sepals, prominently clawed; claw relatively long and slender, fleshy, subterete, somewhat dilated above, about 1.3 mm. or less long; lamina concave, simple, obovate when expanded, broadly rounded in front with a prominent apicule, auriculate at the base, about 2.8 mm. long and 2 mm. wide. Column slender below, very abruptly dilated at the apex, about 2 mm. high.

Loreto: Vicinity of Iquitos, 100 meters, on dead tree, *Klug 10112*.

Notylia parvilabia C. Schweinf. Bot. Mus. Leaflet. Harvard Univ. 12: 203, t. 26. 1946. Figure 181.

Plant small, caespitose. Rhizome abbreviated. Pseudobulbs small, aggregated, complanate-cylindric, unifoliate, about 1.3 cm. or less high, invested and partially concealed by several distichous, closely imbricating sheaths of which the upper one or two on each side are leaf-bearing. Leaves oblong or oblanceolate-oblong, bilobed at the apex with slightly unequal lobes, more or less narrowed below with a conduplicate base, 4.8-11.3 cm. long, about 1.4 cm. or less wide, thickly coriaceous. Inflorescence lateral, basal, solitary, arcuate-recurved, more or less surpassing the leaves; peduncle up to 7.5 cm. long, provided with a few short, erect-spreading sheaths which are remote above and imbricating at the base. Raceme densely many-flowered, incomplete in the specimens at hand. Floral bracts short, linear-lanceolate, reflexed. Flowers small, reflexed, entirely glabrous, with widely spreading, subfleshy segments. Dorsal sepal strongly fornicate and concave, when expanded lanceolate-oblong, acute, about 5 mm. or less long and 2 mm. wide. Lateral sepals connate into an oblong-lanceolate or lanceolate-elliptic, deeply concave lamina which is minutely bidentate at the apex, and is

NOTYLIA

parvilabia C. Schweinf.

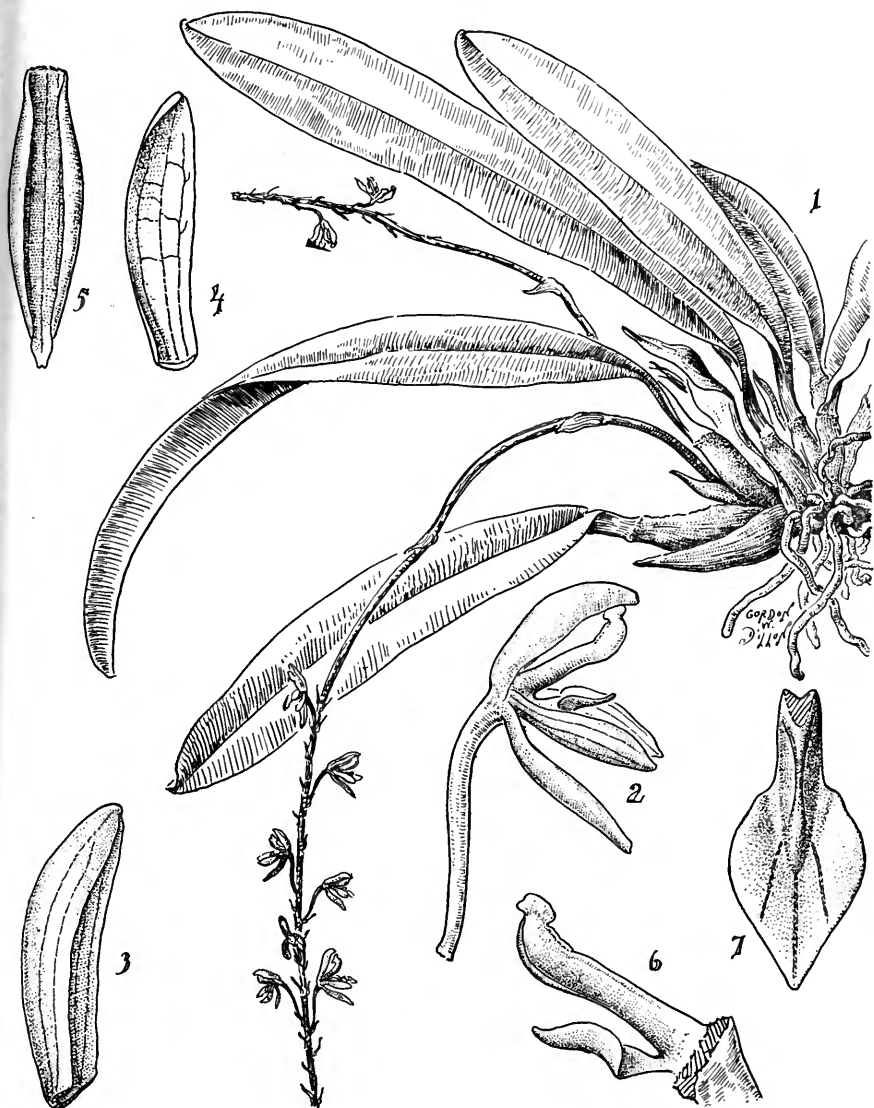


FIG. 181. *Notylia parvilabia* C. Schweinf. 1, plant; $\times 1$. 2, flower from side; $\times 5$. 3, dorsal sepal; $\times 8$. 4, petal; $\times 8$. 5, lateral sepals; $\times 8$. 6, lip and column from side; $\times 8$. 7, lip from above, expanded; $\times 16$.

about as long and wide as the dorsal sepal. Petals lanceolate-oblong or oblanceolate-oblong, subacute, more or less oblique, shorter and noticeably narrower than the sepals. Lip small, adnate to the base of the column, distinctly shorter than the column, conspicuously clawed, up to 2.2 mm. long; claw about 1 mm. or less long, gradually merging into the lamina, with a high central keel which extends to about the middle of the lamina; lamina rhombic-ovate with incurved sides, narrowed to a subacute apex, about 1.4 mm. wide when expanded. Column long, cylindric, abruptly recurved at the apex, about 3.5 mm. or less long, more or less clavate.

Junín: Chanchamayo Valley, 1200 meters, *Schunke 2054* (type in Herb. Chicago Nat. Hist. Mus.). Same locality, 1500 meters, *Schunke 1106*.

Notylia peruviana (Schltr.) C. Schweinf. Bot. Mus. Leaflet. Harvard Univ. 12: 205. 1946. *Dipteranthus peruvianus* Schltr. Orchis 10: 187, t. 44, figs. 8-16. 1916.

Plant epiphytic, slender, up to 12 cm. high, with an abbreviated rhizome. Pseudobulbs cylindric, slightly compressed, unifoliate, 1.3-1.5 cm. high. Leaf erect, ligulate, subobtuse, slightly narrowed below, about 8.5 cm. long, nearly 1 cm. wide. Inflorescence pendent, 10-13 cm. long; peduncle slender, with a few remote, clasping sheaths; raceme laxly many-flowered. Flowers small, pale yellow with a yellow lip, glabrous. Dorsal sepal deeply concave, lanceolate-oblong ("oblong-ligulate"), subobtuse, about 3.5 mm. long and 1.1 mm. wide. Lateral sepals connate into a subequally long, oblong-elliptic, concave lamina which is deeply bidentate with falcate-diverging, acute lobes. Petals obliquely elliptic-oblong ("oblong-ligulate"), obtuse, cuneate below, about as long as the sepals. Lip very shortly clawed, somewhat shorter than the sepals; lamina ovate-suborbicular ("suborbicular"), lightly apiculate, subtruncate at the base, about 3.25 mm. long and 3 mm. wide below; claw and center of the lip below occupied by a fleshy, carinate callus. Column slender for the genus, glabrous, lightly recurved, about 2 mm. high.

Peru: Habitat not recorded, *Forget s.n.* (sent to Sander & Sons, St. Albans).

Notylia rhombilabia C. Schweinf. Bot. Mus. Leaflet. Harvard Univ. 12: 206, t. 27. 1946. Figure 182.

Plant medium-sized, slender. Rhizome apparently abbreviated. Pseudobulbs narrowly complanate-cylindric, unifoliate, up to 1.8 cm. high, invested and partly concealed by 2 or 3 pairs of distichous, deeply imbricating sheaths of which the upper one or two on each side are leaf-bearing. Leaves linear or elliptic-linear, subacute with a conspicuous caducous mucro, slightly cuneate-narrowed below to a conduplicate base, up to 13.2 cm. long and 1.2 cm. wide (sometimes very small). Inflorescence lateral, basal, sharply deflexed near the base, usually much surpassing the leaves, subdensely racemose above, rarely once branched below; peduncle about 11.9 cm. or less long, provided with several small, erect-spreading sheaths which are remote above and imbricating at the base; raceme

NOTYLIA

rhombilabia C. Schweinf.



FIG. 182. *Notylia rhombilabia* C. Schweinf. 1, plant; $\times \frac{1}{6}$. 2, flower, oblique view; $\times 4$. 3, dorsal sepal; $\times 4$. 4, petal; $\times 4$. 5, lateral sepals; $\times 4$. 6, lip from above, expanded; $\times 4$. 7, lip and column from side; $\times 4$. 8, anther; $\times 4$.

10–13.6 cm. long, straight or flexuous. Floral bracts linear-lanceolate, the longest ones (at the base of the raceme) slightly shorter than the pedicellate ovary. Flowers reflexed, light green and white, entirely glabrous, with widely spreading segments. Sepals subfleshy, lip fleshy. Dorsal sepal strongly fornicate and concave, when expanded lanceolate-oblong, acute, about 8 mm. long, up to 3 mm. wide. Lateral sepals connate into an oblong-elliptic, deeply concave lamina which is sharply bidentate to above the middle with the lobules recurved at the apex, a little shorter and broader than the dorsal sepal when expanded. Petals linear, falcate-incurved, acute, about as long as the lateral sepals but much narrower. Lip adnate to the column at the base, rhombic or ovate-rhombic with a cuneate, sessile base and rounded, spreading sides, long-acuminate above (often slightly incurved on each side), about 6 mm. long, up to 4.1 mm. wide; disc with a low, callose keel extending from the base to about the middle. Column cylindric, slightly tapering above, about 4.8 mm. high at the back, somewhat sigmoid-recurved near the apex.

Loreto: Vicinity of Iquitos, 100 meters, epiphyte in dense forest, *Klug 10028*.

Notylia Wulschlaegeliana Focke, Bot. Zeit. 11: 343. 1853; Reichb. f. Xen. Orch. 1: 46. 1854; Cogn. Martius Fl. Bras. 3, pt. 6: 135, t. 38, fig. 3. 1904.

Plant very small, caespitose, epiphytic, about 5 cm. or less high. Rhizome abbreviated. Pseudobulb very small, strongly complanate, oblong-ellipsoid to suborbicular, unifoliate, about 4.5 mm. high, more or less concealed by 1 to several pairs of distichous, deeply imbricated, leaf-bearing sheaths. Leaves in a semi-orbicular-flabellate cluster, equitant, obliquely elliptic-lanceolate, sometimes lightly falcate, acute to subacute, cuneate below, apparently very fleshy, up to 2 cm. long and 5 mm. wide, all articulated to sheaths. Inflorescences lateral, basal, filiform, suberect or arcuate, a little longer than the leaves; peduncle up to 4 cm. long, provided with a very few small, remote sheaths; flower-cluster consisting of a subumbellate, few-flowered raceme which is frequently at the apex of 2 or 3 strict, unequal branches. Floral bracts minute, ovate, much shorter than the widely spreading, filiform, pedicellate ovary. Flowers small but large for the plant, greenish or whitish with purple spots, the floral segments widely spreading and translucent. Dorsal sepal lightly fornicate and deeply concave, when expanded linear-lanceolate, long-acuminate, about 7 mm. or less long and 1.8 mm. or less wide. Lateral sepals free to the base, obliquely elliptic-linear, setaceous-acuminate, about as long as the dorsal sepal but much narrower. Petals obliquely linear-lanceolate, setaceous-acuminate, slightly shorter than the sepals and about as wide as the lateral sepals. Lip adnate to the column above the base of the latter, 5.5–6 mm. long, with a short, linear or narrowly cuneate, fleshy claw; lamina about 5 mm. long, the lower third fleshy-auriculate at the base and oblong-linear above, the middle portion abruptly semiorbicular- or ovate-dilated with a cordate base and erose-denticulate sides, and the anterior part narrowly triangular and setaceous-acuminate. Column filiform, abruptly recurved at the dilated apex, 5–6 mm. high.

Loreto: Vicinity of Iquitos, 100 meters, flowers silver-white, light and dark lilac, *Klug 10122*. Also Surinam (type), and Costa Rica.

CRYPTARRHENA R. Br.

Small or medium-sized American epiphytes extending from Mexico through Central America and the West Indies to Surinam, Colombia, Ecuador and Peru. A single variable species now positively known in Peru.

Stems abbreviated (sometimes thickened into a unifoliate pseudobulb), often clustered, mostly or entirely concealed by several distichous, deeply imbricated, leaf-bearing sheaths. Leaves several to subnumerous, spreading, narrow, articulated to sheaths. Inflorescences lateral, axillary, commonly more or less surpassing the leaves, erect or arcuate, bearing several- to many-flowered racemes above. Flowers small. Sepals subequal, free, spreading, the lateral ones oblique. Petals similar to the sepals, often narrowed toward the base. Lip continuous with the base of the column, spreading, 3- or 4-lobed, with a distinct, usually long, carinate-thickened claw. Column short, thickened above, wingless, footless. Anther opercular, incumbent. Pollinia 4, attached in pairs to the slightly dilated apex of the linear stipe.

- A1. All the lobes of the lip linear-falcate and subequal; petals linear-lanceolate.
C. acrensis
- A2. Lobes of the lip consisting of 2 unequal pairs, the anterior lobes relatively short and broad; petals obovate-oblong. *C. lunata*

Cryptarrhena acrensis Schltr. Notizbl. Bot. Gart. Berl. 6: 126. 1914.

Plant rather small, stemless, epiphytic. Leaves ligulate, obliquely acute, 4-6 to a plant, up to 8 cm. long and 1.5 cm. wide. Scapes surpassing the leaves, loosely racemose and many-flowered above, up to 12 cm. long. Flowers small, whitish, with spreading or recurved segments. Sepals and petals linear-lanceolate, acute or acuminate, glabrous, about 5 mm. long. Lip clawed; claw rather long, with a rather high fleshy keel; lamina 4-lobed, produced in front into a mucro a little shorter than the lobes; lobes linear-falcate, recurved, acuminate, about equal. Column short, clavate, glabrous, footless, with a rather high clinandrium and a lanceolate, acute, erect rostellum.

"Peru": Alto Acre Territory near the Auristella Rubber Plantation, about 350 meters, *Ule* 89. This locality appears at present to be within the boundaries of Brazil.

No material of this species was available.

Cryptarrhena lunata R. Br. Bot. Reg. 2: t. 153. 1816; Cogn. Urban Symb. Antill. 6: 633. 1910; Kränzl. Engler, Pflanzenr. IV. 50 (Heft 80), 313. 1922; C. Schweinf. Bot. Mus. Leafl. Harvard Univ. 8: 52. 1940. *Clinhymenia pallidiflora* A. Rich. & Gal. Compt. Rend. Acad. Sci. Paris 18: 512. 1844, *nomen*. *Orchidofunckia pallidiflora*

A. Rich. & Gal. Ann. Sci. Nat. ser. 3, 3: 24. 1845. *Cryptarrhena Kegelia* Reichb. f. Bot. Zeit. 10: 766. 1852; Cogn. Martius Fl. Bras. 3, pt. 6: 228, t. 94, fig. 1. 1905. *Cryptarrhena pallidiflora* Reichb. f. Bot. Zeit. 10: 766. 1852; Kränzl. Engler, Pflanzenr. IV. 50 (Heft 80), 314. 1922. *Cryptarrhena unguiculata* Schltr. Fedde Repert. Beih. 8: 103. 1921; Mansf. Fedde Repert. Beih. 57: t. 99, nr. 389. 1929. Figure 183.

Plants small to rather large, caespitose, about 15–35 cm. tall. Stems very short, entirely concealed by deeply imbricating, distichous sheaths which are successively larger upward and commonly leaf-bearing. Leaves approximate, about 3–7 to a plant, elliptic-linear to oblong-linear or oblanceolate-linear, acute to subacute at the more or less oblique and sometimes bilobed apex, narrowed to a complicate base, wide-spreading in flabelliform clusters, about 5–25 cm. long, 0.5–2.5 cm. wide, the outermost blade usually much smaller. Scapes lateral in the axils of the leaf-bearing sheaths, erect to arcuate, more or less surpassing the leaves, subdensely racemose above, about 31.5 cm. or less long; peduncle about 5–13 cm. long, with several remote, narrow, acute or acuminate sheaths; raceme many-flowered, more or less elongate, about 8–23 cm. long. Flowers very small, with wide-spreading segments, green (rarely whitish), yellow or orange. Dorsal sepal oblong to elliptic-lanceolate, rounded to acute and apiculate at the apex, concave, 4.1–5 mm. long, 1.6–2 mm. wide. Lateral sepals obliquely elliptic-lanceolate, acuminate, subequally long with the dorsal sepal or a little longer and slightly wider. Petals obovate-oblong, acute to rounded and apiculate at the apex, distinctly shorter than the sepals but about as wide as the lateral sepals or wider, with the upper margins irregularly and often minutely denticulate. Lip long-clawed, somewhat exceeding the sepals, about 4.6–5.2 mm. long from the base of the column to the apex of a spreading anterior lobule; claw linear, wholly occupied by a high, fleshy callus, about 2–2.2 mm. long; lamina transversely subquadrate or trapeziform in outline, deeply 3- or 4-lobed, sessile at the broadly cuneate base, retuse to bilobed in front; lateral lobes from a broadly triangular base extended into a linear, falcate-recurved lamina which is often abruptly reflexed above; mid-lobe divided into 2, more or less spreading, relatively short, subquadrate, triangular or lanceolate lobules which are more or less denticulate on the apical margin. Column short, stout, somewhat dilated upward, about 2.8–3 mm. high at the back, terminating in a large, erect, concave, denticulate clinandrium. Sometimes the flowers are recorded with markedly smaller measurements.

Junín: Río Pinedo, north of La Merced, 700–900 meters, epiphyte in dense woods, *Killip & Smith 23651*.—Loreto: San Isidro, at the mouth of the Pastaza River, 135 meters, *Tessmann 4983*. Vicinity of Iquitos, 100 meters, epiphyte in dense forest, *Klug 10086*. A wide-spread and variable species extending from Mexico (type of *Orchidofunckia pallidiflora*) to Costa Rica, the West Indies (Jamaica, type of *Cryptarrhena lunata*, and Trinidad) and to most of northern South America (types of *Cryptarrhena Kegelia* and *C. unguiculata*).



FIG. 183. *Cryptarrhena lunata* R. Br. 1, plant; $\times \frac{1}{2}$. 2, flower, front-side view; $\times 3$. 3, lip, side view; $\times 4$. Drawn by D. E. Tibbits. Adapted in part from Fawcett and Rendle, *Flora of Jamaica* 1: pl. 30. 1910.

MACRADENIA R. Br.

A small genus of tropical American epiphytes extending from Florida (U.S.A.) and Guatemala through Central America and in South America southward to Brazil and Paraguay. But one species appears at present to occur in Peru.

Plants medium-sized, with the habit and in the alliance of *Notylia*. Rhizome abbreviated. Pseudobulbs aggregated, mostly narrow, 1-leaved. Leaves linear to elliptic, more or less coriaceous. Scapes lateral, basal, suberect to nodding, shorter than or surpassing the leaves, racemose above. Racemes laxly few- to many-flowered. Sepals nearly equal, free, spreading. Petals similar, commonly a little smaller. Lip sessile and continuous with the column, prominently 3-lobed; lateral lobes erect, broad and embracing the column, relatively large, entire or dentate; mid-lobe relatively small, lanceolate or linear, spreading. Column stout, dilated upward, footless, provided with a conspicuous cup-like, commonly lacerate-margined clinandrium and with a prominent rostellum. Anther erect in the bottom of the clinandrium, oblong-cylindric, more or less decurved. Pollinia 2, on a linear or triangular stipe.

Macradenia tridentata C. Schweinf. Am. Orch. Soc. Bull. 14: 62, t., 1945. Figure 184.

Plant medium-sized, with an abbreviated rhizome, up to 22.5 cm. high. Pseudobulbs approximate, cauliform to very narrowly pyriform-cylindric, unifoliolate, 1.5-4 cm. high. Leaves very variable, linear, oblong or narrowly elliptic-oblong, acute or acuminate, cuneate-narrowed below to a short sulcate petiole, 9-15.7 cm. long, 3.5-18 mm. wide, subcoriaceous. Scapes lateral, basal, suberect to arcuate-spreading, shorter than or somewhat exceeding the leaves, 11-24 cm. long, racemose above; peduncle with several scarious, infundibuliform sheaths which are remote above and imbricated at the base; raceme loosely several- to many-flowered, 4.7-15 cm. long. Floral bracts horizontally spreading, triangular-lanceolate, acuminate, much shorter than the pedicellate ovary. Flowers submembranaceous, with spreading segments. Dorsal sepal strongly concave, when expanded linear-lanceolate or linear-elliptic, acute, 13.3-15 mm. long, 3.2-3.8 mm. wide. Lateral sepals similar but narrower. Petals similar to the sepals, distinctly smaller, oblique. Lip shorter than the other segments, deeply concave below, sharply 3-lobed near the middle, 8.3-9.3 mm. long, about 7 mm. wide across the lateral lobes when expanded; lateral lobes erect, relatively large, obliquely ovate or rhombic-ovate, acuminate, porrect; mid-lobe relatively small, linear, rather fleshy, slightly protruding beyond the lateral lobes, 4.2-4.9 mm. long, about 0.9 mm. wide; disc with a central linear (often indistinct) keel through the lower half and with a pair of linear, flat intramarginal keels near the base. Column stout, dilated upward, about 6.1 mm. high, with a cup-like, lacerate-margined clinandrium which is produced in front into a pair of prominent, subquadrate wings and with a prominent linear rostellum. Anther erect, protuberant, oblong-cylindric, deeply sulcate, decurved.

Loreto: Above Pongo de Manseriche, Creek Torompisa, 220 meters, flowers white, maroon-spotted, *Mexia 6358a* (type). Vicinity

MACRADENIA

tridentata C. Schweinf.

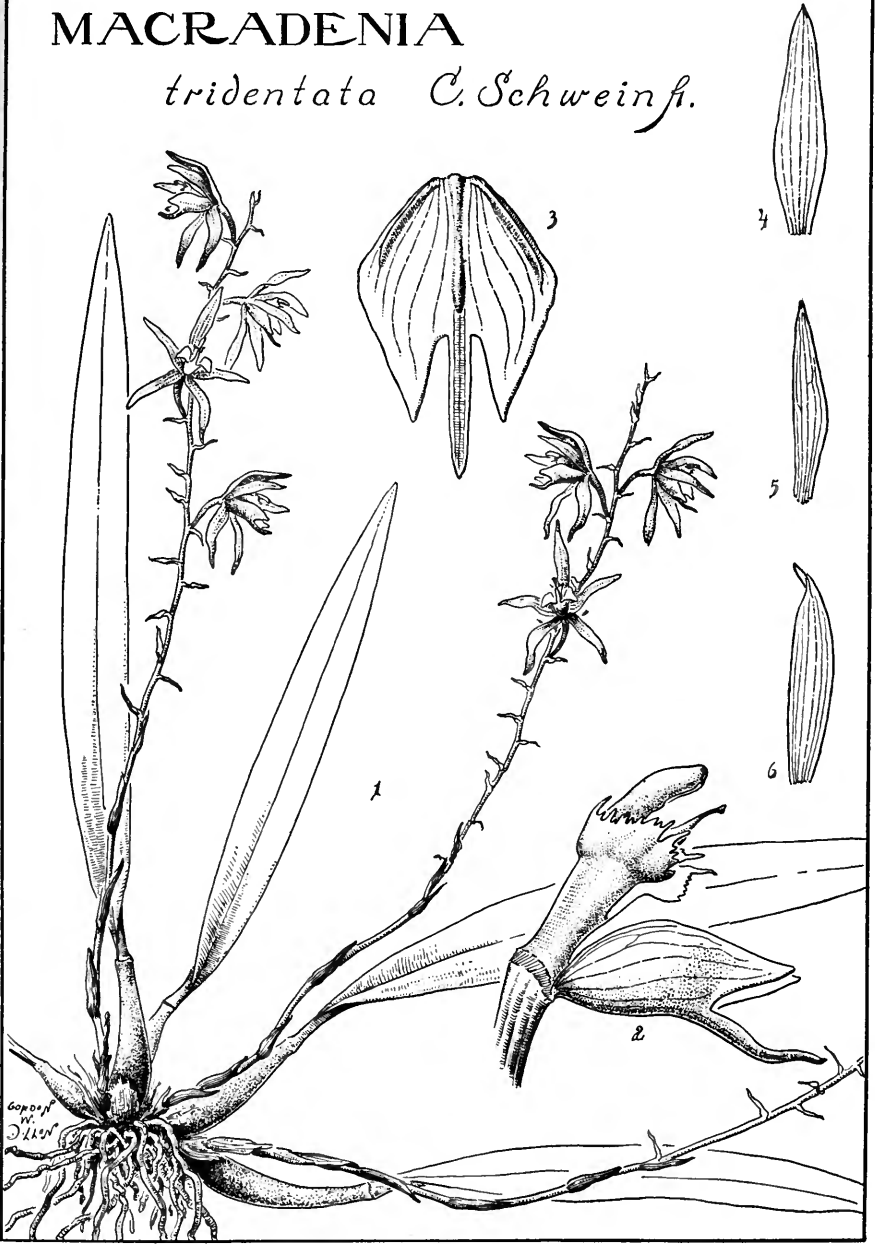


FIG. 184. *Macradenia tridentata* C. Schweinf. 1, plant; $\times \frac{2}{3}$. 2, column and lip, natural position; $\times 4$. 3, lip expanded; $\times 4$. 4, dorsal sepal; $\times 2$. 5, petal; $\times 2$. 6, lateral sepal; $\times 2$.

of Iquitos, 100 meters, "fls. greenish red-brown, white and dark violet," *Klug 10089*.

TELIPOGON HBK.

Plants small to medium-sized, epiphytic or terrestrial, with a creeping rhizome or decumbent lower portion of the stem. Stems very short or sometimes well-developed, without pseudobulbs, sometimes branching above. Leaves few to numerous, distichous, commonly narrow, coriaceous or fleshy. Peduncles terminal, erect, often elongate, racemose above. Flowers one to several, medium-sized or more commonly large and showy, sometimes very small. Sepals subequal, free, wide-spreading, narrow. Petals commonly much larger and often transverse, usually prominently veined and often reticulated. Lip very similar to the petals and often broader (more rarely smaller), commonly simple, sessile. Column usually abbreviated, footless, wingless, long-setose or hispid. Anther erect, distinctly 2-celled. Pollinia 4, 2 separate ones in each cell, unappendaged, affixed to the slightly dilated apex of the linear stipe.

Plants frequent in Costa Rica and in northern South America (Venezuela, Colombia, Ecuador, Peru and Bolivia).

- A1. Stems (if known) elongate; peduncles many times longer than the leaves . . . I
 A2. Stems (if known) more or less abbreviated (at least not markedly elongate); peduncles at most twice as long as the leaves . . . 1
 Ia. Petals 5-nerved; lip 7- to 9-nerved; flowers small, lip about 9 mm. long.
T. Benedicti
 Ib. Petals 9- or 10-nerved; lip 11- to 13-nerved; flowers relatively large, lip about 2 cm. long . . . *T. Boissierianus*
 1a. Lip distinctly trilobulate with a fold on each side of the apex, much smaller than the petals . . . *T. Fritillum*
 1b. Lip simple, commonly larger (at least broader) than the petals . . . 2
 2a. Petals and lip oblong-elliptic, much (nearly twice) longer than broad.
T. gymnostele
 2b. Petals and lip not oblong-elliptic, usually little longer than broad or broader than long . . . 3
 3a. Lip about 49-nerved; petals urceolate, abruptly angle-dilated above.
T. urceolatus
 3b. Lip about 25-nerved or less; petals not urceolate nor abruptly dilated above . . . 4
 4a. Anterior portion of the lip distinctly narrowed toward the apex . . . 5
 4b. Anterior portion of the lip not distinctly narrowed toward the apex . . . 8
 5a. Lip reticulate-veined throughout; column relatively long . . . *T. Vargasii*
 5b. Lip not reticulate-veined (i.e., without cross-reticulation); column very short . . . 6
 6a. Petals 15- or 16-nerved; lip 19-nerved . . . *T. rhombipetalus*
 6b. Petals 7- to 11-nerved; lip 15- (rarely 17-) nerved . . . 7
 7a. Lip suborbicular-ovate, distinctly narrowed in front, subequally long and broad; petals 9- to 11-nerved . . . *T. latifolius*
 7b. Lip transversely oblong-oval, only slightly narrowed in front, much broader than long; petals 7- to 9-nerved . . . *T. gnomus*
 8a. Petals and lip wholly conspicuously reticulated (with prominent veins and horizontal reticulations) . . . *T. tessellatus*

- 8b. Petals and lip without cross-reticulations, or rarely (*T. Hercules*) with occasional obscure, oblique reticulations. 9
- 9a. Flowers relatively large, lip about 3.3 cm. long and 4 cm. wide . . . *T. Hercules*
- 9b. Flowers smaller, lip 2.6 cm. or less long and 3.7 cm. or less wide 10
- 10a. Lip 21- to 25-nerved 11
- 10b. Lip 13- to 17-nerved 12
- 11a. Petals 13- to 15-nerved; lip about 25-nerved. *T. Papilio*
- 11b. Petals 9- to 11-nerved, about 1.9-2.2 cm. long; lip 21-nerved . . . *T. radiatus*¹
- 12a. Petals much longer than wide; lip very broadly obovate or suborbicular, nearly as long as wide. *T. obovatus*
- 12b. Petals little longer than wide, about equally wide, or wider than long; lip transversely oblong-oval, much wider than long. 13
- 13a. Flower large, petals 2.2-2.7 cm. long; lip 2.8 cm. or more wide. . . *T. gnomus*
- 13b. Flower small, petals 1.5-1.7 cm. long; lip 2 cm. or less wide . . . *T. semipictus*

Telipogon Benedicti Reichb. f. *Linnaea* 41: 3. 1876; Kränzl. Ann. Naturh. Hofmus. Wien 33: 29. 1919.

Stems elongate, leafy, sometimes branched with short strict branches, mostly concealed by the sheathing bases of the leaves, bearing more or less numerous, scattered simple roots which are stout, fibrous and glabrous. Leaves small, very numerous, distichous, spreading-ascending, elliptic-oblong or ovate-oblong ("ligulate"), acute (with a recurved apex), amplexicaul and sheathing the stem through the lower part, up to 3.7 cm. long and 1 cm. wide. Inflorescence ascending, loosely racemose above; peduncle up to 10 cm. long, with 1 or 2 tubular-amplexicaul sheaths below; raceme few- (4- to 6-) flowered, up to about 6 cm. long, with a flexuous or fractiflex rachis. Floral bracts spreading, amplexicaul, conduplicate, triangular-ovate, obtuse, dorsally carinate. Pedicellate ovary tri-lobate. Flowers relatively very small, with wide-spreading segments; sepals green, petals and lip green with dark brown nerves or the "perianth orange-yellow, purple ribbed." Dorsal sepal oblong-ovate ("oblong-triangular"), acute, short-apiculate, strongly concave, 3-nerved, 7-10 mm. long, 3-5.6 mm. wide when forcibly expanded, ecarinate. Lateral sepals similar, but somewhat narrower. Petals suborbicular-ovate or oval-ovate ("elliptic"), acute, apiculate, 5-nerved with an additional small nerve on each side below, about as long as the dorsal sepal and 6-8 mm. wide. Lip very similar to the petals, subacute, 7- to 9-nerved, about 8-10 mm. long and wide. Column very short, triangular-rostrate and short-pubescent in front, densely setulose in the rear.

Cuzco: Prov. of Convención, "alturas de Pintobamba," 2700 meters, epiphytic in forest, *Vargas 3544*. Prov. of Paucartambo, Pilla-huata, 2800 meters, epiphyte, *Vargas 6107*. Also Bolivia (type).

Telipogon Boissierianus Reichb. f. *Bonpl.* 4: 213. 1856; *Xen. Orch.* 1: 229, t. 97, fig. I. 1858; Kränzl. Ann. Naturh. Hofmus. Wien 33: 32. 1919.

¹This species was described from only a single flower, and no authentic record was available.

Stem elongate, slightly decumbent below, leafy, with a few short, strict branches, more or less concealed by the sheathing bases of the leaves, producing in the lower portion occasional roots which are fibrous, glabrous, simple, sulcate and finely verruculose when dry. Leaves very numerous, distichous, spreading-ascending, elliptic-oblong, acute with a recurved tip, amplexicaul by a long-sheathing, membranaceous, basal portion, up to 2.5 cm. long and 7 mm. wide, the free portion (up to 1.4 cm.) cartilaginous, ovate to oblong-ovate. Inflorescences strict to spreading-ascending, racemose above, about 6–9.5 cm. long; peduncle with a single close, tubular sheath near the middle or below the middle; raceme short, 3-flowered; rachis flexuous, about 2–3.5 cm. long. Floral bracts spreading, amplexicaul, lanceolate-ovate, concave. Flower small for the genus, with spreading segments, "dull yellow-brown dotted and veined," with a purple pubescent center. Dorsal sepal oblong-lanceolate or ovate-oblong, strongly concave below, abruptly acute, mucronate, 3-nerved, about 1.6 cm. long and 5.6 mm. wide, dorsally subcarinate. Lateral sepals similar, oblong-lanceolate, slightly shorter and narrower than the dorsal sepal. Petals much larger, rhombic-ovate, acute, slightly oblique, about 10-nerved, about 1.8 cm. long and 1.5 cm. wide. Lip very similar to the petals but larger, suborbicular-ovate, acute, about 11- to 13-nerved, about 2 cm. long and 1.8 cm. wide. Column very short and stout, finely pubescent in front, densely setose in the rear. Sometimes the flower has smaller measurements.

Huánuco: Playapampa, about 2700 meters, on wet rocky sphagnum slope, *Macbride 4888*.—De la Cunta (Cuerta?) de Saria, Herb. Pavón (type).

Telipogon Fritillum Reichb. f. & Warsc. Bonpl. 2: 101. 1854; Xen. Orch. 1: 230, t. 97, fig. III. 1858; Kränzl. Ann. Naturh. Hofmus. Wien 33: 16. 1919.

Plant low, 7.6–12.7 cm. high. Stem very short, provided with a few congested leaves. Leaves oblanceolate, apiculate, minutely undulate, up to 5 cm. long and 6 mm. wide (according to Kränzlin). Inflorescence straight or curved, up to 10 cm. long, racemose above; raceme 1- to 3-flowered. Floral bracts triangular-ovate, acute or acuminate, dorsally carinate. Pedicellate ovary rather broadly tripterous, up to 4 cm. long, much surpassing the bracts. Sepals triangular-ovate or triangular-lanceolate, acute or acuminate, 3-nerved, the lateral sepals lightly oblique, about 1.5 cm. long and 6 mm. wide. Petals much larger, obliquely rhombic-ovate or suborbicular-ovate, very shortly acute or apiculate, 11- to 13-nerved, about 1.8 cm. long and broad. Lip much smaller than the petals, transversely oval or suborbicular in outline, with a fold on each side of the apex (thus 3-lobulate), broadly rounded in front in the middle, more or less ciliate, 21- to 23-nerved, 1–1.2 cm. long and broad (according to Kränzlin). Column probably abbreviated, very densely long-setose. (The measurements were mostly taken from Kränzlin, l.c.)

Peru: Habitat not recorded, *Warscewicz s.n.*

No example of this species was available.

Telipogon gnomus Schltr. Fedde Repert. Beih. 9: 114. 1921; Mansf. Fedde Repert. Beih. 57: t. 130, nr. 509. 1929.

Plant very variable, from about 6 to 22 cm. high. Stems rather short, procumbent or flexuous, commonly shortly branched, entirely concealed by the imbricating, often marcescent sheaths of the leaves and bearing numerous, scattered roots which are fibrous, glabrous, with a more or less enlarged, shining velamen. Leaves several, congested on each short branch, oblong-elliptic to broadly or narrowly oblanceolate, acute and short-apiculate ("obtuse"), more or less narrowed to a complicate, sessile or petiole-like base, 2.5-10 cm. long, about 5 mm.-2 cm. wide. Scapes slightly shorter than the leaves or somewhat exceeding them, 2-17 cm. long; peduncle naked, subcompressed and very narrowly bialate above; raceme 1- to 7-flowered, up to about 6.5 cm. long, lightly fractiflex. Floral bracts spreading, conduplicate, triangular or ovate-triangular, dorsally carinate, subacute to acuminate, much shorter than the trialate pedicellate ovary. Flowers variable, medium-sized to large for the genus, with wide-spreading, membranaceous segments, pale yellow with brown-red or purple lines. Dorsal sepal lanceolate or oblong-lanceolate, acute or acuminate, dorsally strongly carinate with the keel produced as a mucro, navicular, 3-nerved, about 1.7-2.3 cm. long and 4.5-7 mm. wide. Lateral sepals similar, slightly narrower, oblique. Petals much larger, obovate-rhombic to suborbicular-rhombic, commonly rather sharply acute and apiculate, 7- to 9-nerved, 2-2.7 cm. long, 1.8-2.4 cm. wide. Lip transversely oblong-oval ("subreniform-flabellate"), minutely apiculate at the broadly rounded or slightly narrowed apex, cuneate-rounded at the base, 15- to 17-nerved, 2.2-2.6 cm. long, 2.75-3.2 cm. wide. Column very short and stout, with a tuft of numerous deciduous bristles (often 2- or 3-forked) in the rear.

Cajamarca: Prov. of Chota, pass south of Conchan, 2500 meters, terrestrial in loose humus, *Stork & Horton 10082*.—Huánuco: Huacachi (near Muña), in montaña, about 2000 meters, *Macbride 4114*. Panoa, 3100 meters, *Zimmer s.n.* 12 miles south of Panoa, about 3000 meters, epiphyte on shrub in shade, *Macbride & Featherstone 2224*.—Loreto: Near Moyobamba, *Filomeno s.n.* (type).

Telipogon gymnostele Reichb. f. *Linnaea* 41: 70. 1876; Kränzl. *Ann. Naturh. Hofmus. Wien* 33: 16. 1919.

Plant small, about 6 cm. high including the flowers. Stem short, about 1 cm. high, apparently somewhat branched (judged from Reichenbach's record). Leaves rather numerous, congested, elliptic-oblong ("oblong"), articulated to sheaths, acute or obtuse, about 2.5-3.5 cm. long and 7 mm. wide. Inflorescence including the flowers slightly surpassing the leaves; peduncle very short, much shorter than the leaves; raceme 2-flowered. Floral bracts triangular or ovate, amplexicaul, dorsally carinate, much shorter than the pedicellate ovary which is slender, trialate and about 2 cm. long. Sepals elliptic-lanceolate or oblong-lanceolate ("lanceolate"), acute, lightly carinate, 1-nerved throughout or 3-nerved below the middle, 1-1.5 cm. long, 3-4 mm. wide. Petals oblong-elliptic ("oblong"), acute, 5-nerved with a few oblique reticulations, about 1.2-1.7 cm. long and nearly twice as wide as the sepals. Lip oblong-elliptic ("oblong"), more or less acute, 7-nerved, with one of the lateral nerves branching on each side and the nerves velutinous near the base, about 1.2-1.5 cm. long, 7-8 mm. wide. Column very short and stout, glabrous, with a conspicuous curved rostellum. The measurements were taken in part from Kränzlin (l.c.) and in part from a drawing of the type.

Peru: Pustaco(?), 3300 meters, *Warscewicz s.n.*

No material of this species was available, but there is a drawing of the type with a floral analysis in the Ames Herbarium.

Telipogon Hercules Reichb. f. ex Kränzl. Ann. Naturh. Hofmus. Wien 33: 27. 1919; C. Schweinf. Bot. Mus. Leaflet. Harvard Univ. 17: 57. 1955.

Plant medium-sized, about 20 cm. or more high. Stems abbreviated. Leaves several, congested, obovate-oblong to oblanceolate, acute or subacute, more or less long-narrowed to a complicate base, 4.5–10 cm. long, up to 2 cm. wide. Inflorescence (excluding the flowers) about 15–33 cm. long; peduncle flexuous, naked, apparently angulate in section; raceme very loosely few- (about 3-) to several-flowered, the rachis fractiflex and about 5 cm. high. Floral bracts conspicuous, spreading, conduplicate, dorsally carinate, triangular-ovate when expanded, up to 1.7 cm. long. Flowers very large, with spreading segments, golden yellow with brown nerves. Dorsal sepal oblong-lanceolate, acute or acuminate, dorsally carinate, 3-nerved with a short outer nerve on each side, strongly concave or navicular, about 2.6 cm. long and 9.6 mm. wide. Lateral sepals similar but a little narrower, lightly oblique. Petals much larger, rhombic-suborbicular, broadly acute and apiculate, 13-nerved with oblique reticulations, about 3.3 cm. long and equally broad. Lip transversely suborbicular-oval, minutely apiculate at the broadly rounded apex, about 3.3 cm. long and 4 cm. wide, 17-nerved. Column very short and stout.

Northern Peru and Ecuador: Habitat not recorded, *Roez l s.n.* (type). Also Colombia.

Telipogon latifolius HBK. Nov. Gen. et Sp. 1: 336. 1816; Cogn. Martius Fl. Bras. 3, pt. 6: 109, t. 37, fig. 1. 1904; Kränzl. Ann. Naturh. Hofmus. Wien 33: 18. 1919.

Plant extremely variable in size, epiphytic, about 2.5–16 cm. high (excluding the flowers). Stems short, decumbent, simple or with abbreviated, erect branches, concealed by the imbricating leaf-sheaths, the lower portion (producing the roots and leaves) about 1–4 cm. long. Leaves (present) commonly 4 or 5, congested, linear-oblanceolate or obovate-oblong to elliptic-oblong, up to 9 cm. long and 2 cm. wide (often minute), abruptly acute, more or less narrowed below to the articulation with the conduplicate leaf-sheaths. Inflorescence (excluding the flowers) about 1–15 cm. long, erect to ascending or arcuate, commonly about twice longer than the leaves; peduncle about 10.5 cm. or less long, naked except for the sheathed base, stout, narrowly bialate above; raceme 1- to 7-flowered, loose; rachis about 4 cm. or less long. Floral bracts spreading, triangular, conduplicate, dorsally carinate, acute or acuminate, much shorter than the triolate pedicellate ovary. Flowers medium-sized for the genus, with wide-spreading membranaceous segments, yellow with dark nerves. Dorsal sepal lanceolate or oblong-lanceolate, acuminate, dorsally carinate, 3-nerved, navicular, 2.1–2.3 cm. long, 6.8 mm. wide. Lateral sepals similar but narrower, lightly oblique. Petals much larger, suborbicular-ovate or rhombic-ovate, acute or short-acuminate, 9- to 11-nerved, about 2.6–2.7 cm. long,

1.8–2 cm. wide. Lip ovate-suborbicular, narrowed to an acute or apiculate apex, about 2.6 cm. long and equally broad, 15- to 17-nerved. Column very short and stout, protruded onto the lip, surrounded (except in front) by a dense cluster of dark bristles.

Cajamarca: Prov. of Jaën de Bracamoros, between the districts of Choros and Tomependa, near the confluence of the Chinchipes and Amazon rivers, in very hot places, *Humboldt & Bonpland s.n.* (type). Also Colombia and Ecuador.

Telipogon obovatus Lindl. Bot. Reg. 33: sub t. 27. 1847; Kränzl. Ann. Naturh. Hofmus. Wien 33: 25. 1919.

Plant medium-sized. Stem abbreviated. Leaves oblong or oblong-oblancheolate, acute, up to 7.6 cm. long and 1.8 cm. wide, coriaceous. Inflorescence stout, loosely racemose above, about 18 cm. or less long; peduncle naked, compressed and enlarged above, about 13 cm. high; raceme arcuate, about 6-flowered. Floral bracts conspicuous, spreading, ovate, concave, acute or acuminate. Flowers large, with membranaceous wide-spreading segments, bright yellow. Sepals similar, lanceolate or ovate-lanceolate, acuminate, dorsally more or less carinate, about 1.8 cm. long and 7 mm. wide. Petals much larger, oblong-subrhombic ("oblong"), acute, 11-nerved, about 3 cm. long and 1.8 cm. wide. Lip very broadly obovate or suborbicular, rounded and not apiculate in front, 13- to 15-nerved, about 2.5 cm. long and nearly 3 cm. wide. Column apparently short and stout, adorned with very many long, brown bristles.

Peru: Habitat unrecorded, *Lobb s.n.* (type). Also Ecuador and perhaps Colombia, fide Kränzl. l.c.

In the Ames Herbarium is a photograph of the type in the Lindley Herbarium, as well as one Ecuadorian specimen referred to this species.

Telipogon Papilio Reichb. f. & Warsc. Bonpl. 2: 101. 1854; Kränzl. Ann. Naturh. Hofmus. Wien 33: 26. 1919.

Plant small, epiphytic. Stem very short, concealed by imbricating, conduplicate leaf-sheaths and by the numerous long, fibrous, glabrous roots which have a very stout velamen. Leaves several, congested, oblanceolate to oblanceolate-oblong, acute with an apiculate tip, cuneate-narrowed to an articulated base, 3.5–6 cm. long, 1.2–1.7 cm. wide (up to 8 cm. long and 6–8 mm. wide, according to Kränzl.). Inflorescence strict, shorter than or surpassing the leaves, about 4–17.7 cm. tall, subterete to narrowly bilate and angulate, racemose above; raceme 1- to 7-flowered, with a more or less fractiflex rachis. Floral bracts conspicuous, spreading, triangular-ovate, conduplicate, dorsally carinate, acute. Pedicellate ovary narrowly trilobate, much longer than the bracts. Flowers medium-sized for the genus, with wide-spreading membranaceous segments, orange-yellow or primuline with red nerves. Dorsal sepal lanceolate-ovate or narrowly triangular, acuminate ("acute"), concave and navicular, dorsally strongly carinate, up to about 1.8 cm. long and 7.4 mm. wide when expanded, 3-nerved. Lateral sepals similar

but shorter and narrower, oblique. Petals much larger, broadly rhombic-obovate, oblique, abruptly acute, commonly 13- to 15-nerved, about 1.9 cm. long and very slightly narrower (2.2 cm. long and equally wide, according to Kränzlin). Lip transversely suborbicular-oval, minutely apiculate at the very broadly rounded and plicate apex, about 25-nerved, about 1.85 cm. long, 2.5 cm. or more wide, densely setose near the base. Column abbreviated, very stout, surrounded (except in front) by a tuft of numerous, long bristles.

Peru: Habitat not recorded, *Warszewicz s.n.* (type).—Cuzco: Prov. of Urubamba, "Huiñaihuaina" Inca ruins, 2550 meters, epiphyte in forest, *Vargas 4140a*.

***Telipogon radiatus* Reichb. f. *Linnaea* 41: 70. 1876; Kränzlin. *Ann. Naturh. Hofmus. Wien* 33: 24. 1919.**

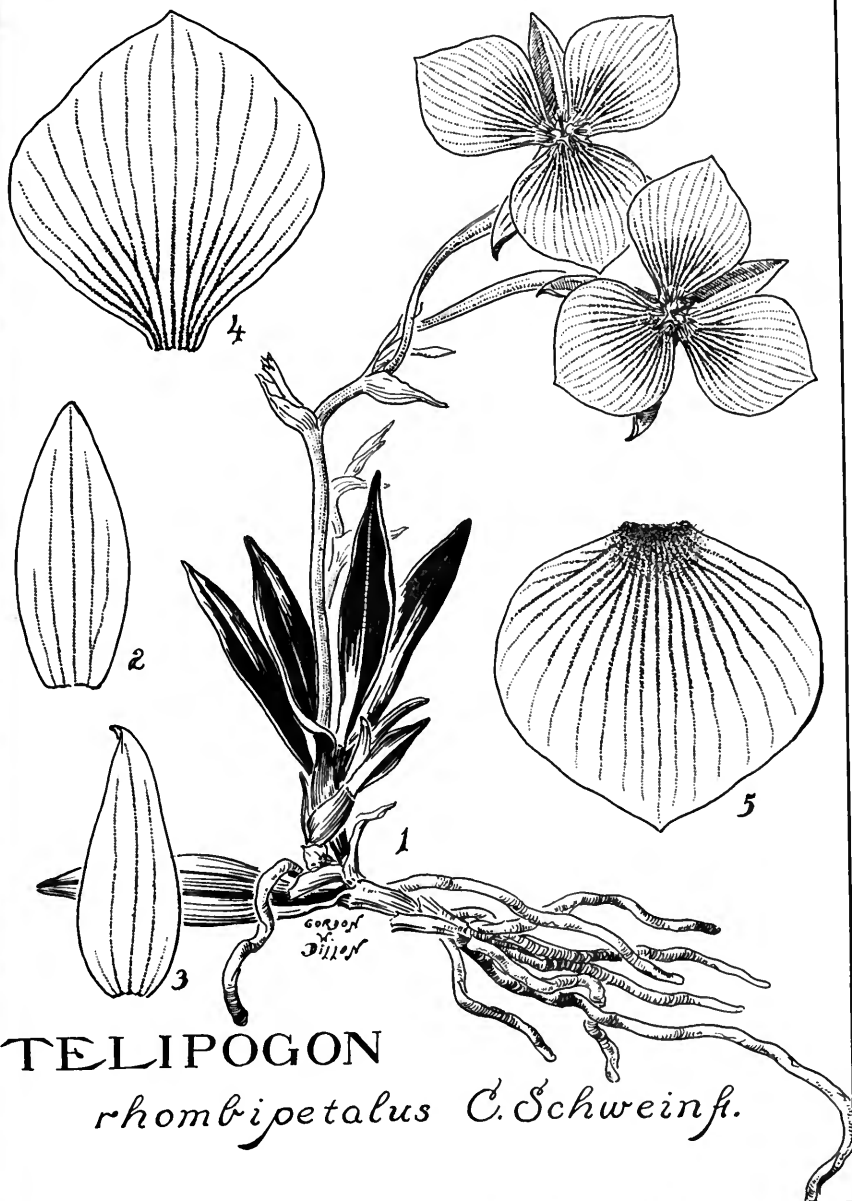
Vegetative parts lacking in the type (and apparently the only collection) and the description was drawn from a single flower. Pedicellate ovary sharply tri-lobate. Sepals triangular or triangular-ligulate, similar, dorsally carinate, acuminate, 3-nerved, 1.6 cm. long, 5-6 mm. wide. Petals much larger, rhombic ("cuneate-elliptic"), acute, 9- to 11-nerved, 2.2 cm. long and 2 cm. wide. Lip intermediate between transversely oblong-oval and very broadly obovate, without any apicule at the broadly rounded apex, 21-nerved, 2.5 cm. long and 3.7 cm. wide, the basal portion densely pilose. Column with violet bristles.

Peru: Habitat not recorded, *Davis s.n.*

No authentic material of this species was available. The floral measurements were derived from Kränzlin's description (l.c.).

***Telipogon rhombipetalus* C. Schweinf. *Am. Orch. Soc. Bull.* 15: 180, t., 1946. Figure 185.**

Plant rather small, epiphytic. Stem decumbent, leafy, somewhat branched, apparently entirely concealed by the leaf-sheaths. Leaves lanceolate-oblong to oblong-elliptic, acute, short-apiculate, more or less narrowed to a sessile, complicate and articulated base, about 2.9-4 cm. long, up to 1 cm. wide. Inflorescence racemose above; peduncle strict, narrowly bilobate, subequaling or somewhat exceeding the leaves, about 4 cm. or less high; racemes very short, 3-flowered, with the fractiflex rachis about 1.2-1.5 cm. long. Floral bracts spreading, strongly conduplicate, dorsally carinate, acute, apparently ovate when expanded. Flowers medium-sized for the genus, with wide-spreading membranaceous segments, apparently yellowish with purple lines near the base. Pedicellate ovary tri-lobate. Dorsal sepal elliptic-lanceolate, concave, subacute, with a prominent dorsal keel (broader at the base) produced into an apicule, 3-nerved with 2 short additional nerves near the base, about 1.9 cm. long and 7.6 mm. wide. Lateral sepals similar but slightly narrower, oblong-lanceolate, somewhat oblique. Petals a little longer and about three times broader than the sepals, suborbicular-rhombic, more or less acute, 15- to 16-nerved. Lip very similar to the petals but less rhombic, ovate-suborbicular, minutely apiculate, 19-nerved with the lateral nerve branching on each side without, densely setulose at the base, about 1.95 cm. long and 2.1 cm. wide. Column very short and stout, with very numerous long, purple bristles.



TELIPOGON

rhombipetalus C. Schweinf.

FIG. 185. *Telipogon rhombipetalus* C. Schweinf. 1, plant; $\times 1$. 2, dorsal sepal; $\times 2$. 3, lateral sepal; $\times 2$. 4, petal; $\times 2$. 5, lip; $\times 2$.

Cajamarca: Celendin, 2625 meters, in moss on a thick branch of a tree over a shady brook in a canyon, "F.W.D." s.n. (type in Herb. Chicago Nat. Hist. Mus.).

Telipogon semipictus Reichb. f. ex Kränzl. Ann. Naturh. Hofmus. Wien 33: 25. 1919.

Plant small, apparently epiphytic, with very long roots. Stem abbreviated, somewhat short-branching, entirely concealed by imbricating leaf-sheaths. Leaves several, aggregated on each branch, oblanceolate or elliptic-oblong, acute, short-apiculate, narrowed below to a sessile or petiole-like, articulated base, very variable in size, up to 8 cm. long (rarely) and 1.2 cm. wide. Inflorescence surpassing the leaves, racemose and arcuate above; peduncle slender, more or less dilated above, naked, about 6.7 cm. long; raceme short, loosely 3- to 5-flowered; rachis fractiflex, about 5 cm. or less long. Floral bracts conspicuous, spreading, conduplicate, dorsally carinate, ovate when expanded. Flowers small for the genus, with wide-spreading membranaceous segments, "greenish yellow with broken cross marks of red-brown, center purple." Pedicellate ovary trilocate. Dorsal sepal oblong-ovate or lanceolate-ovate, acute, strongly concave, dorsally carinate with the keel produced in a mucro, 3-nerved, about 1.3-1.65 cm. long and 4-7 mm. wide. Lateral sepals similar but shorter and narrower, lanceolate, acuminate, lightly oblique. Petals much larger than the sepals, suborbicular-rhombic or broadly rhombic-ovate, acute, minutely apiculate, about 1.5-1.7 cm. long and equally wide or slightly narrower, 8- to 11-nerved. Lip transversely oblong-oval, broadly rounded in front with a minute apicule, 15- to 17-nerved, about 1-1.5 cm. long and 2 cm. wide, densely setulose at the base. Column very short and stout, produced onto the lip, densely long-setose (especially on the sides and rear).

Huánuco: Huacachi, near Muña, in montaña, about 2000 meters, *Macbride 4166*. Also Colombia (type) and Ecuador.

Telipogon tessellatus Lindl. Benth. Pl. Hartw. 150. 1844; Kränzl. Ann. Naturh. Hofmus. Wien 33: 21. 1919.

Plant small, about 6.5-12 cm. high (exclusive of the flowers). Stem abbreviated, often with a few short, suberect branches. Leaves several, congested, variable in size, oblanceolate ("oblong"), acute, apiculate, narrowed below to a sessile, articulated base, rarely up to 10 cm. long and 1.8 cm. wide. Inflorescence suberect, racemose above, becoming a little longer than the leaves; peduncle naked, gradually enlarged and bialate above, about 3.8-8.1 cm. long; raceme abbreviated, 2-flowered; rachis about 6.5 mm. or more long. Floral bracts conspicuously spreading, conduplicate, triangular-ovate when expanded, dorsally carinate, acuminate. Flowers large for the plant, with wide-spreading segments. Sepals narrowly lanceolate or oblong-lanceolate, acuminate, concave, dorsally carinate, about 1.3-1.6 cm. long and 5 mm. broad. Petals much larger than the sepals, suborbicular-rhombic, acute, 7- to 9-nerved, with the nerves conspicuously cross-reticulated, about 1.5-2 cm. long and 1.35-1.8 cm. wide. Lip transversely oblong-oval, about 15-nerved with dark nerves and conspicuous cross-reticulations, broadly rounded

and apparently lightly retuse in front, about 1.4–1.8 cm. long and 2–2.5 cm. wide. Column abbreviated, adorned with a few bristles.

Cajamarca, fide Schlechter, Fedde Repert. Beih. 9: 179. 1921. Also Colombia and Ecuador (type).

The type, as recorded by a photograph in the Ames Herbarium, appears to be rather smaller than one plant of an Ecuadorian collection (*Espinosa* 761).

Telipogon urceolatus C. Schweinf. Am. Orch. Soc. Bull. 16: 292, t., 1947. Figure 186.

Plant epiphytic, small but with a large flower, about 15 cm. or less high. Roots numerous, recurved, with a stout, shining velamen. Stems decumbent, with an ascending, branching apex. Branches (including the inflorescence) up to 12 cm. long; lower portion relatively short, entirely concealed by 2–4 imbricating, conduplicate leaf-sheaths; upper portion consisting of a relatively long, naked peduncle terminated by a short raceme. Leaves elliptic-oblong (rarely) to oblanceolate, acute, short-apiculate, more or less long-narrowed below to a sessile, often petiole-like, articulated base, 5–10 cm. long, about 1–1.5 cm. wide (sometimes very small). Peduncle about 7 cm. or less long. Raceme short, loosely 2- to 5-flowered, the fractiflex rachis about 3 cm. or less long. Floral bracts spreading, conduplicate, dorsally carinate, broadly ovate when expanded, acute or acuminate. Pedicellate ovary much surpassing the bracts, tripartite, about 3.5 cm. long. Flower large for the genus, with wide-spreading segments, pale greenish yellow lined with dark red. Dorsal sepal elliptic-lanceolate, navicular, sharply complicate-acute, dorsally carinate, 5-nerved, about 2.6 cm. long and 9 mm. wide when expanded. Lateral sepals similar, obliquely oblong-lanceolate, somewhat shorter and narrower than the dorsal sepal. Petals much larger, oblong-urceolate in outline, abruptly dilated above with a very broadly triangular-acute apex having the outer angles rounded, about 3.2 cm. long and 2.7 cm. wide above, 13-nerved with 2 short additional nerves at the base on each side. Lip transversely oval-suborbicular, very broadly rounded at the apex, subcordate at the base, about 3.1 cm. long and 4.2 cm. wide, about 49-nerved. Column very short and stout as in the genus, with a surrounding tuft of deciduous, purple hairs.

Huánuco: Muña, about 2150 meters, in dry woods, *Macbride* 4193.

Telipogon Vargasii C. Schweinf. Am. Orch. Soc. Bull. 15: 290, t., 1946. Figure 187.

Plant epiphytic, medium-sized. Stem decumbent, the lower portion leafy and apparently wholly concealed by the sheathing bases of the leaves. Leaves numerous, oval to oblong-elliptic, acute, short-apiculate, sheathing the stem toward the base, up to about 5.5 cm. long and 2 cm. wide. Peduncle slender, naked, strict, about 9 cm. long. Raceme short, 2- to 3-flowered, about 3 cm. long. Floral bracts small, triangular-lanceolate, amplexicaul, concave. Pedicellate ovary much surpassing the bracts, about 3.5 cm. long. Flower large for the genus, yellow, with wide-spreading segments. Dorsal sepal lanceolate, acuminate and complicate above, concave, 5-nerved near the base, dorsally subcarinate, about 2 cm. long

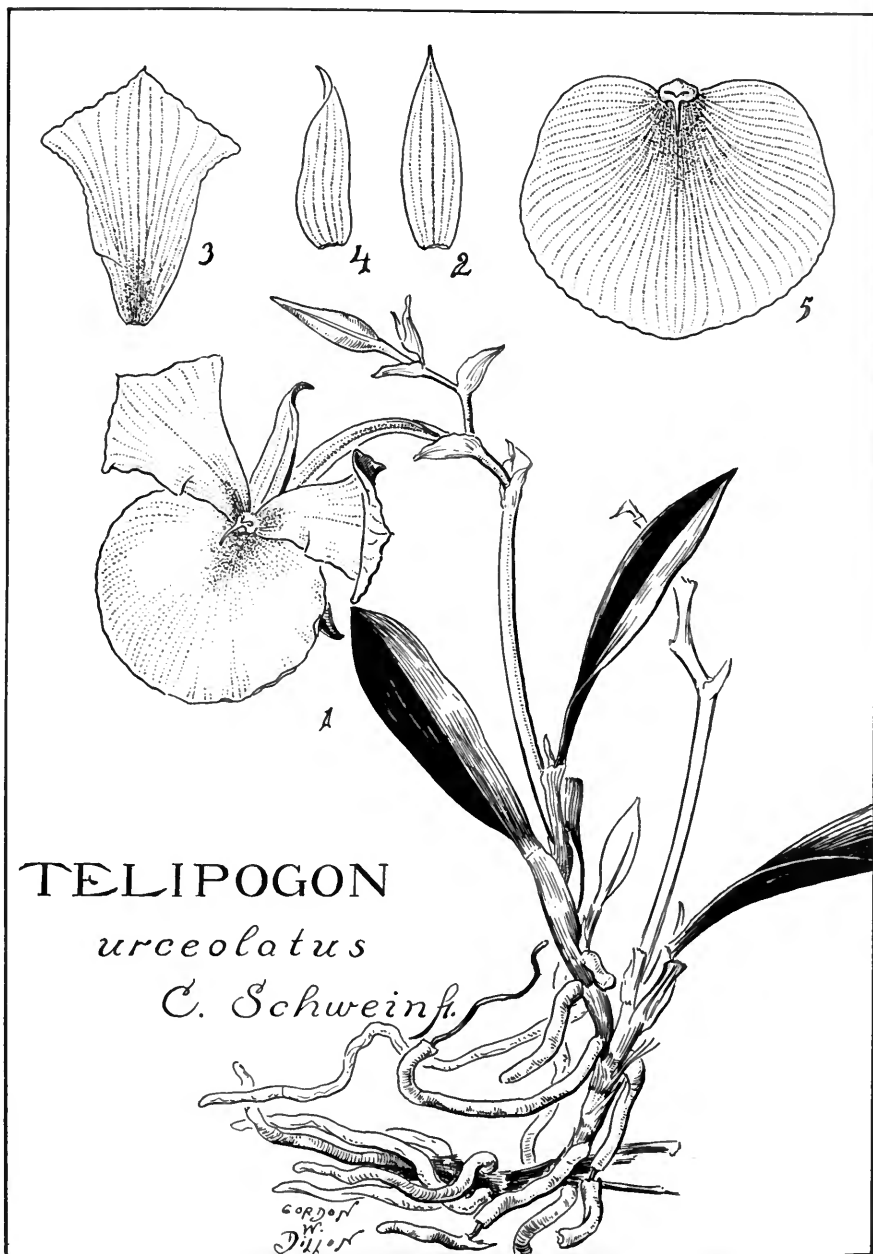


FIG. 186. *Telipogon urceolatus* C. Schweinf. 1, plant; $\times \frac{1}{8}$. 2, dorsal sepal; $\times 1$. 3, petal; $\times 1$. 4, lateral sepal; $\times 1$. 5, lip; $\times 1$.

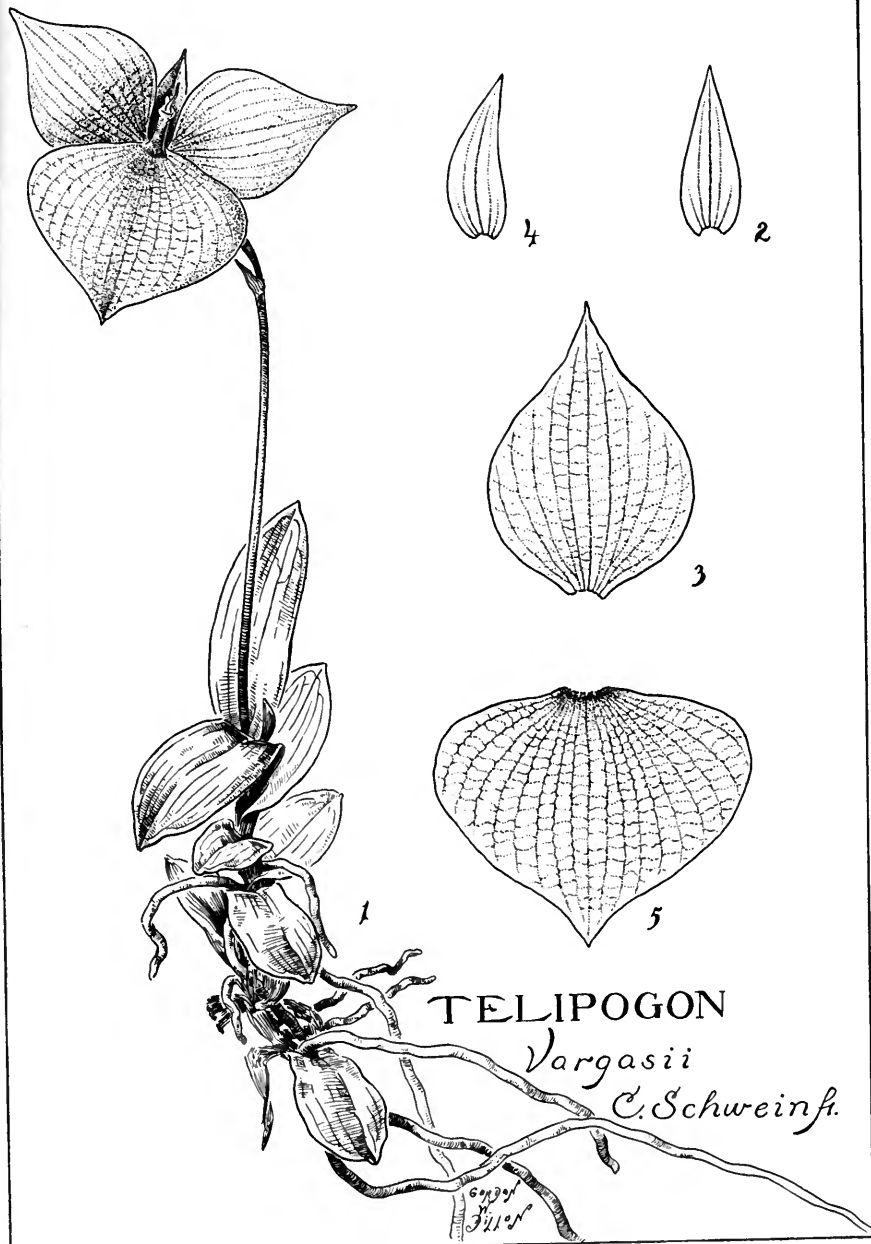


FIG. 187. *Telipogon Vargasii* C. Schweinf. 1, plant; $\times \frac{2}{3}$. 2, dorsal sepal, expanded; $\times 1$. 3, petal, expanded; $\times 1$. 4, lateral sepal, expanded; $\times 1$. 5, lip, expanded; $\times 1$.

and 7.6 mm. wide. Lateral sepals similar but slightly narrower, oblique, dorsally carinate. Petals much larger, very broadly ovate, short-acuminate, 11-nerved with cross-reticulations throughout, about 3.7 cm. long and 2.7 cm. wide. Lip transversely broad-ovate, acute and minutely apiculate, subtruncate at the base, 17-nerved with cross-reticulations throughout, about 3.3 cm. long and 4.2 cm. wide. Column long for the genus, stout, densely setose throughout, about 8.9 mm. high at the back.

Cuzco: Prov. of Convención, Hda. Potrero, Sapan-Sachayoc, in forest, *Vargas 2551*.

Telipogon Warscewiczii Reichb. f.

This concept, which was described only from two flowers, was apparently found in Ecuador (near Loxa), although it was cited by Kränzlin (*Ann. Naturh. Hofmus. Wien* 33: 26. 1919) from Peru.

TRICHOCEROS HBK.

Small to medium-sized epiphytes or terrestrials, recorded only from Colombia, Ecuador, Peru and Bolivia.

Plants with a more or less elongate rhizome, bearing very short pseudobulbous stems. Leaves 2 or more, distichously imbricating and sheathing the pseudobulb (which commonly bears 1 smaller blade), small, fleshy or coriaceous, unjointed. Inflorescences lateral, 1 or 2 at the base of each pseudobulb, simple, racemose above, commonly much exceeding the leaves; racemes loosely few- to several-flowered. Flowers more or less small, with spreading segments. Sepals subequal, free, spreading. Petals similar to the sepals (often narrower or broader). Lip usually 3-lobed (very rarely simple); lateral lobes spreading or erect, commonly narrow and retrorse; mid-lobe much larger, usually more or less ovate. Column very short and stout, wingless, footless, with a fimbriate clinandrium, and often long-setose in the rear. Anther attached to the erect rostellum, 2-celled. Pollinia 4, affixed to the slightly dilated apex of the linear stipe.

- A1. Lip simple, without lateral lobes, broadly obovate; inflorescences very short, little exceeding the leaves. *T. Tupaipi*
- A2. Lip deeply 3-lobed at the base, with oblong-ovate or obovate to linear lateral lobes; inflorescences commonly many times exceeding the leaves. I
- Ia. Lateral lobes of the lip linear or antenna-like.
T. parviflorus (*T. armillatus*, *T. muscifer*)
- 1b. Lateral lobes of the lip obliquely semiovate to round-obovate.
T. muralis var. *platyceros* (*T. platyceros*)

Trichoceros muralis Lindl. var. **platyceros** (Reichb. f.) C. Schweinf. Bot. Mus. Leaflet. Harvard Univ. 17: 58. 1955. *Trichoceros platyceros* Reichb. f. *Xen. Orch.* 1: 22, t. 9, fig. III. 1854.

Plant small to medium-sized, epiphytic. Roots stout, glabrous. Rhizome creeping, more or less concealed by close, tubular sheaths. Pseudobulbs small,

broadly ovoid, mostly concealed by sheaths or the bases of the imbricating leaves. Leaves 2 or 3, clustered at the base of the stems, suborbicular to elliptic-oblong, sessile at the clasping base, apiculate, up to about 4 cm. long and 1.4 cm. wide, coriaceous. Inflorescences up to 15.5 cm. high; peduncle slender, provided with 2 or 3 short, infundibuliform sheaths; raceme short, loosely up to 7-flowered. Flowers rather small, with spreading segments. Dorsal sepal cucullate, ovate-elliptic, acute, apiculate, 8–16 mm. long, up to 9 mm. wide. Lateral sepals similar, sometimes slightly longer. Petals similar to the sepals but often slightly broader, ciliolate throughout. Lip about equaling the other segments, 3-lobed at the base, up to 15 mm. long; lateral lobes relatively small, obliquely semiovate to round-obovate, rounded-obtuse; mid-lobe relatively large, obovate or oblong-obovate, rounded at the apex, sometimes with a minute apicule; disc more or less pilose throughout. Column minute, densely pilose.

Ancash: Prov. of Bolognesi, Chupa, mountain near Aquia, 3200–3250 meters, on stony soil, “rojo oscuras,” called “michimichi,” *Ferreyra* 7546.—Cajamarca, fide Schlechter, Fedde Repert. Beih. 9: 180. 1921. Also Ecuador (type).

Trichoceros parviflorus HBK. Nov. Gen. et Sp. 1: 337, t. 76. 1816; Lindl. Gen. & Sp. Orch. 174. 1833; Reichb. f. Xen. Orch. 1: 21, t. 9, figs. I–II, 1–6. 1854; C. Schweinf. Bot. Mus. Leaflet. Harvard Univ. 17: 60. 1955. *Trichoceros armillatus* Reichb. f. Bonpl. 4: 212. 1856; Xen. Orch. 1: 231, t. 97, fig. V. 1858. *Trichoceros muscifer* (as *muscifera*) Kränzl. Engler, Bot. Jahrb. 37: 387. 1906.

Plants extremely variable, commonly terrestrial in humus or on rocks (rarely epiphytic). Stem more or less elongate, ascending, sometimes branched, mostly concealed by close, tubular, not imbricating, evanescent sheaths, bearing (at more or less remote intervals) clusters of leaves surrounding a pseudobulb beneath which are 1 to several elongate, stout, fibrous roots. Leaves 2 to several, distichous, imbricating, unjointed, ovate to elliptic-oblong or oblong, sharply acute or acuminate, narrowed below to a sheathing base, spreading, commonly thickly coriaceous, often conduplicate in the dried specimen, up to 7 (rarely 9) cm. long and 2 cm. wide, supported below by 2 or 3 concave, ovate to lanceolate sheaths. Pseudobulbs small, more or less concealed by the leaves, broadly ellipsoid to oblong-cylindric, about 1–1.5 cm. high, commonly bearing a single rudimentary or small leaf at the summit, rarely 1-jointed near the summit and bearing (at the lower articulation) a well-developed blade. Inflorescences lateral from beneath the pseudobulb, 1 or 2 to each pseudobulb, racemose above, much surpassing the leaves, more or less erect to arcuate; peduncle slender, about 5 to more than 25 cm. long, with 2–4 remote, small, close, tubular sheaths; raceme few- (3-) to several- (18-) flowered, more or less loose below, the rachis up to 6 cm. long. Floral bracts small, ovate to ovate-lanceolate, acute or acuminate, much surpassed by the pedicellate ovary in the course of development. Flowers small, with spreading segments, the color varying from greenish or whitish green to pale yellow brown-lined, with the central portion and often the lip with its appendages dark red (the latter often barred). Dorsal sepal lanceolate-ovate or elliptic-ovate, concave,

acute or acuminate, 3- to 5-nerved, about 10-13 mm. long and 5-7 mm. wide. Lateral sepals similar but commonly slightly wider, dorsally more or less carinate. Petals elliptic, acute, 5- to 7-nerved, a little shorter than the sepals and equally wide (or somewhat narrower), with the margins minutely ciliolate. Lip deeply 3-lobed at the base, about 9-13.1 mm. long; lateral lobes linear or oblong-linear, obtuse, ciliate (especially above), 1-nerved, strongly retrorse in course of development; mid-lobe much larger, variable, elliptic-ovate to suborbicular-oval, acute to rounded and apiculate at the apex, usually 7-nerved, often with a fleshy, longitudinal thickening below in the middle, more or less pubescent or setose toward the base, about 6-9 mm. wide. Column very short and stout, protruding onto the lip, with a cluster of long bristles at the rear.

Peru: Habitat not recorded, *Pavón s.n.* (type of *T. armillatus*).—Cajamarca: Near Hualgayoc, beyond Hacienda La Tatoma, 2600 meters, on cliffs, *Weberbauer 4061*.—Cuzco: Prov. of Calca, Hda. "Urco," 2900 meters, on rocks, *Vargas 3051*. Prov. of Calca, Vilcabamba (along Paucartambo River), 2600 meters, in humus of forest slopes, *Vargas 4009*.—Huánuco: Cani, 7 miles northeast of Mito, about 2600 meters, "humus floor of thicket," *Macbride 3480*. Yanano, about 1800 meters, "floor of dense wood," *Macbride 3833*.—Junín: Prov. of Tarma, Agua Dulce, 2300 meters, on tree in low highland wood, *Woytkowski 35460*. Prov. of Tarma, above Huacapistana, *Weberbauer 2048*. Prov. of Tarma, between Palca and Carpapata, 2900 meters, "over boulders that have accumulated some humus," *Stork 10955*. Carpapata, above Huacapistana, about 2400 meters, on open hillside, *Killip & Smith 24345*. Huacapistana, 1800-2400 meters, epiphyte in thickets and open woods, *Killip & Smith 24220*. Same locality and altitude as the last, terrestrial, *Killip & Smith 24124*. Yanahuanca, about 3000 meters, on canyon ledge, "Michehuagte" or "Flor de Gato," *Macbride & Featherstone 1239*.—Puno: Sandía, 2100-2300 meters, on cliffs, *Weberbauer 542* (type of *T. muscifer*). Also Colombia (type of *T. parviflorus*), Ecuador and Bolivia.

Trichoceros Tupaipi Reichb. f. Linnaea 41: 33. 1876.

Plant small, apparently about 10 cm. or less high. Rhizome creeping, short, with numerous stout, elongate roots. Pseudobulbs apparently subapproximate, small, suborbicular-conic, unifoliate, less than 1 cm. high, surrounded below by 1 or 2 pairs of leaves. Leaves imbricating at the sheathing base, recurved and fleshy-coriaceous in the dried specimen, apparently lanceolate to elliptic-oblong ("ligulate-triangular"), commonly more or less conduplicate in the dried specimen, acuminate, apparently about 3 cm. or less long. Inflorescences short, about 7.6 cm. or less high, racemose above; raceme loose, up to 3-flowered. Floral bracts small, ovate, apiculate, amplexicaul. Sepals similar, oblong-ovate ("oblong-triangular"), acute, 5-nerved, the dorsal sepal apparently a little shorter and broader than the laterals. Petals ovate-elliptic, acute, 7-nerved, apparently slightly longer than the lateral sepals and markedly broader than the dorsal

sepal. Lip suborbicular-obovate ("cuneate-oblong"), abruptly apiculate at the broad apex, 9-nerved. Column short, stout, with the clinandrium setose-fimbriate.

Peru: Habitat not recorded, *Farris s.n.* Huansaquasi, *Dombey s.n.* (without flower).

This description was largely compiled by an examination of a drawing with floral analysis from the Reichenbach Herbarium, as no other record of this species was available.

STELLILABIUM Schltr.

A very small, perhaps monotypic genus, confined, in South America, to Peru.

Plant small, epiphytic, with an abbreviated rhizome and a very short stem. Leaves several, approximate, articulated, narrow, their sheaths entirely concealing the stem. Inflorescence subequaling or somewhat surpassing the leaves, racemose at the apex; peduncle very slender, relatively elongate; raceme contracted, densely several-flowered. Flowers very small, not wide open. Sepals ovate or oval-ovate, acute. Petals smaller, oblong ("ligulate"), rounded at the apex, minutely serrulate. Lip 3-lobed near the base, triangular in outline, entirely velvety-papillose, with 3 clusters of stellate hairs; lateral lobes retrorse-spreading, relatively small, ovate-oblong; mid-lobe relatively large, oblong-ovate ("oblong from a broader base"), apiculate at the rounded apex. Column very short and stout, dilated upward, with a cluster of elongate papillae or bristles on either side at the apex. Anther very slender, cordiform. Pollinia 4, compressed, oblong-cylindric (the 2 outer smaller), inserted at the dilated apex of the linear stipe.

Stellilabium astroglossum (Reichb. f.) Schltr. Die Orchideen 530. 1914. *Telipogon astroglossus* Reichb. f. Xen. Orch. 1: 16, t. 7, fig. II, 12-19. 1854; Kränzl. Ann. Naturh. Hofmus. Wien 33: 15. 1919. *Trichoceros astroglossus* Lindl. ex Benth. & Hook. f. Gen. Pl. 3: 588. 1883.

Plant slender, delicate, about 5-10 cm. high. Stem abbreviated, entirely concealed by the short, approximate leaf-sheaths. Leaves 3 or 4, linear-lanceolate, acute, slightly narrowed at the complicate base, up to 5 cm. long and 6 mm. wide. Inflorescence terminal, slightly exceeding the leaves, racemose above, about 6 cm. tall; peduncle very slender, with a single small sheath in the middle; raceme abbreviated, densely few-flowered. Floral bracts ovate-triangular, acute, about a fourth as long as the filiform pedicellate ovary. Flowers very small, little spreading, hyaline. Dorsal sepal ovate or oblong-ovate, acute, about 3-4 mm. long and 2.5 mm. wide, 1-nerved. Lateral sepals similar, broadly ovate, oblique, apparently slightly shorter and broader than the dorsal sepal. Petals broadly oblong ("ligulate"), obtuse or rounded ("retuse") at the apex, minutely serrulate or ciliolate, 1-nerved, slightly shorter than the sepals and much narrower. Lip triangular in outline when expanded, with a very short and broadly cuneate base, lightly 3-lobed near the base, about 2.5 mm. long and equally broad, according to Kränzlin; lateral lobes relatively small, erect in natural position, retrorse-

spreading when expanded, ovate-oblong ("ligulate"), rounded at the apex; mid-lobe much larger, oblong-ovate, rounded and apiculate at the tip; disc entirely pilose on the upper surface, with 3 clusters of stellate radiating bristles (the anterior central one largest). Column very short and stout, protruded onto the lip, dilated upward, with a cluster of long bristles or setae on each side at the apex.

Amazonas: Near Chachapoyas, *Mathews s.n.*

No material of this concept was available.

DICHAEA Lindl.

Inconspicuous epiphytes extending from Mexico and the West Indies through Central America, and in South America as far as Brazil, Bolivia and Peru.

Plants small to medium-sized, with more or less elongate, leafy stems. Stems often pendent, concealed by the leaf-sheaths or the sheathing bases of the leaves. Leaves numerous, distichous, spreading or reflexed, articulated or not articulated, very short to relatively long. Peduncles axillary, 1-flowered, solitary, commonly much shorter than the leaves. Flowers very small to (rarely) medium-sized. Perianth segments more or less spreading. Sepals subequal, free, the lateral ones oblique and forming an inconspicuous mentum with the short column-foot. Petals similar to the sepals or often smaller. Lip rigidly joined to the column-foot, sessile to long-clawed, concave, varying from ovate to broadly triangular or anchor-shaped and often produced on each side into a more or less prominent lobe, angle or tooth. Column erect, short, commonly exalate, produced at the base into a short or minute foot, often with a prominent ligule in front. Anther terminal, opercular, incumbent. Pollinia 4, ovoid, attached in pairs to a small stipe.

- A1. Lamina of the leaves not articulated to a sheath, i.e., not deciduous.
D. muricata var. *maculata* (*D. maculata*)
- A2. Lamina of the leaves articulated to a sheath, i.e., deciduous. I
- Ia. Ovary pilose, capsule echinate. 1
- Ib. Ovary and capsule smooth. 3
- 1a. Plant robust; leaves oblong to elliptic-oblong, commonly¹ 10 mm. or more wide; sepals 11 mm. or more long. *D. Morrisii*
- 1b. Plant relatively slender; leaves linear-lanceolate to linear, 6 mm. or less wide; sepals 6 mm. or less long. 2
- 2a. Stems very short, 3-7 cm. long; leaves narrowly linear, 2.5 mm. or less wide.
D. humilis
- 2b. Stems relatively elongate, 10-50 cm. long; leaves lanceolate-linear, 4 mm. or more wide. *D. laxa*
- 3a. Leaf-blades very narrowly linear or acicular, many times longer than broad; lip more or less emarginate and apiculate. 4
- 3b. Leaf-blades linear-oblong or broader, 4.4 cm. or less long; lip acute to rounded at the apex, not distinctly emarginate. 5
- 4a. Plant relatively large, stems 20 cm. or more long; leaves 5-12.5 cm. long.
D. calyculata

¹ Rarely a leaf may be found in *D. Morrisii* which is only 5 mm. wide in the dried specimen, but such a blade is unusual in any collection.

- 4b. Plant very small, stems about 7 cm. or less long; leaves about 1.1 cm. or less long. *D. tenuis*
- 5a. Lower half of the lip with a keel or a longitudinal callus. 6
- 5b. Lower half of the lip without any distinct keel or longitudinal callus. 7
- 6a. Lip with the lower half broadly cuneate, narrowed toward the base.
D. campanulata
- 6b. Lip with the lower half broadly auriculate-rounded on each side.
D. graminoides
- 7a. Anterior portion of the lip broadly rounded, with a truncate, subretuse apex.
D. ancoraelabia
- 7b. Anterior portion of the lip with an acute or acuminate apex. . . *D. panamensis*

Dichaea ancoraelabia C. Schweinf. Am. Orch. Soc. Bull. 16: 614, t., 1947. Figure 188.

Plant medium-sized for the genus, recalling *D. graminoides* (Sw.) Lindl. Stems simple or branched, erect to flexuous or arcuate, up to 24 cm. or more long, entirely concealed by imbricating leaf-sheaths. Leaves numerous, distichous, rather loose, articulated, elliptic-oblong, acute, minutely apiculate, up to 2.4 cm. long and 6 mm. wide, smooth on the margin. Inflorescences axillary, 1-flowered, the free portion of the peduncle less than one half as long as the leaf-blades. Flower rather small, campanulate, white with pale purple markings. Ovary smooth. Dorsal sepal ovate, acute, concave, 3-nerved, about 5.1 mm. long and 4 mm. wide. Lateral sepals obliquely ovate, acute or short-acuminate, concave, markedly longer than the dorsal sepal and equally wide. Petals ovate-elliptic, acute, slightly longer than the dorsal sepal but narrower. Lip anchor-shaped, concave, from a long-cuneate base abruptly dilated above, broadly rounded in front with a subtruncate, minutely apiculate apex, the anterior part terminating on each side in an obliquely triangular, retrorse lobule, about 7 mm. long and broad across the lobules. Column short, stout, about 2.3 mm. high at the back.

Loreto: Right bank of Río Santiago, above Pongo de Manseriche, 200 meters, common, *Mexia* 6221.

Dichaea calyculata Poepp. & Endl. Nov. Gen. ac Sp. 2: 4, t. 106. 1838; Cogn. Martius Fl. Bras. 3, pt. 6: 498. 1906. *Epithecia calyculata* Schltr. Orchis 9: 26. 1915.

Plant medium-sized for the genus, epiphytic. Stems solitary or two, erect or ascending, simple or very rarely bifurcate, spreading, arcuate or deflexed above, entirely concealed by imbricating leaf-sheaths, 20-45 cm. long. Leaves numerous, distichous, articulated, very narrowly linear, more or less recurved, acute or acuminate and apiculate, 5-12.5 cm. long, about 2-3 mm. wide, loose to rather dense. Inflorescences axillary, 1-flowered, much shorter than the leaves; peduncle capillary, erect or spreading, below with several acuminate, scarious sheaths, and above with 1 bract which loosely envelops the smooth ovary. Flowers small, sessile, white with purple nerves or yellowish, the segments strongly concave, erect and subconnivent. Dorsal sepal obovate-oblong, rounded and minutely apiculate at the apex, about 5-7.8 mm. long and 2.75-4 mm. wide. Lateral sepals very similar to the dorsal sepal but a little broader or narrower, suboblique.

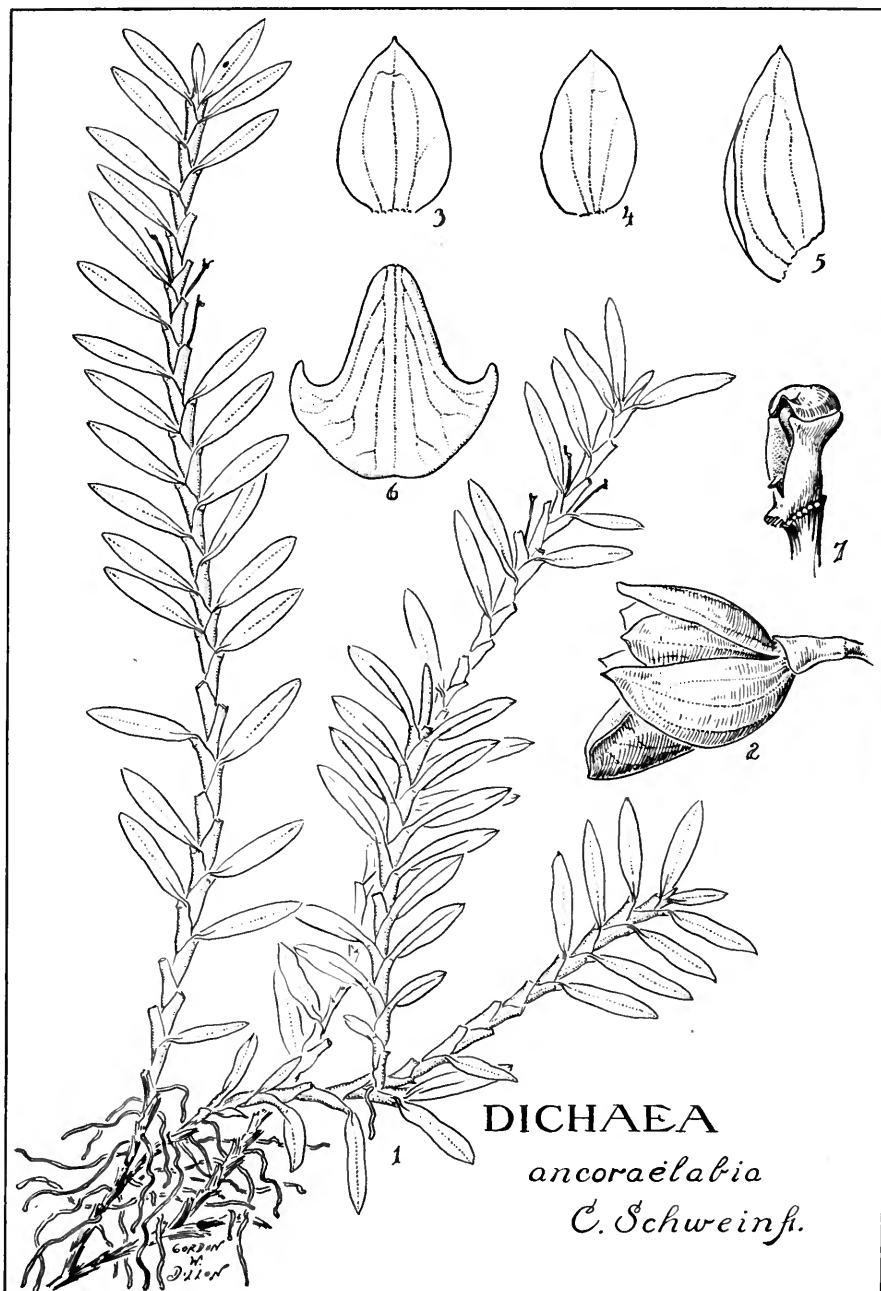


FIG. 188. *Dichaea ancoraelabia* C. Schweinf. 1, plant; $\times \frac{2}{3}$. 2, flower, natural position; $\times 4$. 3, dorsal sepal; $\times 4$. 4, petal; $\times 4$. 5, lateral sepal; $\times 4$. 6, lip, spread out; $\times 4$. 7, column, oblique view; $\times 8$.

Petals narrowly obovate-oblong, subrounded and minutely apiculate at the apex, a little shorter and narrower than the lateral sepals, minutely ciliate. Lip fleshy, sessile, broadly obovate-deltoid, concave, abruptly dilated above with a retrorse, uncinat angle on each side, broadly rounded-subtruncate in front with an incurved, emarginate and minutely apiculate apex, about 4.5–6 mm. long and 4–8.2 mm. wide above when expanded. Column rather long, stout, subclavate, 3–4.2 mm. high, with an elongate linear-subulate rostellum.

Huánuco: Near Cuchero (Cochero) and Pampayaco (Pampayacu), epiphyte, *Poeppig 1092* (type).—San Martín: In jungle east of Tingo María, 625–1100 meters, *Allard 20739, 20742*. On ridge east of Tingo María, *Allard 20940*.

Dichaea campanulata C. Schweinf. *Am. Orch. Soc. Bull.* 16: 346, t., 1947. Figure 189.

Plant epiphytic, small to medium-sized for the genus, lax. Stems spreading, suberect, flexuous or arcuate, simple or branched, rarely up to 30 cm. or more long, entirely concealed by loose, imbricating leaf-sheaths. Leaves numerous, small, distichous, articulated, rather loose, oblong to elliptic-oblong, commonly acute or apiculate, up to 2 cm. long (rarely) and 5 mm. wide. Inflorescences short, in the axils of upper leaves, much shorter than the leaves; peduncle filiform, 1-flowered, with 3 small, loose, imbricating, infundibuliform sheaths at the base. Ovary sessile, smooth, surrounded by a loose, infundibuliform sheath. Flower very small, with spreading, membranaceous segments, snow-white and carmine, pinkish or pinkish white. Dorsal sepal oblong-ovate or elliptic-ovate, acute, apiculate, concave, about 4.2–4.5 mm. long and 2–2.5 mm. wide. Lateral sepals similar to the dorsal sepal and sometimes slightly broader, suboblique. Petals oblong-elliptic, acute, commonly slightly smaller than the sepals, often somewhat oblique. Lip deeply concave, a little shorter than the sepals but much wider, broadly rhombic-obovate, rounded in front with a more or less prominent apicule, cuneate below to a sessile base, with the outer angle on each side subacute (or lobulate) and spreading, about 3.5–4 mm. long and 5.1–6 mm. wide when expanded; disc with the mid-nerve carinate-thickened about to the middle. Column very short and stout, with a large stigmatic cavity below and a cucullate clinandrium above.

Ayacucho: Río Apurimac Valley, near Kimpitiriki, 400 meters, at edge of dense forest along beach, *Killip & Smith 22978*.—Junín: Chanchamayo Valley, 1500 meters, *Schunke 524*. East of Quimiri Bridge, near La Merced, 800–1300 meters, in dense forest, *Killip & Smith 23955* (fruit). Tarma, Vitoc, "Eyebrow of the jungle," 1800 meters, *Woytkowski 3*.—Loreto: Vicinity of Iquitos, 100 meters, on living tree by river, *Klug 10014* (type).

Dichaea graminoides (Sw.) Lindl. *Gen. & Sp. Orch.* 209. 1833; *Fawc. & Rendle, Fl. Jam.* 1: 138, t. 30, figs. 8–12. 1910. (Not *D. graminoides* Cogn. *Martius Fl. Bras.* 3, pt. 6: 492, t. 102, fig. 2. 1906.) *Epidendrum graminoides* Sw. *Prod. Veg. Ind. Occ.* 125. 1788. *Cym-*

bidium graminoides Sw. Nov. Act. Upsal. 6: 71. 1799; Fl. Ind. Occ. 1459. ?1806. *Epithecia graminoides* Schltr. Orchis 8: 101. 1914.

Plant small to medium-sized, erect to lax or arcuate, epiphytic or on rocks. Stems up to 30 cm. or more long, simple or somewhat branched below, entirely concealed by leaf-sheaths, the lower portion destitute of leaf-blades. Leaves distichous, linear-oblong to elliptic-oblong, acute and prominently apiculate, articulated, wide-spreading, minutely ciliolate above, up to 4.4 cm. long, about 4–6 mm. wide, rather loose. Inflorescences axillary, 1-flowered, about half as long as the leaves or less; peduncle capillary, straight or arcuate. Ovary smooth. Flower medium-sized for the genus, whitish. Segments campanulate. Dorsal sepal elliptic-lanceolate, acute or short-acuminate, 5.9–7.9 mm. long, 2.2–3 mm. wide, 3- or indistinctly 5-nerved. Lateral sepals similar to the dorsal sepal but slightly longer and either narrower or more or less wider, lightly oblique. Petals similar to the sepals and either slightly smaller or larger. Lip shorter than the other segments but broader, 4.5–5.8 mm. long, 3.2–5.8 mm. wide above, divided by a constriction near the base into a broadly deltoid-ovate, acute to acuminate anterior part and a shorter, narrower basal part which is auriculate-rounded on each side; disc with a prominent central, longitudinal callus through the lower part. Column small, stout, dilated upward.

Peru, probably, *Poeppig 2024*, fide Kränzlin, Engler, Pflanzenr. IV. 50 (Heft 83), 47. 1923. Also the West Indies (type), Mexico, Guatemala and Nicaragua.

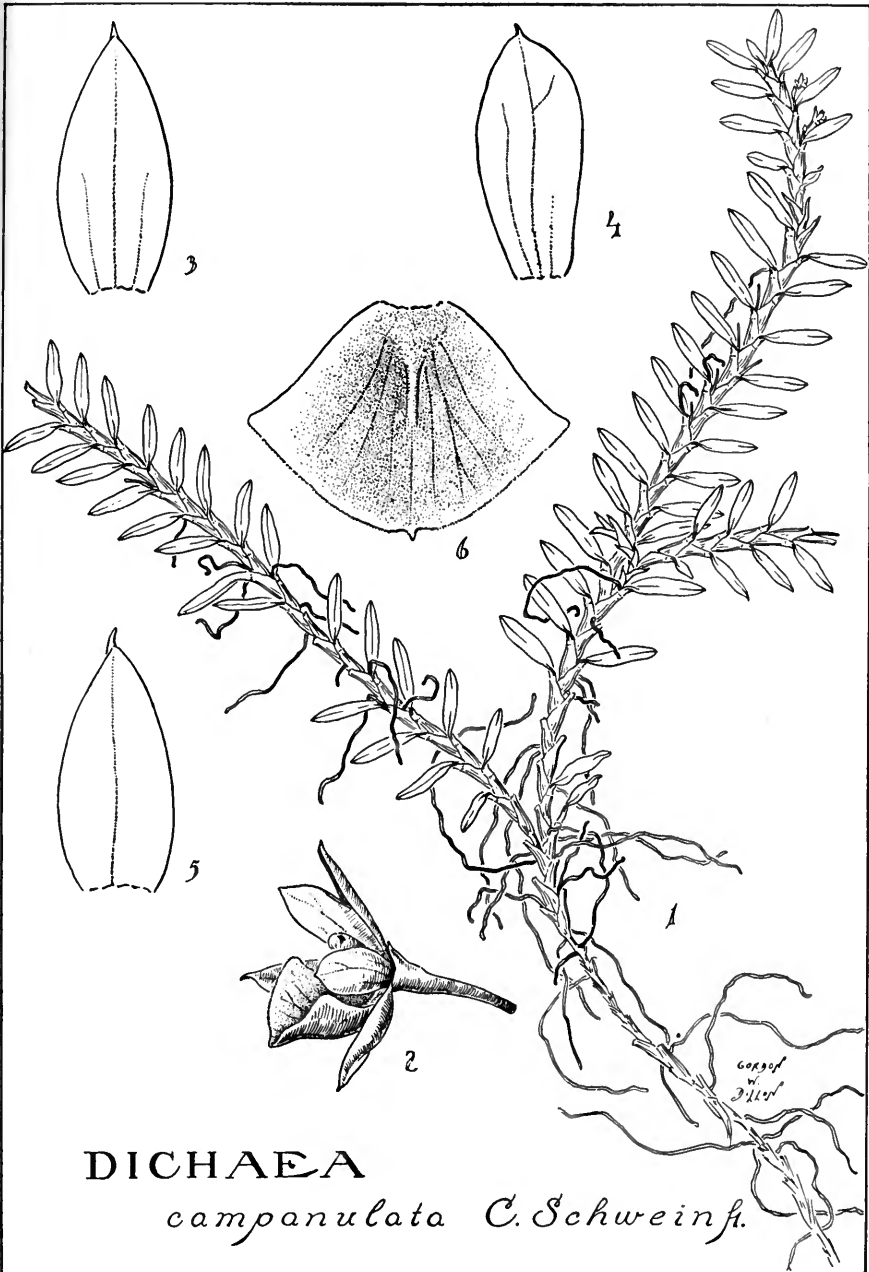
Dichaea humilis Cogn. Martius Fl. Bras. 3, pt. 6: 502. 1906. *Epithecia humilis* Schltr. Orchis 9: 27. 1915.

Plant small, epiphytic. Stems numerous, erect or ascending to arcuate, short, 3–7 cm. long, with erect, densely fastigate branches. Leaves numerous, densely distichous, articulated, narrowly linear, sharply acute and short-apiculate, minutely ciliate above, more or less falcate, usually conduplicate, 1.5–2.5 cm. long, 1.5–2.5 mm. wide. Inflorescences subterminal; peduncle very short, slender, erect, 3–5 mm. long. Ovary shortly and very densely muricate. Flowers small, erect or nodding, purplish brown. Sepals about equally long, oblong, short-acuminate, somewhat concave, 5.5–6 mm. long, 1.75–2 mm. wide, submembranaceous, the lateral sepals lightly oblique. Petals narrowly lanceolate, acute, a little shorter and narrower than the sepals. Lip shorter and broader than the other segments, broadly rhomboid from a rather long and broadly clawed base, apex broadly triangular-subrounded and minutely apiculate, the lateral angle on each side sharply acute, about 4 mm. long and equally wide when expanded. Column short, stout, dilated above, about 2 mm. high.

Loreto: Near Cerro de Ponasa, 1200 meters, on trees, *Ule 6666*.

No material of this species was available.

Dichaea laxa Poepp. & Endl. Nov. Gen. ac Sp. 2: 4, t. 105, figs. a–d. 1838; Cogn. Martius Fl. Bras. 3, pt. 6: 500. 1906. *Epithecia laxa* Schltr. Orchis 9: 26. 1915. *Fernandezia laxa* Ruiz & Pav. Syst. Veg. Fl. Peruv. et Chil. 1: 240. 1798, fide Schltr. l.c.



DICHAEA

campanulata C. Schweinf.

FIG. 189. *Dichaea campanulata* C. Schweinf. 1, plant; $\times \frac{2}{3}$. 2, flower; $\times 4$. 3, dorsal sepal; $\times 8$. 4, petal; $\times 8$. 5, lateral sepal; $\times 8$. 6, lip; $\times 8$.

Plant small to medium-sized, lax, epiphytic. Stems solitary or few, ascending to pendent, flexuous or arcuate, simple or sometimes slightly branched, 10–50 cm. long. Leaves numerous, distichous, articulated, linear-ligulate or lanceolate-linear, acute and rather long-aristate, minutely ciliate above, 2–3.5 cm. long, 4–6 mm. wide, rather loose or distant. Inflorescences axillary, filiform, 1-flowered, straight or arcuate, 10–13 mm. long, a little longer than the leaf-sheaths. Ovary shortly and densely echinate. Flowers small, pale violet, sessile with incurved, rather connivent, submembranaceous segments. Dorsal sepal oblong-lanceolate, acuminate, 6 mm. long, 2 mm. wide, rather concave. Lateral sepals similar to the dorsal sepal but shorter and slightly narrower, suboblique. Petals narrowly ligulate, acuminate, as long as the lateral sepals but slightly narrower. Lip as long as the lateral sepals and petals, about 5 mm. long, from a short, filiform claw abruptly dilated into a broadly ovate, cordate-sagittate lamina (about 3 mm. wide) which is obliquely mucronate in front, with the sides terminating in a subulate, reflexed-curved lobule. Column short, stout, clavate, lightly arcuate, about 2 mm. high.

Huánuco: Near Pampayaco (Pampayacu) and Cuchero (Cochero),
Poeppig 1009.

No material of this species was accessible.

Dichaea Morrisii Fawc. & Rendle, Journ. Bot. 48: 107. 1910;
Fl. Jam. 1: 139, t. 30, figs. 31–36. 1910. *Epiethecia Morrisii* Schltr.
Orchis 9: 26. 1915.

Plant very stout for the genus, epiphytic, medium-sized to large. Stems solitary or several and caespitose, up to 45 cm. long, erect to arcuate or flexuous, entirely concealed by imbricating leaf-sheaths from which the leaf-blades have commonly fallen in the lower portion, the sheathed stem of the upper portion (in the dried specimen) about 10–15 mm. wide. Leaves numerous, distichous, articulated, wide-spreading, oblong to elliptic-oblong (rarely linear-oblong), subdistant, about 2.7–7.5 cm. long and 5 (very rarely) –15 mm. wide, rounded and mucronate at the sometimes oblique apex with minutely ciliate upper margins. Inflorescences short, axillary, 1-flowered, the peduncle about 8 mm. long. Ovary and capsule densely echinate. Flower large for the genus, rather fleshy, pale or yellow-green often striped with lavender and lip lavender, or greenish white with brown dots and rays. Dorsal sepal oblong-lanceolate, sharply acute or acuminate, concave, minutely ciliate, 11–17 mm. long, about 5 mm. wide. Lateral sepals obliquely ovate or lanceolate-ovate, acuminate, as long as the dorsal sepal but broader. Petals obliquely elliptic-lanceolate or oblong-lanceolate, acuminate, a little shorter and narrower than the dorsal sepal. Lip concave with a reflexed apex, anchor-shaped, about 9 mm. or more long, from a linear-oblong claw abruptly dilated above, abruptly acute or apiculate in front, the lateral lobe on each side retrorse, acute or obtuse and more or less elongate. Column short, stout, arcuate.

Cuzco: Prov. of Convención, Hda. Potrero, Sapan-Sachayocc, 2200 meters, in forest, *Vargas 2533*. Also Jamaica (type), Sto. Domingo, Costa Rica, Panama and Colombia.

Dichaea muricata (Sw.) Lindl. var. *maculata* (Poepp. & Endl.)
C. Schweinf. Bot. Mus. Leafl. Harvard Univ. 16: 17. 1953. *Dichaea*

maculata Poepp. & Endl. Nov. Gen. ac Sp. 2: 3, t. 105, figs. 1-6. 1838; Cogn. Martius Fl. Bras. 3, pt. 6: 489. 1906; Kränzl. Engler, Pflanzenz. IV. 50 (Heft 83), 40. 1923.

Plant medium-sized to large, epiphytic, lax, variable throughout. Stems pendent, simple or more rarely branched, straight, lightly arcuate or flexuous, 7-120 cm. long, entirely concealed by the imbricating, sheathing bases of the leaves, ancipitous and more or less robust. Leaves very numerous, distichous, small, commonly very dense, either horizontally spreading or somewhat deflexed, not articulated; lamina oblong or elliptic-oblong, obtuse to rounded at the apex, apiculate, prominently ciliolate above, about 9-22 mm. long and 4-8 mm. wide. Inflorescences axillary, 1-flowered, suberect to arcuate-recurved, much shorter than the leaves; peduncle subfiliform, about 1 cm. long, clothed at the base with 2 or 3 short imbricated sheaths. Ovary and capsule densely echinate. Flowers rather small to medium-sized, variable in color (pale blue with large violet spots, dark purple, or cream-color spotted with lilac), campanulate, more or less fleshy. Dorsal sepal oblong-lanceolate, acute, concave, about 9-10.2 mm. long and 2.5-4 mm. wide. Lateral sepals obliquely lanceolate, acuminate, a little larger or smaller than the dorsal sepal. Petals subelliptic, acute or shortly acuminate, markedly shorter than the dorsal sepal and as wide or nearly as wide as the lateral sepals. Lip from a long cuneate base or a short, oblong, fleshy claw (attached to and continuous with the column) dilated into an obovate-suborbicular lamina which is rounded above with a more or less prominent mucro, 7-11 mm. long and 8.8-10 mm. wide when expanded, on each side terminating in a narrowly triangular, acuminate, spreading or retrorse lobule. Column short, stout, with a prominent lanceolate or subquadrate-triangular ligule below.

Peru: Habitat not indicated, *Pavón s.n.*—Cuzco: Prov. of Convención, "alturas de Pintobamba," 2700 meters, pendent epiphyte in forest, *Vargas 3244*.—Huánuco: Near Pampayaco (Pampayacu) and Cuchero (Cochoero), in dark humid woods, *Poeppig 1479* (type).—Junín: Pichis Trail, Yapas, 1350-1600 meters, in dense forest, *Killip & Smith 25490*. Río Paucartambo Valley, near Perene Bridge, 700 meters, in dense forest, *Killip & Smith 25249*. Tarma, Vitoc, 1400 meters, *Woytkowski 3A*.—Loreto: Left bank of Río Santiago, above Pongo de Manseriche, 200 meters, *Mexia 6237*. Near Tarpoto, *Spruce 4601*. Puerto Melendez, below Pongo de Manseriche, on banks of the Marañon River, 155 meters, *Tessmann 4766*.—San Martín: San Roque, 1350-1500 meters, *Williams 7202*. Also Costa Rica, fide Kränzlin (l.c.).

Dichaea panamensis Lindl. Gen. & Sp. Orch. 209. 1833; Kränzl. Engler, Pflanzenz. IV. 50 (Heft 83), 51. 1923. *Epithecia panamensis* Schltr. Orchis 9: 25. 1915. *Dichaeopsis panamensis* Schltr. Beih. Bot. Centralbl. 36, Abt. 2: 519. 1918. Figure 190.

Plant small to medium-sized, epiphytic. Stems simple or rarely branched, commonly several and caespitose, erect or less commonly arcuate or flexuous, en-

tirely concealed by imbricating leaf-sheaths, rarely up to 27 cm. long. Leaves numerous, distichous, articulated, rather loose, linear or oblong-linear (rarely elliptic-oblong), acute, apiculate, spreading, commonly glaucous, up to 4 cm. long (rarely) and 5 mm. wide, commonly in zones of more or less different lengths. Inflorescences axillary, 1-flowered, usually much shorter than the leaves; peduncles filiform. Flowers small to medium-sized, campanulate, variable in color (whitish, greenish or yellowish, often with red or purple spots). Ovary and capsule glabrous. Dorsal sepal oblong or oblong-lanceolate, acute or acuminate, concave, about 4–7.3 mm. long and 2–2.8 mm. wide. Lateral sepals triangular-lanceolate, very oblique, acuminate, deeply concave below, somewhat longer and broader than the dorsal sepal. Petals obliquely ovate or oblong-ovate, acute, shorter and much wider than either sepal. Lip obovate-anchoriform, about 4.3–9 mm. long and nearly as wide or narrower across the lateral lobules, from a broadly oblong claw abruptly dilated near the middle or below into a broadly ovate, acute or acuminate lamina with a sharp, spreading-retrorse, more or less prominent angle or lobule on each side. Column short, stout, with a small recurved ligule below.

Junín: East of Quimiri Bridge, near La Merced, 800–1300 meters, in dense forest, *Killip & Smith 25412*. Also Mexico and Central America to Panama (type), Colombia and Venezuela.

Dichaea tenuis C. Schweinf. *Am. Orch. Soc. Bull.* 21: 510, t., 1952. Figure 191.

Plant small and slender, epiphytic, up to about 7 cm. or more high. Stems apparently caespitose, slender, commonly arcuate, up to 7 cm. in length, entirely concealed by tubular, leaf-bearing sheaths which waste into fibres at the base. Leaves numerous, distichous, spreading, very fleshy, acicular, semiterete or subquadrate in section with a deep groove on the upper surface, articulated, acuminate, more or less recurved above, about 9–11 mm. long. Inflorescences axillary on the upper part of the stem; peduncle filiform, distinctly shorter than the subtending leaf. Flower subglobose in natural position, with the subfleshy perianth-segments seemingly connivent. Ovary smooth. Sepals and lip concave in natural position. Dorsal sepal oblong-ovate, acute, about 3 mm. long and 1.6 mm. wide. Lateral sepals obliquely elliptic-ovate, acute, somewhat longer and broader than the dorsal sepal. Petals ovate-elliptic, acute, slightly shorter and broader than the dorsal sepal. Lip anchor-shaped, from a cuneate-unguiculate base dilated into an abruptly crescentiform anterior portion, very broadly rounded above and abruptly apiculate in the center, about 3.1 mm. long and 3.8 mm. wide across the disc when expanded. Column very short and stout, about 1.4 mm. high at the back.

San Martín: In a deep ravine near the top of a ridge east of Tingo María, 525–1100 meters, on fallen tree, *Allard 21577*.

FIG. 190. *Dichaea panamensis* Lindl. Plant; $\times 1$. 1, flower, spread open, side view; $\times 3$. 2, lateral sepal; $\times 3$. 3, dorsal sepal; $\times 3$. 4, petal; $\times 3$. 5, column, side view; $\times 3$. 6, pollinia and stipe; much enlarged.



DICHAEA

tenuis

C. Schweinf.

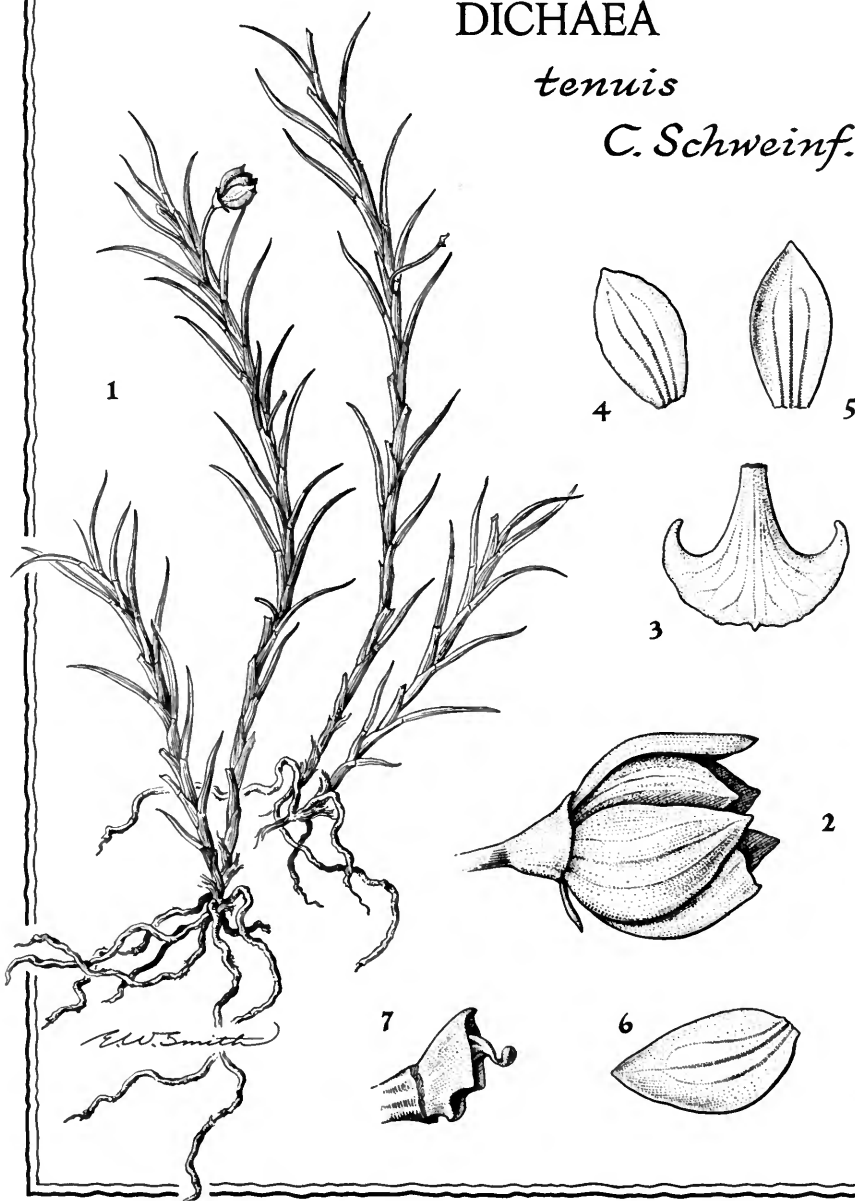


FIG. 191. *Dichaea tenuis* C. Schweinf. 1, plant; $\times 1\frac{1}{2}$. 2, flower from side, natural position; $\times 9$. 3, lip expanded; $\times 7$. 4, petal; $\times 7$. 5, dorsal sepal expanded; $\times 7$. 6, lateral sepal expanded; $\times 7$. 7, column from side; $\times 7$.

PACHYPHYLLUM HBK.

Inconspicuous, minute to medium-sized epiphytes without pseudobulbs, extending from Costa Rica and Panama to Colombia, Ecuador, Peru and Bolivia.

Stems short or long, simple to more or less branched, erect to arcuate and pendent, often caespitose, entirely concealed by densely imbricating leaf-sheaths. Leaves distichous, articulated, numerous, short, fleshy, spreading, often conduplicate and recurved. Inflorescences axillary, short, racemose, few-flowered or reduced to one flower. Flowers small to minute, shortly pedicelled. Sepals free or more or less connate, equal or nearly so. Petals similar to the sepals, often broader. Lip erect, simple or obscurely 3-lobed, longitudinally concave, more or less adnate to the sepaline tube, the disc usually provided in the middle or below with a pair of short, broad keels or calli. Column very short, stout, dilated into a large petaloid clinandrium. Anther opercular, incumbent. Pollinia 2, obovoid-oblong, sessile on a small gland.

- A1. Petals and anterior portion of the lip minutely denticulate; anterior portion of the lip distinctly narrower than the basal portion and often recurved.
P. Pastii
- A2. Petals and anterior portion of the lip entire; anterior portion of the lip only slightly narrower than the basal portion or broader. 1
- Ia. Leaves elliptic or oval to oblong-elliptic, never equitant or conduplicate. . . 1
- Ib. Leaves not elliptic (sometimes broadly oblong) in outline, often conduplicate or equitant. 3
- 1a. Disc of the lip naked, i.e., destitute of lamellae or tubercles. . . *P. parvifolium*
- 1b. Disc of the lip with a pair of prominent lamellae or tubercles. 2
- 2a. Plant relatively small and slender, leaves 8 mm. or less long; lip broadly rounded at the apex. *P. gracillimum*
- 2b. Plant relatively large and stout, leaves 11 mm. or more (commonly 15 mm.) long; lip strongly acute or acuminate. *P. brevicornatum*
- 3a. Sepals, petals and lip strongly adnate into a tube below. 4
- 3b. Sepals, petals and lip free or adnate only at the very base. 5
- 4a. Leaves fimbriate-ciliate; lip broadly ovate, acute or subacute, with 2 small basal calli. *P. muscoides*
- 4b. Leaves entire, smooth on the margin; lip broadly obovate, strongly obtuse or rounded at the apex, with 2 large triangular lamellae near the middle.
P. tenue
- 5a. Leaves triangular when seen from the side; lip obscurely 3-lobed with a fold on each side. *P. capitatum*
- 5b. Leaves oblong, ligulate, or semilunate when seen from the side; lip strictly simple. 6
- 6a. Lip rhombic-ovate or rhombic-ligulate, with a pair of short, fleshy calli; leaves commonly conduplicate. *P. distichum*
- 6b. Lip oblong, obovate-oblong or pandurate. 7
- 7a. Leaves apparently not conduplicate; lip oblong, obtuse. . . . *P. lycopodioides*¹
- 7b. Leaves distinctly conduplicate; lip strongly acute or mucronate. 8

¹ This species, of which we have not seen any authentic material, is rather obscure and may be referable to *P. distichum*.

- 8a. Plant relatively tall, 15 cm. or more high; leaf-sheaths shining, transversely rugose; leaves about 5 mm. wide in natural position. *P. serra*
- 8b. Plant relatively short, about 9 cm. or less high; leaf-sheaths not transversely rugose; leaves about 2-3 mm. wide in natural position. *P. pectinatum*

Pachyphyllum brevicornatum Schltr. Fedde Repert. Beih. 9: 115. 1921; Mansf. Fedde Repert. Beih. 57: t. 130, nr. 510. 1929.

Plant large for the genus, pendent, up to 53 cm. or more long. Stems flexuous or arcuate, more or less branched, rather slender, entirely or mostly concealed by loose, infundibuliform leaf-sheaths. Leaves small, very numerous, distichous, articulated, wide-spreading, elliptic to elliptic-oblong ("obliquely oblong"), acute or subacute and prominently mucronate, minutely ciliolate near the apex, fleshy, 1.1 (rarely) -2.3 cm. long, up to 7.5 mm. wide, rather loose. Inflorescences numerous, axillary, shorter than the leaves, commonly 3- or 4-flowered above; floral bracts spreading, amplexicaul, triangular-lanceolate to ovate-triangular, acuminate, the lower ones successively larger. Flowers rather large for the genus, white or primrose yellow, fleshy, with wide-spreading or recurved segments, slightly connate below. Dorsal sepal elliptic-lanceolate or oblong-lanceolate, acute, mucronate, dorsally strongly carinate, about 6 mm. long and 1.5-1.9 mm. wide. Lateral sepals obliquely oblong-lanceolate, more or less lightly falcate, acute, mucronate, dorsally carinate, much longer and slightly wider than the dorsal sepal, considerably connate below. Petals obliquely oblong-lanceolate, acute, mucronate, similar to the dorsal sepal but shorter and either slightly narrower or broader. Lip with the claw adnate to the sepaline tube; free portion lanceolate-elliptic, sharply acute, about 5-5.5 mm. long and 2-2.2 mm. wide; disc below the middle with a pair of spreading, fleshy, semiorbicular-conic calli. Column rather short and stout, about 3-4 mm. high at the back, with a large, concave, retuse clinandrium. Ovary trigonous, trilocate.

Cuzco: Prov. of Paucartambo, below Tres Cruces Inn, 3600-3700 meters, *Weberbauer 6976* (type). "Pillahuata," Cerro de Cusiluyoc, 2800-3100 meters, epiphytic in thickets, *Pennell 14129*. The latter collection, which is somewhat smaller throughout than the type, has "primrose-yellow" flowers.

Pachyphyllum capitatum Kränzl. Engler, Bot. Jahrb. 37: 386. 1906; Kränzl. Engler, Pflanzenr. IV. 50 (Heft 83), 21. 1923.

Plant medium-sized. Stems rather stout, straight or scarcely curved, 10-15 cm. tall, densely leafy. Leaves equitant, triangular as seen from the side, obtuse, thickly fleshy, about 10 mm. long and 5-6 mm. wide. Inflorescences axillary on the upper portion of the plant, a little surpassing the leaves, densely 3- to 4-flowered and subcapitate; floral bracts minute. Flowers small, white, shining without. Dorsal sepal oblong, acute, 4-5 mm. long, 2 mm. wide. Lateral sepals equally long, ovate-oblong, acute. Petals oblong, apiculate, rather broader than the sepals. Lip oblong-obovate, obscurely 3-lobed above with a fold on each side, rounded, retuse and apiculate at the apex; disc through the lower portion with a pair of lamellae (higher in front). Column very broad and foliaceous.

Amazonas: East of Chachapoyas between Tambo Ventillas and Piscohuañuna, 2600–2700 meters, in grass-steppe with scattering shrubs, *Weberbauer 4421*.

No example of this species was available.

Pachyphyllum denticulatum (Ruíz & Pav.) Schltr. Fedde Reper. Beih. 9: 180. 1921. *Fernandezia denticulata* Ruíz & Pav. Syst. Veg. Fl. Peruv. et Chil. 1: 240. 1798. = an obscure concept, perhaps referable to *P. distichum* HBK.

Huánuco: Pillao, on trees and rocks, *Pavón s.n.*

Pachyphyllum distichum HBK. Nov. Gen. et Sp. 1: 339, t. 77. 1816; Reichb. f. Bonpl. 3: 219. 1855; Xen. Orch. 1: 165, t. 58, fig. II, 5–7. 1856; Kränzl. Engler, Pflanzenr. IV. 50 (Heft 83), 25. 1923.

Plant epiphytic or rarely terrestrial, commonly rather large and stout. Stems usually arcuate, simple or more commonly branched, about 52 cm. or less long, entirely or nearly enveloped by distichous, loose leaf-sheaths. Leaves very numerous, rather dense, broadly to narrowly oblong, articulated, usually strongly compressed and conduplicate in the dried specimen, more or less falcately recurved, apiculate at the rounded apex, minutely serrulate-ciliate throughout, up to 3.1 cm. long and 1 cm. wide when expanded. Inflorescences numerous, axillary, shorter than the leaves, racemose, recurved, densely about 6- to 8-flowered; floral bracts amplexicaul, conduplicate, triangular-ovate, ciliolate. Perianth segments free. Flowers very small, green or greenish white, with the floral parts fleshy and campanulate. Dorsal sepal oblong, navicular, acute, dorsally carinate, up to 3.5 mm. long and 1.4 mm. wide. Lateral sepals oblong-lanceolate, acute, navicular, lightly oblique, somewhat longer and slightly narrower than the dorsal sepal. Petals obliquely oblong, sometimes broader above, acute, slightly shorter and narrower than the dorsal sepal. Lip oblong-lanceolate, rhombic-lanceolate or rhombic-ovate, longitudinally concave, obtuse, up to about 4 mm. long and 2.2 mm. wide; disc above the middle with a pair of fleshy, finger-like calli. Column relatively large and stout, dilated upward, trilobulate at the apex, up to about 2.6 mm. high at the back. Ovary trigonous, narrowly tri-lobate.

Cuzco: Habitat not recorded, *Bues 2158*. Prov. of Convención, Tanamanche-Quellomayo, 3750 meters, *Vargas 4445*. "Pillahuata," Cerro de Cusilluyoc, 2800–3100 meters, epiphyte in thicket, *Pennell 14128*. Prov. of Urubamba, near Wenner Gren ruins, 3400–3600 meters, in dense wet dark forest with much fog and rain, *Metcalf 30767* (fl. old on fruit).—Huánuco: Cani, 7 miles northeast of Mito, about 2600 meters, *Macbride 3462*. Prov. of Pachitea, above La Molina near Panao, on bushy slope, *Asplund 13643*. Also Colombia and Ecuador (type).

Pachyphyllum gracillimum C. Schweinf. Am. Orch. Soc. Bull. 16: 564, t., 1947. Figure 192.

Plant epiphytic, very slender and lax. Stems short to relatively elongate, lax, usually remotely branched, about 37 cm. or less long, entirely (or mostly) concealed by loose spreading leaf-sheaths. Leaves numerous, distichous, very small, articulated, elliptic to lanceolate-elliptic or oblong-elliptic, never equitant, acute and prominently mucronate, flat and never conduplicate, wide-spreading, 6-8 mm. long, up to 3.3 mm. wide, minutely ciliolate on the upper margins. Inflorescences very numerous, axillary, shorter than the leaves, racemose, densely 3- to 6-flowered, nodding in the upper half. Floral bracts semiamplexicaul, spreading, triangular, conduplicate, larger toward the base of the raceme. Flowers very small, yellow-greenish, campanulate, fleshy, the sepals, petals and lip connate below to form a short tube. Dorsal sepal (including the connate basal portion) oblong or ovate-oblong, subacute at the rounded apex, about 3 mm. long and 1.2 mm. wide. Lateral sepals similar to the dorsal sepal but somewhat narrower, oblong, navicular, slightly oblique. Petals very similar to the dorsal sepal but shorter and slightly narrower, ovate-oblong, acute. Lip small, adnate to the sepaline tube, oblong-oval, broadly rounded at the apex, about 1.8 mm. long (free part) and 1.1 mm. wide; disc below the middle with a pair of erect-spreading, obliquely triangular lamellae which are truncated on the outer angle. Column very short and stout, about 1.7 mm. high, with a large concave clinandrium. Ovary trigonous and trialate.

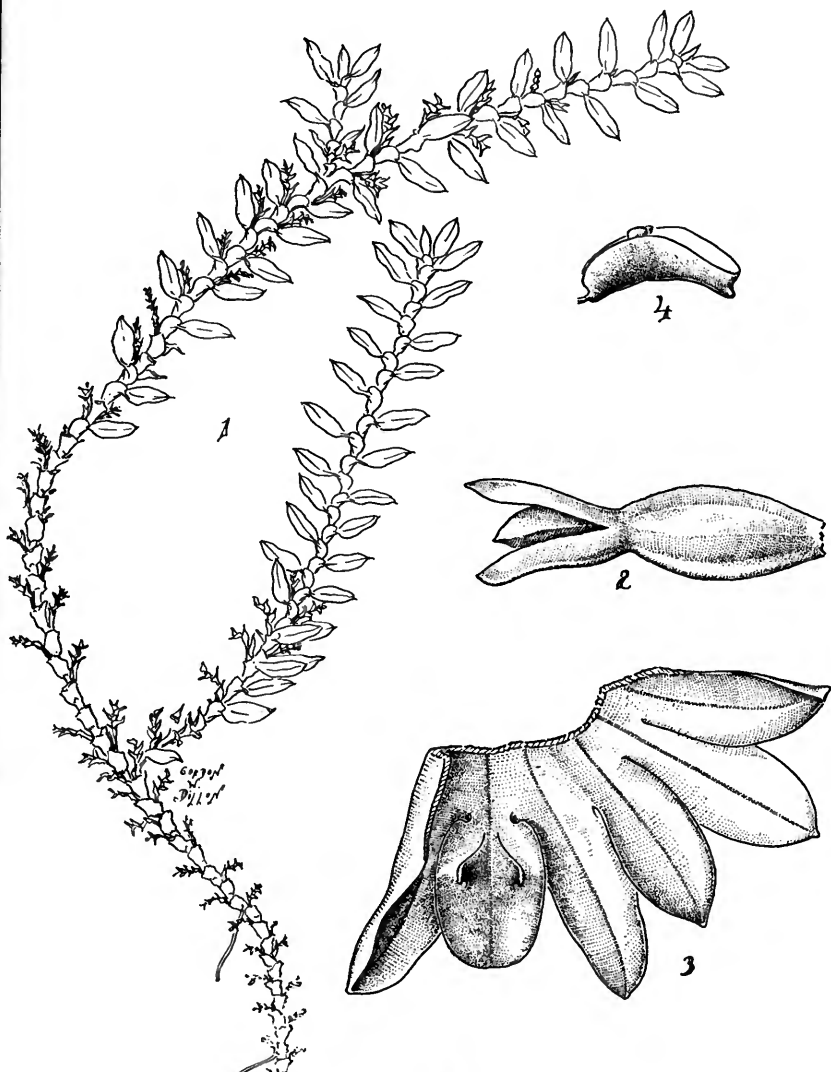
Cuzco: Prov. of Urubamba, Puyupata-Tuncapata, 3200 meters, *Vargas 2932* (type). Prov. of Urubamba, near Wenner Gren ruins, 3400-3600 meters, in dense wet forest with much fog and rain, *Metcalf 30770*.

Pachyphyllum haemathodes (as "haematodes") (Ruíz & Pav.) Schltr. Fedde Repert. Beih. 9: 180. 1921. *Fernandezia haemathodes* Ruíz & Pav. Syst. Veg. Fl. Peruv. et Chil. 1: 240. 1798.=obscure concept, probably referable to *Maxillaria crassicaulis* C. Schweinf., a new name for *Ornithidium Weberbauerianum* Kränzl.

Huánuco: Muña, on trees and rocks, *Pavón s.n.*

Pachyphyllum lycopodioides Schltr. Fedde Repert. Beih. 9: 116. 1921; Mansf. Fedde Repert. Beih. 57: t. 130, nr. 511. 1929. *Pachyphyllum Pastii* Kränzl. ex Weberb. Pflanzenw. Peru. And. 254. 1911, not Reichb. f.

Plant epiphytic, erect, about 25 cm. high. Stems strict, rather stout, densely leafy, entirely concealed by close, imbricating, denticulate leaf-sheaths. Leaves recurved-spreading, oblong-ligulate, apiculate, fleshy, sparingly papillose-serrulate on the margin, up to 9 mm. long, about 3 mm. wide. Inflorescences lateral, 3- to 4-flowered, erect-spreading but nodding above; peduncle subcompressed, up to 5 mm. long; floral bracts ovate, short-acuminate. Flowers small, white, glabrous. Sepals shortly connate at the base. Dorsal sepal ovate-oblong ("oblong-ligulate"),



PACHYPHYLLUM
gracillimum C. Schweinf.

FIG. 192. *Pachyphyllum gracillimum* C. Schweinf. 1, plant; $\times 1$. 2, flower from side; $\times 8$. 3, flower opened out; $\times 12$. 4, lip from side, natural position; $\times 12$.

mucronulate, sharply carinate on the back, about 3.75 mm. long and 1.25 mm. wide. Lateral sepals oblong-lanceolate ("oblong-ligulate"), oblique, carinate, apparently longer than the dorsal sepal. Petals obliquely and narrowly elliptic-oblong, subacute, a little shorter than the dorsal sepal, entire. Lip suberect and parallel to the column, shortly connate at the base with the sepaline tube, oblong, obtuse, equally long with the petals, slightly narrowed in the middle of each side; disc in the middle with a pair of obliquely subulate, subobtuse calli. Column very short and stout, about 2 mm. high, with a broad, concave clinandrium which is obscurely trilobulate at the truncate apex. Ovary clavate, trigonous.

Huánuco: Southwest of Monzón, on the mountains, 3400-3500 meters, *Weberbauer 3327*.

No example of this species was available.

Pachyphyllum muscoides (Kränzl.) Schltr. Fedde Repert. 15: 216. 1918. *Orchidotypus muscoides* Kränzl. Engler, Bot. Jahrb. 37: 383. 1906; Kränzl. Engler, Pflanzenr. IV. 50 (Heft 83), 59, fig. 3 C, a-e. 1923.

Plant minute, epiphytic. Stems suberect to arcuate or lax, simple or very rarely branched, slender, about 7.5 cm. or less long, entirely concealed by leaf-sheaths. Leaves very small, distichous, more or less numerous, articulated, elliptic-oblong to oblong or linear-oblong, acute, mucronate, often conduplicate and falcate-recurved in the dried specimen, conspicuously ciliate throughout, about 7 mm. or less long and 1-1.5 mm. wide. Inflorescences axillary, abbreviated, much shorter than the leaves, apparently 1- or 2-flowered. Flowers pale green to yellowish white, very small, campanulate, about 2 mm. long. Parts of the perianth all connate into a tube below the middle. Dorsal sepal (free portion) oblong-ovate, acute or obtuse, about 1 mm. long and 0.6 mm. wide. Lateral sepals (free portion) obliquely lanceolate-ovate, acute, little longer than the dorsal sepal. Petals (free portion) ovate, subacute, overlapping the sepals at the sides, similar to the dorsal sepal but a little shorter and wider. Lip with narrow claw adnate to the sepaline tube; free portion rotund-ovate, subacute, about 1-1.2 mm. long and 1 mm. broad; disc at the base on each side with a small, erect, obliquely subquadrate lamella. Column relatively large, stout, about 1.4 mm. high, mostly occupied by a large, concave clinandrium.

Cajamarca: Prov. of Chota, mountains west of Huambos, 2700-3000 meters, in sclerophyllous vegetation, especially shrubs with scattering small trees, *Weberbauer 4189* (type, as *Orchidotypus*). Also Colombia and Central America (Costa Rica, Panama).

Pachyphyllum parvifolium Lindl. Hook. Ic. Pl. 2: t. 117. 1837; Kränzl. Engler, Pflanzenr. IV. 50 (Heft 83), 23. 1923.

Plant slender. Stems few, slender, commonly several-branched with remote ascending branches, up to about 18 cm. long, lightly flexuous, entirely concealed by leaf-sheaths. Leaves very numerous, distichous, rather loose, articulated, oblong-elliptic to oval, obtuse, never conduplicate, wide-spreading, about 13 mm. or

less long and 4 mm. or less wide. Inflorescences numerous, axillary, commonly densely 3-flowered (rarely 4-flowered), about equaling or a little shorter than the leaves. Flowers small, campanulate, about 4 mm. long. Dorsal sepal oblong to elliptic-oblong, acute, concave, navicular, dorsally carinate. Lateral sepals somewhat longer, obliquely oblong-lanceolate, acute, navicular, dorsally carinate. Petals similar to the dorsal sepal, obtuse, ecarinate. Lip very similar to the petals, apparently elliptic-oblong, entirely naked (without lamellae or tubercles). Column a little shorter than the petals, broadly winged, elliptic-obovate in outline, concave, lightly retuse at the apex.

Amazonas: Chachapoyas, *Mathews 1836*.

No material of this species was available, but there is a photograph of the type in the Ames Herbarium.

Pachyphyllum Pastii Reichb. f. Bonpl. 3: 239. 1855; Xen. Orch. 1: 165, t. 58, fig. I, 1-4. 1856; Kränzl. Engler, Pflanzenr. IV. 50 (Heft. 83), 25. 1923. *Pachyphyllum Stuebelii* Schltr. Fedde Repert. Beih. 7: 204. 1920; Mansf. Fedde Repert. Beih. 57: t. 73, nr. 283. 1929.

Plant epiphytic, medium-sized for the genus. Stems rather stout, often aggregated, simple or more commonly branched, up to 65 cm. or more long, entirely or mostly concealed by veiny, ciliate-margined sheaths. Leaves very numerous, distichous, articulated, wide-spreading, rotund-ovate, oblong-oval or elliptic-oblong, often conduplicate and falcate-recurved in the dried specimen, obtuse and mucronate, ciliate-denticulate throughout, up to 14 mm. long and 7 mm. wide. Inflorescences more or less numerous, axillary, densely few- (2- to 6-) flowered and nodding above, the peduncle much shorter than the leaves. Floral bracts semiamplexicaul, conduplicate, triangular-ovate, acute or acuminate. Flowers very small, more or less fleshy, campanulate, commonly yellowish green with a white lip. Sepals shortly connate at the base. Dorsal sepal oblong to ovate-oblong (rarely ovate), acute, mucronate, concave or navicular, dorsally carinate, about 3.2 (rarely 2) mm. long, 1.5-1.8 mm. wide. Lateral sepals similar to the dorsal sepal but a little longer, obliquely oblong-lanceolate (rarely obliquely ovate). Petals oblong or lanceolate-oblong (rarely oval-oblong), acute to subacute, more or less conspicuously ciliolate-denticulate, a little shorter and more or less narrower than the dorsal sepal. Lip elliptic-oblong or oblong-rhombic in outline and about 4 (rarely 3) mm. long when expanded, more or less distinctly trilobulate above the concave base, with the anterior lobule more or less reflexed, subacute to obtuse, with the anterior margins ciliolate-denticulate, about 2 mm. or more (rarely 1.8 mm.) wide near the middle; disc in the middle with a pair of small, approximate digitiform calli. Column relatively large, oblong-cylindric to oblong-ovoid, lightly trilobulate at the truncate apex, about 2.1-2.7 (rarely 1.7) mm. high at the back. Ovary trigonous, narrowly trilobate.

Cuzco: Prov. of Convención, Santa Ana Valley, Alturas del Chaco, *Bues (Herrera 2124b)*. Prov. of Urubamba, on trail from Puyupata to Sayacmarca, 3600 meters, *Vargas 2895*. Prov. of Urubamba, near Wenner Gren ruins, 3400-3600 meters, in wet shady

sphagnum bog with much fog and rain, *Metcalf 30756*. Same locality as the last, in dense wet forest, *Metcalf 30775*.—Huánuco: Prov. of Huamalies, mountains southwest of Monzón, 3400–3500 meters, *Weberbauer 3327*. Also Colombia (type of *P. Stuebelii*) and Ecuador (type of *P. Pastii*).

Pachyphyllum pectinatum Reichb. f. *Xen. Orch.* 3: 22. 1878; Kränzl. *Engler, Pflanzenr.* IV. 50 (Heft 83), 22. 1923.

Plant epiphytic, small, simple or sparingly branched, about 10 cm. or less tall. Stems erect or more or less arcuate, densely to loosely many-leaved, rather slender, entirely concealed by leaf-sheaths which are longitudinally nervose. Leaves conduplicate, recurved, oblong-semilunate when viewed from the side, apiculate, with the anterior margin minutely denticulate, about 5–8 (rarely 14) mm. long and 2–3 mm. wide in natural position. Inflorescences racemose, few-flowered, when flowering a little shorter than the leaves. Floral bracts triangular or triangular-lanceolate, much shorter than the pedicellate ovary. Flowers very small, campanulate, white or ivory-color. Dorsal sepal oblong-lanceolate (“ligulate”), acute, navicular, subcarinate, 2.3–3.2 mm. long, 0.8–1.1 mm. wide. Lateral sepals obliquely oblong-lanceolate, acute, mucronate, carinate, slightly longer and broader than the dorsal sepal. Petals oblanceolate or oblong-lanceolate, shortly acuminate, slightly shorter than the dorsal sepal. Lip oblong-oblanceolate (“ligulate-obovate”), acute, mucronate, longitudinally concave, 2–3.1 mm. long, 0.75–1.25 mm. wide; disc with a pair of approximate keels extending from near the base to above the middle where more or less dilated. Column stout, 1.6–2 mm. high at the back, with a large suborbicular, concave wing throughout. Ovary trigonous.

Cuzco: Region of Vilcabamba, “Buena Cuesta,” toward Cochayoc, about 2460 meters, *Bues 1615*. Same locality, *Vargas 417*.—Puno: Prov. of Carabaya, “Ackopampa a Juro-Juro,” 3500 meters, on rocks, *Vargas 7038*. Also Bolivia (type).

Pachyphyllum serra Reichb. f. *Bonpl.* 3: 219. 1855; Reichb. f. *Xen. Orch.* 1: 167, t. 58, fig. IV, 13–17. 1856; Kränzl. *Engler, Pflanzenr.* IV. 50 (Heft 83), 26. 1923.

Plant probably epiphytic, apparently simple, about 15 cm. or more tall. Stem stout, strict, entirely concealed by leaf-sheaths which are longitudinally and transversely rugose and shining. Leaves very numerous and dense, spreading, conduplicate, oblong-semilunate, recurved, acute, about 1.5 cm. long and 5 mm. wide in natural position, with the anterior margin minutely denticulate. Inflorescences very short, racemose, few-flowered, much shorter than the leaves. Floral bracts triangular, equal to the pedicellate ovary. Flowers very small, with subparallel segments. Sepals ligulate, acute, carinate, about 3.5 mm. long and scarcely 1 mm. wide (according to Kränzl.). Petals ligulate-oblanceolate, acute or shortly acuminate, slightly shorter and narrower than the sepals. Lip ligulate-pandurate, acute or acuminate, rounded at the base; disc in front of the constriction with a pair of elongate keels which are angled in front. Column 3-lobed at the apex with the mid-lobe longer and retuse. Ovary trigonous, slender.

Amazonas: Chachapoyas, *Mathews s.n.*

No material or other record of this species has been examined.

Pachyphyllum subbiflorum (Ruíz & Pav.) Schltr. Fedde Repert. Beih. 9: 181. 1921. *Fernandezia subbiflora* Ruíz & Pav. Syst. Veg. Fl. Peruv. et Chil. 1: 240. 1798.= obscure species.

Huánuco: Muña, on trees and rocks, *Pavón s.n.*

Pachyphyllum tenue Schltr. Fedde Repert. Beih. 9: 116. 1921; Mansf. Fedde Repert. Beih. 57: t. 131, nr. 512. 1929.

Plant epiphytic, small, slender, about 8 cm. tall. Stem simple, arcuate, very slender, entirely concealed by leaf-sheaths. Leaves rather loose, spreading, ligulate, apiculate, entire, 4.5–6 mm. long, scarcely exceeding 1 mm. wide in the middle. Inflorescences solitary, densely 2- to 3-flowered, erect-spreading, slightly exceeding the leaves, the peduncle a little shorter than the leaves. Floral bracts ovate-deltoid, acute, much shorter than the pedicellate ovary. Flowers minute, campanulate, erect-spreading, with sepals, petals and lip shortly connate below. Dorsal sepal oblong or ovate-oblong, obtuse, dorsally carinate, about 1.5 mm. long. Lateral sepals apparently a little longer and much wider than the dorsal sepal, obliquely oblong-ovate. Petals oblong-elliptic ("oblong"), obtuse, a little shorter than the sepals, with the lower sides overlapping the sepals. Lip broadly obovate in outline, rounded in front, adnate to the sepaline tube by the narrowed, clawed base, as long as the petals, broader than the sepals in the upper part; disc below the middle with a pair of large, obliquely triangular, wing-like lamellae (highest at the truncate apex). Column short, scarcely 1 mm. high, terminated by a large concave-cucullate, trilobulate clinandrium. Ovary trigonous.

Junín: Chanchamayo Valley, *Koehler s.n.*

No example of this species was available.

CENTROPETALUM Lindl. (including *Nasonia* Lindl.)

A small group of South American epiphytes apparently limited to Colombia, Ecuador and Peru.

Plants very small to medium-sized, without pseudobulbs. Stems simple or rarely branched, erect or commonly arcuate, entirely concealed by leaf-bearing sheaths. Leaves numerous, distichous, small, flat to conduplicate or equitant, articulated, commonly recurved or falcate, fleshy, caducous. Inflorescences lateral, axillary, 1- or rarely 2-flowered. Flowers small to medium-sized, often large in relation to the plant, yellow, orange, red or purple. Sepals subequal, narrow, free or the laterals partly connate, more or less carinate (especially the laterals). Petals subequally long but commonly much wider than the sepals. Lip similar to the rest of the perianth or much larger, sessile or short-clawed, entire or rarely subtrilobed. Column short, with a large petaloid clinandrium. Pollinia 4, on two free or partly free stipes.

- A1. Lip about equaling the other perianth segments, elliptic-lanceolate with a saccate base..... *C. Hartwegii*
- A2. Lip larger (especially broader) than the other segments (commonly much larger), suborbicular, triangular-suborbicular or rhombic-obovate, without a saccate base..... I
- Ia. Lamina of the lip triangular-cordate or suborbicular-cordate, with a strongly cordate base; base of the disc with a long keel terminated by a bilobed callus.
C. ionantherum
- Ib. Lamina of the lip not triangular-cordate, commonly with a cuneate base; base of the disc without a long keel..... 1
- 1a. Lip suborbicular, slightly longer than the sepals, with a bilobed callus above the base..... *C. nigro-signatum*¹
- 1b. Lip rhombic-obovate to transversely oval, much longer than the sepals, with a small concave callus (rarely bilobed) at the base..... *C. distichum*

Centropetalum distichum Lindl. Sert. Orch. sub t. 21. ?1838; Kränzln. Engler, Pflanzenr. IV. 50 (Heft 83), 30. 1923; C. Schweinf. Bot. Mus. Leaflet. Harvard Univ. 17: 62. 1955. *Centropetalum Warscewiczii* Reichb. f. Bot. Zeit. 10: 706. 1852; Xen. Orch. 1: 96, t. 38, fig. I, 1-5. 1855. *Fernandezia disticha* Schltr. Fedde Repert. 16: 349. 1920. *Fernandezia Warscewiczii* Schltr. Fedde Repert. 16: 349. 1920. *Fernandezia pulchra* Schltr. Fedde Repert. Beih. 9: 117. 1921; Mansf. Fedde Repert. Beih. 57: t. 131, nr. 513. 1929.

Plant small, suberect or commonly more or less arcuate. Stems simple, up to about 12 cm. long, entirely concealed by striate-sulcate leaf-bearing sheaths. Leaves numerous, subdensely distichous, linear, articulated, caducous, conduplicate or subterete, lightly recurved and falcate, acute, fleshy, about 7-15 mm. long, about 2 mm. wide. Inflorescences very short, 1-flowered, in the axils of the upper leaves. Pedicels rather long, with a trigonous ovary. Flower large for the plant, yellow or orange-yellow to scarlet or purple. Sepals lanceolate or oblong-lanceolate, acute or short-acuminate, dorsally carinate, about 7 mm. or less long, 2-2.7 mm. wide, lateral sepals oblique and connate at the base. Petals about as long as the sepals but often nearly twice as wide, ovate-elliptic, acute, apiculate. Lip conspicuously longer and much wider than the other segments, rhombic-obovate, cuneate-flabellate or transversely oval, broadly cuneate toward the base, very broadly rounded (and rarely retuse) at the apex, about 10 mm. long and 10-14 mm. wide; disc with a very small ovate-oblong, concave (rarely bilobulate) callus at the base. Column short, with a large cucullate and petaloid, denticulate, often trilobulate clinandrium.

Amazonas: Chachapoyas, among lichens, *Mathews s.n.* (type of *C. distichum*), *Hübsch* ex Reichb. f., fide Kränzln (l.c.).—Cajamarca: East side of the Cordillera, east of Huancabamba, epiphytic, in sclerophyllous vegetation, *Weberbauer 6141* (type of *Fernandezia pulchra*). Also Ecuador (type of *C. Warscewiczii*).

¹ This concept was considered referable to *C. ionantherum* by Schlechter (Fedde Repert. Beih. 9 [1921], 181), but it seems preferable to follow Kränzln in considering it distinct.

Centropetalum Hartwegii (Reichb. f.) Kränzl. Engler, Pflanzenr. IV. 50 (Heft 83), 30. 1923. *Nasonia Hartwegii* Reichb. f. Xen. Orch. 1: 97. 1855. *Nasonia punctata* Lindl. in sched., fide Kränzlin, l.c.

Plant small, stout, more or less arcuate. Stems commonly strongly curved, stout, simple, about 22 cm. or less long, entirely concealed by loose, infundibuliform, striate, denticulate leaf-sheaths. Leaves numerous, densely distichous, flat, lanceolate, lanceolate-oblong or elliptic-oblong, acute, strongly rugose in the dried specimen, up to 2.3 cm. long, about 5-6 mm. wide. Inflorescences very short, 1- or 2-flowered, in the axils of the upper leaves. Pedicels long-exserted, terminating in a trigonous ovary. Flowers small but rather large for the plant, campanulate. Sepals similar, oblong-lanceolate ("triangular"), acute or acuminate, dorsally carinate, about 1.2 cm. long. Petals similar to the sepals but somewhat broader, acute. Lip narrowly elliptic-lanceolate from a minutely saccate base, subacute, lightly sigmoid when seen from the side, about as long as the other floral segments, about 2 mm. wide; disc with a pair of short lamellae in the middle. Column nearly as long as the lip, with 3 subequal, round-ovate lobes.

Cajamarca(?), fide Schlechter, Fedde Repert. Beih. 9: 181. 1921. Colombia (type).

No material of this species was available, but there are records of the type of *Nasonia Hartwegii* in the Ames Herbarium.

Centropetalum ionantherum (Reichb. f. & Warsc.) Kränzl. Engler, Pflanzenr. IV. 50 (Heft 83), 32. 1923. *Nasonia ionanthera* Reichb. f. & Warsc. Bonpl. 2: 99. 1854; Xen. Orch. 1: 97, t. 38, fig. II, 6-14. 1855. *Fernandezia ionanthera* Schltr. Fedde Repert. 16: 349. 1920.

Plant small, erect to ascending or arcuate. Stems usually simple, rarely somewhat branching, up to 20 cm. long, entirely concealed by numerous loose, imbricating, striate leaf-sheaths. Leaves several to numerous, densely or subdensely distichous, conduplicate, falcate-recurved, semielliptic (rarely) to linear-oblong, acute, caducous, fleshy, 2 cm. or less long, 2-3 mm. thick. Inflorescences very short, 1-flowered, in the axils of the upper leaves. Pedicels long-exserted, terminating in a trigonous ovary. Flowers medium-sized but large for the plant, red-orange or cinnabar-red, sometimes with a black spot. Dorsal sepal oblong-lanceolate ("triangular"), complicate-acute, dorsally carinate, about 1 cm. or less long and 2.3 mm. wide. Lateral sepals obliquely lanceolate ("ovate-triangular"), short-acuminate, dorsally carinate, a little longer and broader than the dorsal sepal. Petals oblong-elliptic ("ovate"), acute, slightly shorter than the sepals but nearly twice as wide as the dorsal sepal. Lip much larger than the sepals and petals, suborbicular-cordate or triangular-cordate, strongly cordate at the base, subacute to broadly obtuse at the apex, about 1.5 cm. or less long and equally wide; disc below with a long, thickened or carinate mid-nerve which terminates in a bilobed callus. Column short and stout, with a large, cucullate, petaloid clinandrium which is subentire or obscurely lobulate above.

Peru: Habitat unrecorded, in high mountains, *Warscewicz s.n.* (type of *Nasonia ionanthera*).—Cajamarca: Prov. of Chota, pass south of Conchan, 2500 meters, epiphyte on moss-covered branches, *Stork & Horton 10061*.—Huánuco: Between Huánuco and Pampayaco (Pampayacu), *Kanehira 327*. Pillao, abundant on tree trunks in rain-forest, 2700 meters, *Woytkowski 37018*.—Junín, fide Schlechter, *Fedde Repert. Beih. 9: 181. 1921*.—Piura: Huancabamba, El Tambo, Camino Piura, about 3000 meters, *Scolnik 1403*.

Centropetalum nigro-signatum Kränzl. Engler, *Bot. Jahrb.* 37: 388. 1906; Kränzl. Engler, *Pflanzenr.* IV. 50 (Heft 83), 31. 1923.

Plant small. Stems simple, erect or lightly arcuate, up to 10 cm. long, concealed by short, transversely rugulose leaf-sheaths. Leaves more or less dense, distichous, oblong-lanceolate, often conduplicate and recurved, acute and apiculate, 1–1.8 cm. long, up to 5 mm. wide, articulated, strongly rugulose in the dried plant. Inflorescences very short, 1- or 2-flowered, on the upper portion of the stems. Pedicels slender, long-exserted, terminating in a trigonous ovary. Flowers rather small, scarlet, lip marked with a black spot. Sepals lanceolate, acute, dorsally carinate especially the lateral sepals which are lightly dilated at the base, 8–9 mm. long, 2.5 mm. wide. Petals oblong, acute, almost twice as wide as the sepals. Lip much larger than the other segments, apparently suborbicular, minutely bilobed in front, about 10 mm. long and broad; disc without thickened basal nerves but with a very small bilobed callus a little above the base. Column with a very broad cucullate clinandrium.

Cajamarca: Prov. of Chota, mountains west of Huambos, 2700–3000 meters, epiphytic in sclerophyllous vegetation, especially shrubs with scattering small trees, *Weberbauer 4178*.

No material of this species was available, but the Ames Herbarium contains a photograph of the type.

CAMPYLOCENTRUM Benth.

Inconspicuous and widespread epiphytes extending from Florida (U.S.A.) through Mexico, Central America, the West Indies and South America to Brazil and Argentina.

Plants small to medium-sized, non-pseudobulbous. Stems commonly more or less elongate, more rarely strongly abbreviated or wanting and leafless. Leaves (when present) more or less numerous, distichous, fleshy, lanceolate or oblong to oblong-elliptic or oval. Inflorescences lateral, several- to many-flowered, often very densely flowered. Floral bracts minute, persistent. Flowers very small to minute, campanulate. Sepals and petals free, subequal, broad or narrow, often somewhat spreading above. Lip sessile, simple or 3-lobed, ovate or triangular-ovate to lanceolate, produced into a more or less elongate spur which is often strongly recurved or arcuate. Column very short, wingless, footless. Anther

terminal, opercular, incumbent, 2-celled. Pollinia 2, globose, with 2 short, filiform stipes.

A1. Plants with more or less elongate, leafy stems.....I

A2. Plants with abbreviated, leafless stems.....I

Ia. Small plants, with racemes much exceeding the leaves.

C. Ulaei var. *peruvianum*

Ib. Large plants, with racemes more or less shorter than the leaves.

C. micranthum

1a. Spur of the lip about equaling or little exceeding the sepals; lip definitely 3-lobulate.....*C. fasciola* (*C. Sullivanii*, *C. loretoense*)

1b. Spur of the lip twice as long as the sepals; lip nearly or quite simple.

C. minutum

Campylocentrum fasciola (Lindl.) Cogn. Martius Fl. Bras. 3, pt. 6: 520, t. 106, fig. 1. 1906. *Angraecum fasciola* Lindl. Bot. Reg. 26: sub t. 68. 1840. *Campylocentrum Sullivanii* Fawc. & Rendle, Journ. Bot. 47: 128. 1909; Fl. Jam. 1: 142, t. 31, figs. 1-4. 1910. *Campylocentrum loretoense* Schltr. Fedde Repert. Beih. 9: 118. 1921; Mansf. Fedde Repert. Beih. 57: t. 131, nr. 514. 1929. *Campylocentrum Lankesteri* Ames, Sched. Orch. 4: 57. 1923. *Campylocentrum multiflorum* Schltr. Fedde Repert. Beih. 19: 156. 1923.

Plant epiphytic, small or very small, with conspicuous, elongate, fibrous roots which are up to 30 cm. long. Stem abbreviated or none. Leaves wanting. Peduncles caespitose, several to numerous (up to 40), up to 15 cm. long, subdensely many-flowered with distichous (rarely secund) flowers, puberulent. Flowers minute, sessile, with membranaceous, campanulate segments, white, greenish white or pale yellow (rarely brownish white). Sepals and petals 1-nerved (3-nerved according to Cogniaux). Dorsal sepal elliptic-ovate or ovate-lanceolate, acute, about 1.3-1.8 mm. long and 0.8 mm. wide. Lateral sepals obliquely oblong-ovate or ovate-lanceolate, acute, apiculate, a little longer and narrower than the dorsal sepal. Petals similar to the dorsal sepal but slightly narrower or wider. Lip prominently spurred; lamina broadly triangular-ovate in outline, lightly 3-lobulate, about 1-1.5 mm. long and equally wide or wider below; lateral lobes semiobovate-rounded; mid-lobe triangular and acute, or broadly ovate and obtuse when expanded, distinctly larger than the lateral lobes; spur short, saccate to cylindrical-clavate, straight to lightly arcuate, about 1.1-2 mm. long, shorter or slightly longer than the lateral sepals. Column very short and stout.

Loreto: Near Moyobamba, *Filomeno s.n.* (type of *C. loretoense*). Santa Rosa, Yurimaguas, lower Río Huallaga, 155-210 meters, epiphyte on trunk of "Castaña," *Williams 4936*. Near Yurimaguas, *Ule 58p*. Also British Honduras to Costa Rica (types of *C. Lankesteri* and *C. multiflorum*), the West Indies (type of *C. Sullivanii*), British Guiana (type of *Angraecum fasciola*), Surinam and Brazil.

Campylocentrum micranthum (Lindl.) Rolfe, Orch. Rev. 11: 245. 1903; Cogn. Martius Fl. Bras. 3, pt. 6: 506, t. 103, fig. 2. 1906.

Angraecum micranthum Lindl. Bot. Reg. 21: t. 1772. 1835. Figure 193.

Plant medium-sized to large, very variable. Stem stout, more or less arcuate and sometimes fractiflex, up to 52 cm. or more long, entirely concealed by close, tubular, leaf-bearing sheaths which are commonly pierced by long, flexuous, adventitious roots. Leaves numerous, distichous, widely spreading, oblong, oblong-elliptic to oval (rarely narrowly oblong), commonly very obliquely bilobed at the acute to rounded apex, shortly cuneate at the sessile base, about 2–11 (rarely 12.5) cm. long, up to 3 cm. wide. Inflorescences lateral, numerous, racemose, more or less shorter than the leaves, densely many-flowered to the base, rarely up to 7 cm. long. Flowers small, white or cream-color, more rarely greenish or lilac and rose-color, with subparallel segments which are recurved above. Dorsal sepal linear-oblong, acute or short-acuminate, 3-nerved, up to 6.1 mm. long and 1.7 mm. wide near the base. Lateral sepals similar to the dorsal sepal but slightly longer, abruptly oblique at the base. Petals similar to the dorsal sepal but markedly smaller. Lip lanceolate in outline, lightly recurved, distinctly 3-lobed near the base, tubular-involute, up to 5.8 mm. long, produced below into a distinct spur; lateral lobes relatively small, semiobovate, rounded or dentiform above; mid-lobe much longer, linear-lanceolate, acute or acuminate; spur slightly shorter than the lip or subequaling it, strongly arcuate, narrowly cylindrical-clavate, broadly rounded at the apex. Column very short and stout.

Junín: Schunke Hacienda above San Ramón, 1300–1700 meters, in dense forest, *Schunke A 52* (flowers poor and abnormal).—Loreto: Vicinity of Iquitos, 100 meters, *Klug 10132*.—San Martín: Juan Jui, Alto Río Huallaga, 400–800 meters, in forest, *Klug 4317*. San Roque, 1350–1500 meters, epiphyte on edge of water, *Williams 7702*. Also Mexico through Central America to Panama, the West Indies and South America (type, perhaps Surinam) to Brazil and Peru.

Campylocentrum minutum C. Schweinf. Am. Orch. Soc. Bull. 17: 108, t., 1948. Figure 194.

Plant very small, epiphytic, stemless, leafless. Roots elongate, fibrous, very slender, climbing along slender branches. Inflorescences fascicled, about 6 or less, short, about 2.3 cm. long including the flowers, subdensely racemose nearly to the base, puberulent. Flowers minute, yellow, membranaceous, 14 or less. Dorsal sepal ovate, acute, about 1 mm. long and 0.5 mm. wide. Lateral sepals similar to the dorsal sepal but slightly longer, obliquely ovate, conspicuously apiculate. Petals ovate-elliptic, acute, slightly smaller than the dorsal sepal. Lip prominently spurred; lamina simple or nearly so, very broadly triangular-ovate, acute, nearly 1 mm. long, 1.5 mm. wide when expanded; spur about twice as long as the sepals, distinctly arcuate, thick-cylindrical, about 2 mm. or more long, rounded at the apex. Column minute, stout. Ovary glabrous.

FIG. 193. *Campylocentrum micranthum* (Lindl.) Rolfe. Plant; $\times 1$. 1, inflorescence; $\times 4$. 2, lip and column from above; about $\times 10$. 3, column from side; about $\times 10$.



Loreto: Mishuyacu, near Iquitos, 100 meters, climbing along a slender branch of a forest tree, *Klug 923*.

Campylocentrum Ulaei Cogn. var. peruvianum C. Schweinf.
Bot. Mus. Leaflet. Harvard Univ. 16: 19. 1953.

Plant small, slender, epiphytic. Stem slender, about 4.5 cm. long in the type specimen, lightly arcuate, below producing elongate fibrous roots, entirely concealed by loose, conduplicate leaf-sheaths. Leaves several, distichous, wide-spreading, small, narrowly lanceolate to narrowly elliptic-oblong, narrowed to a minutely and commonly obliquely bilobed apex, slightly contracted to a sessile base, up to 2.1 cm. long and 5 mm. wide. Inflorescences lateral, racemose, much exceeding the leaves, puncturing the middle of the leaf-sheaths, densely many-flowered, up to about 6.5 cm. long, glabrous; peduncle filiform, up to 1.6 cm. long. Flowers very small, with membranaceous, subparallel segments. Dorsal sepal linear-lanceolate, subacute, 1-nerved, about 2.3 mm. long and 0.8 mm. wide. Lateral sepals subequalling the dorsal sepal, narrowly and obliquely triangular-lanceolate, acute or acuminate. Petals triangular-lanceolate, acute or acuminate, slightly shorter than the sepals. Lip conspicuously spurred; lamina tubular-involute in natural position, ovate-lanceolate in outline when expanded, about 2 mm. long, deeply 3-lobed below the middle; lateral lobes relatively short, obliquely subquadrate and slightly dilated above, with an obtuse outer tip; mid-lobe much protuberant, narrowly lanceolate-triangular, long-acuminate; spur relatively large, U-shaped when viewed from the side, slender and cylindric below, laterally flattened and dilated above, about 1.3 mm. long from the rounded apex to the base of the curve. Column minute. Ovary glabrous.

Junín: Chanchamayo Valley, 1800 meters, *Schunke 520*.

The following collections were indeterminable due to lack of the requisite characters:

Genus uncertain. Flower poor.

Loreto: On right bank of Río Santiago, above Pongo de Manseriche, 200 meters, epiphytic on trunk of tall forest tree, in small colonies, fruit pale green, *Mexia 6165*.

Genus uncertain. No flowers.

Junín: Chanchamayo Valley, 1500 meters, *Schunke 1671*.

Genus uncertain, perhaps *Masdevallia*. No flowers.

Junín: Schunke Hacienda, above San Ramón, 1400–1700 meters, epiphyte in dense forest, perianth yellow, *Killip & Smith 24525*.

Genus uncertain, perhaps *Spiranthes*. Only floral remnants.

CAMPYLOCENTRUM

minutum

C. Schweinf.

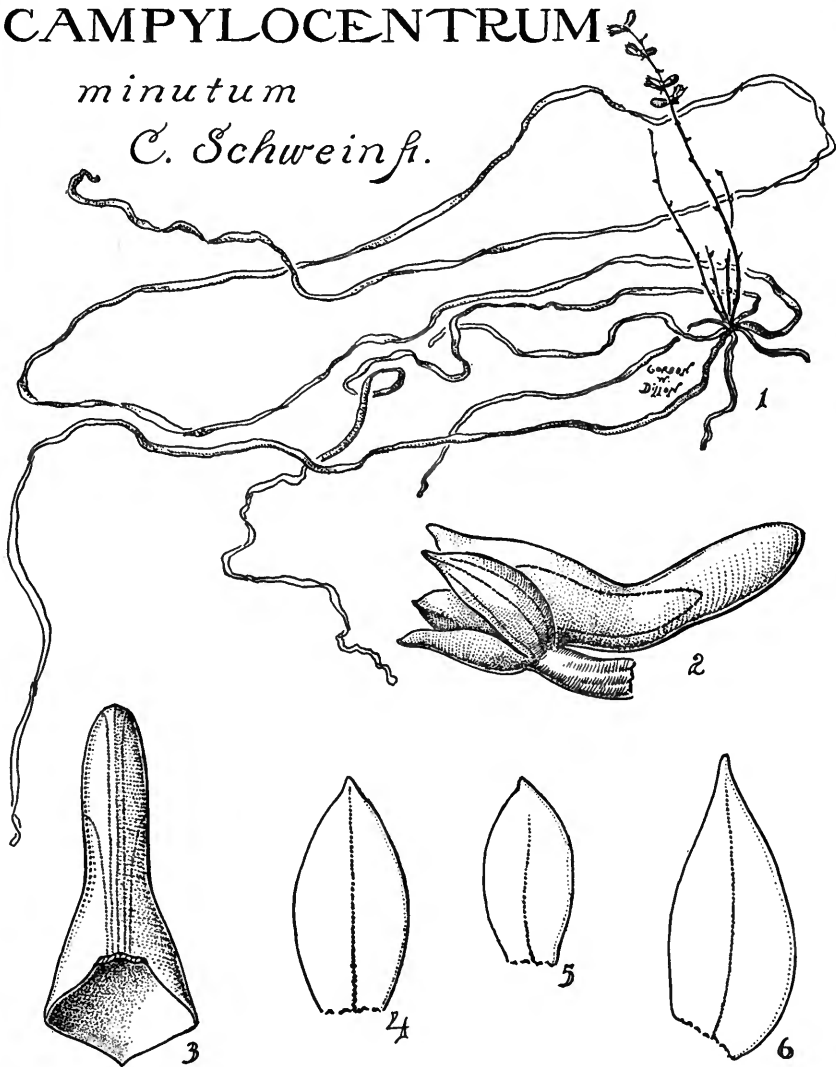


FIG. 194. *Campylocentrum minutum* C. Schweinf. 1, plant; $\times 2$. 2, flower from side, natural position; $\times 16$. 3, lip and spur from above; $\times 16$. 4, dorsal sepal; $\times 32$. 5, petal; $\times 32$. 6, lateral sepal; $\times 32$.

Junín: Pichis Trail, Eneñas, 1600–1900 meters, terrestrial in dense forest, *Killip & Smith 25652*.

Genus uncertain, perhaps *Spiranthes*. Very immature.

Junín: Puerto Bermudez, about 375 meters, epiphyte(?) in dense forest, bracts pink, *Killip & Smith 26587*.

Genus uncertain, perhaps *Lycaste*. Old fruit.

Junín: La Merced, about 700 meters, terrestrial in wooded valley, fruit green, *Killip & Smith 23745*.

Genus uncertain. Old fruit.

Junín: Pichis Trail, Eneñas, 1600–1900 meters, epiphyte in dense forest, *Killip & Smith 25724*.

Genus uncertain, perhaps *Erythrodos*. Flowers very old.

Junín: Pichis Trail, Dos de Mayo, 1700–1900 meters, terrestrial herb 3–4 feet high, in dense forest, *Killip & Smith 25810*.

Genus uncertain, perhaps *Lycomormium*. Young bud only.

Junín: Colonia Perene, about 680 meters, epiphyte in dense forest, *Killip & Smith 24946*.

Genus uncertain, perhaps *Scelochilus*. Flower poor.

Junín: Chanchamayo Valley, *Schunke 570*.

Genus uncertain. Flower resembles *Epidendrum ibaguense* HBK.

Huánuco: Pampayacu, Hacienda at mouth of Río Chinchao, about 1070 meters, on grassy cliff, *Macbride 5018*.

Genus uncertain. No flowers.

Huánuco: Llata, about 2100 meters, in rock crevices of cliff, *Macbride & Featherstone 2257*.

Genus uncertain. Only vegetative parts present.

Huánuco: Yanano, about 1800 meters, pendent on high trees, *Macbride 3851*.

Genus uncertain, perhaps *Stenoptera*. No flowers; only vegetative parts.

Cuzco: Anta, environs of the town of Huaracundo, 3200 meters, *Herrera 3628*.

Genus uncertain. No flowers.

Loreto: Wooded banks of Río Itaya above Iquitos, about 110 meters, epiphyte, *Killip & Smith 29292*.

Genus uncertain, perhaps *Brassia*. No flowers present.

San Martín: San Roque, 1350–1500 meters, *Williams 7346*.

Habenaria sp. Aff. *H. Guentheriana* Kränzl. Flowers too imperfect for certainty.

Huayaquil. Ex Herb. *Ruiz & Pav. s.n.*

Habenaria sp. Aff. *H. caldensis* Kränzl.

Cuzco: Hipayoc, 950 meters, *Bues s.n.*

Habenaria sp. Aff. *H. distans* Griseb. Raceme in fruit.

Ayacucho: Ccarrapa, between Huanta and Río Apurímac, about 1500 meters, terrestrial in densely forested valley, perianth green, *Killip & Smith 22389*.

Vanilla sp. No flowers.

Ayacucho: Río Apurímac Valley, near Kimpitiriki, 400 meters, vine climbing over high trees in dense forest, *Killip & Smith 23050*.

Vanilla sp. No flowers.

Junín: Río Pinedo, north of La Merced, 700–900 meters, herbaceous vine in dense woods, *Killip & Smith 23637*.

Vanilla sp. No flowers.

Loreto: Iquitos, about 100 meters, vine in woods, *Killip & Smith 27430*.

Vanilla sp. No flowers.

Loreto: Lower Río Huallaga, Santa Rosa, 155–210 meters, in forest, *Williams 4893*.

Vanilla appendiculata Rolfe aff. Flower not found.

Loreto: Mishuyacu, near Iquitos, 100 meters, epiphyte in forest, flowers cream color, called "Bellaco Vainill," *Klug 1338*.

Vanilla bicolor Lindl. aff. Flower poor.

Loreto: Alto Río Itaya, San Antonio, 145 meters, *Williams 3494*.

Epistephium Duckei Huber? Flowers poor.

Cuzco: Prov. of Convención, Potrero, 1300 meters, epiphyte, *Vargas 1847*.

Elleanthus aurantiacus (Lindl.) Reichb. f. aff. No flowers.

Huánuco: Playapampa, about 2700 meters, terrestrial in clumps on sphagnum slopes, *Macbride 4497*.

Elleanthus aurantiacus (Lindl.) Reichb. f. aff. No flowers.

Huánuco: Vilcabamba, Hacienda on Río Chinchao, about 1800 meters, on clay banks, flowers orange, *Macbride 5171*.

Elleanthus capitatus (R. Br.) Reichb. f. aff. No flower seen.

Cuzco: Prov. of Convención, Machu-Picchu, 2400 meters, *Vargas 835*.

Elleanthus capitatus (R. Br.) Reichb. f. aff. No flower seen.

Cuzco: Urubamba Basin, 2000–2300 meters, *Herrera 2033* in part.

Elleanthus casapensis Reichb. f. aff. No flowers.

Junín: Schunke Hacienda, above San Ramón, 1300–1700 meters, in dense forest, *Schunke A65*.

Elleanthus conifer (Reichb. f. & Warsc.) Reichb. f. aff. Fruiting raceme.

Huánuco: Mito, about 2700 meters, patch at grassy summit, edge of gulch, *Macbride & Featherstone 1580*.

Elleanthus conifer (Reichb. f. & Warsc.) Reichb. f. aff. Fruiting raceme.

Huánuco: Yanano, about 1700 meters, in patches on steep, sunny, sparsely shrubby, grassy slopes, *Macbride 3834*.

Sobralia sp. Fruit.

Junín: Pichis Trail, Dos de Mayo, 1700–1900 meters, epiphyte in dense forest, buds greenish white, pink-tinged, *Killip & Smith 25830*.

Sobralia sp. Flowers agglutinated.

San Martín: San Roque, 1350–1500 meters, upland, *Williams 7761*.

Sobralia rosea Poepp. & Endl.

Habitat? between Baños and Río Verde, terrestrial, *Pachano 231*.

Gomphichis sp.? No inflorescence.

Peru: Abragillo, (on loose ticket).

Altensteinia sp. Flowers old.

Junín: Mount La Juntay, near Huancayo, about 4700 meters, in puna, terrestrial, *Killip & Smith 22074*.

Pterichis sp. Flowers poor.

Huánuco: Mito, about 2700 meters, on grassy western slope, *Macbride & Featherstone 1794*.

Pterichis triloba (Lindl.) Schltr. aff. Petals ciliate and lip poor.

Junín: Huacapistana, 1800–2400 meters, terrestrial in thickets and open woods, *Killip & Smith 24123*.

Stelis sp. Flowers agglutinated.

Habitat uncertain: On the western slopes of the equatorial Andes, flowers dark violet, about 3000 meters, *Mission Andre 4482*.

Stelis parviflora (Ruíz & Pav.) Pers.

Habitat uncertain. Ex Herb. *Ruiz & Pav.*

Stelis sp. Flowers poor.

Ayacucho: Ccarrapa, between Huanta and Río Apurímac, about 1500 meters, epiphyte in densely forested valley, perianth greenish white, *Killip & Smith 23217*.

Stelis sp. Plant sterile or too advanced for determination.

Ayacucho: Ccarrapa, between Huanta and Río Apurímac, 2500 meters, epiphyte on wooded hillside, *Killip & Smith 22294*.

Stelis sp. Flowers rotten.

Cuzco: Ccochaypampa, "altura de Ccochayoc," 1000 meters, *Bues s.n.*

Stelis sp. Lip variable.

Huancavelica: Prov. of Tayacaja, Montepungo, 5 km. east of Surcubamba, 3000 meters, abundant epiphyte on mossy tree trunks, flowers varying from blood red to pale greenish white, *Stork & Horton 10385*.

Stelis sp. Flowers too old for diagnosis.

Huánuco: Chaglla, in patches in thickets, *Macbride 3642*.

Stelis sp. No good flowers.

Junín: East of Quimiri Bridge, near La Merced, 800–1300 meters, epiphyte in dense forest, *Killip & Smith 23964*.

Stelis sp. No good flowers.

Junín: Huacapistana, 1800–2400 meters, epiphyte in thickets and open woods, perianth yellowish green, *Killip & Smith 24497*.

Stelis sp. No flowers.

Junín: Pichis Trail, Yapas, 1350–1600 meters, epiphyte in dense forest, *Killip & Smith 25524*.

Stelis sp. No flowers.

Puno: Ollachea, *Soukup 476*.

Stelis sp. No good flowers.

Puno: Ollachea, *Soukup 477*.

Masdevallia sp. Fruit only.

Huánuco: Río Huallaga Cañon, below Río Santo Domingo, in montaña, about 1200 meters, *Macbride 4263*.

Masdevallia sp. No flowers.

Junín: Chanchamayo Valley, 1800 meters, *Schunke 522*.

Lepanthes sp. Aff. *L. blepharistes* Reichb. f.

Junín: Carpapata, above Huacapistana, 2700–3200 meters, epiphyte at edge of forest, segments pink, *Killip & Smith 24444*.

Lepanthes sp. Fruit only, allied to *L. monoptera* Lindl.

Junín: Carpapata, above Huacapistana, 2700–3200 meters, epiphyte at edge of forest, *Killip & Smith 30696*.

Pleurothallis sp. Aff. *P. amygdalodora* Kränzl. No flowers.

“Hohe von Liere,” 2400 meters, *Bues 1734*.

Pleurothallis sp. Aff. *P. velaticaulis* Reichb. f. Buds only.

Apurimac: Prov. of Andahuaylas, Pincos, 2700 meters, on clay bank, “rainy green shrubland,” *Stork & Horton 10664*.

Pleurothallis sp. Aff. *P. cordata* (Ruíz & Pav.) Lindl. Flowers poor.

Ayacucho: Aina, between Huanta and Río Apurimac, 750–1000 meters, epiphyte in dense forest, *Killip & Smith 22778*.

Pleurothallis sp. Aff. *P. xanthochlora* Reichb. f. No flowers.

Ayacucho: Aina, between Huanta and Río Apurimac, 750–1000 meters, on base of tree in open woods, *Killip & Smith 23166*.

Pleurothallis sp. Aff. *P. velaticaulis* Reichb. f. No flowers.

Ayacucho: Aina, between Huanta and Río Apurimac, at base of tree in open woods, *Killip & Smith 23167*.

Pleurothallis sp. Aff. *P. cedralensis* Ames. No flowers.

Ayacucho: Aina, between Huanta and Río Apurimac, 750-1000 meters, epiphyte in open woods, *Killip & Smith 23160*.

Pleurothallis sp. Aff. *P. serripetala* Kränzl. Flower passé.

Cuzco: Ollantaytambo, about 3000 meters, on rocks, *Cook & Gilbert 309*.

Pleurothallis sp. Aff. *P. sicaria* Lindl.

Cuzco: Hda. Ccochayoc, 1000 meters, *Bues s.n.*

Pleurothallis sp. Aff. *P. cordata* (Ruíz & Pav.) Lindl. No flowers.

Cuzco: Ccochayoc, Altura de Ccochayoc, 1000 meters, *Bues s.n.*

Pleurothallis sp. Aff. *P. Reymondii* (Karst.) Reichb. f. Flowers

poor.

Cuzco: Prov. of Convención, Sahuayaco, 1600 meters, epiphyte, *Vargas 6301*.

Pleurothallis sp. Aff. *P. macrorhiza* Lindl. Fruit.

Cuzco: Prov. of Paucartambo, between Acanacu and Pillahuata, 2800 meters, in open woods of "ceja de la montana," epiphyte, *West 7064*.

Pleurothallis sp. Aff. *P. Vargasii* C. Schweinf. Buds only.

Cuzco: Prov. of Convención, Hda. Potrero, Sapan-Sachayoc, 2200 meters, forest epiphyte, "flowers white," *Vargas 2556*.

Pleurothallis sp. Aff. *P. frutex* Schltr. No flowers.

Cuzco: Alturas de Ccochayoc, "Ccochayoc," 1000 meters, *Bues s.n.*

Pleurothallis sp. Aff. *P. nigrohirsuta* Kränzl.

Cuzco: Prov. of Convención, Hda. Potrero, Sapan-Sachayoc, 2200 meters, epiphyte in dense forest, flowers pale yellow, *Vargas 2539*.

Pleurothallis sp. Aff. *P. genychila* Schltr. Plant imperfect.

Huánuco: Muña, on trail to Tambo de Vaca, about 2400 meters, *Macbride 4323*.

Pleurothallis sp. Aff. *P. Tonduzii* Schltr. Flower loose in pocket.

Huánuco: Between Huánuco and Pampayacu, *Kanehira 319*.

Pleurothallis sp. No flowers.

Junín: Chanchamayo Valley, 1800 meters, *Schunke 541*.

Pleurothallis sp. Aff. *P. crocodiliceps* Reichb. f. No flowers.

Junín: Schunke Hacienda, above San Ramón, 1400–1700 meters, epiphyte in dense forest, “perianth greenish yellow,” *Killip & Smith 24852*.

Pleurothallis sp. Aff. *P. muricata* Schltr. Flower poor.

Junín: Schunke Hacienda, above San Ramón, 1300–1700 meters, in dense forest, *Schunke A71*.

Pleurothallis sp. Aff. *P. ciliata* Knowl. & Westc. Flowers poor.

Junín: Pichis Trail, Yapas, 1350–1600 meters, epiphyte in dense forest, *Killip & Smith 25466*.

Pleurothallis sp. (probably). No flowers.

Junín: East of Quimiri Bridge, near La Merced, 800–1300 meters, epiphyte in dense forest, *Killip & Smith 23963*.

Pleurothallis sp.? No flowers.

Junín: Pichis Trail, Yapas, 1350–1600 meters, epiphyte in dense forest, *Killip & Smith 25523*.

Pleurothallis sp.? No flowers.

Junín: Schunke Hacienda, above San Ramón, 1400–1700 meters, epiphyte in dense forest, *Killip & Smith 24619*.

Pleurothallis sp. Aff. *P. tridentata* Kl. No flower.

Junín: Pichis Trail, San Nicolas, about 1100 meters, epiphyte in dense forest, *Killip & Smith 25977*.

Pleurothallis sp. Aff. *P. brevis* Schltr. Flowers passé.

Junín: Chanchamayo Valley, 1800 meters, *Schunke 1198*.

Pleurothallis sp. Aff. *P. rigidifolia* Reichb. f. Flower poor.

Junín: Schunke Hacienda, above San Ramón, 1300–1700 meters, in dense forest, *Schunke A53*.

Pleurothallis sp. Aff. *P. tridentata* Kl. Material inadequate.

Junín: Río Pinedo, north of La Merced, 700–900 meters, epiphyte, "perianth greenish white, pink-tinged," *Killip & Smith 23636*.

Pleurothallis sp. Aff. *P. juninensis* Schltr. No flower.

Junín: Schunke Hacienda, above San Ramón, 1400–1700 meters, epiphyte in dense forest, *Killip & Smith 24586*.

Pleurothallis sp. Aff. *P. juninensis* Schltr. No flower.

Junín: Pichis Trail, Yapas, 1350–1600 meters, epiphyte in dense forest, "perianth reddish purple," *Killip & Smith 25542*.

Pleurothallis sp. Aff. *P. crocodiliceps* Reichb. f. Flower imperfect.

Junín: Pichis Trail, Dos de Mayo, 1700–1900 meters, epiphyte in dense forest, *Killip & Smith 25828*.

Pleurothallis sp. Buds only.

Loreto: Puerto Arturo, lower Río Huallaga, below Yurimaguas, about 135 meters, "perianth rose-red," epiphyte in dense forest, *Killip & Smith 27890*.

Pleurothallis sp.? No flowers.

Loreto: Alto Río Itaya, San Antonio, 145 meters, on tree trunk, *Williams 3452*.

Pleurothallis sp. No flowers.

San Martín: San Roque, 1350–1500 meters, "on trunk of shrub," *Williams 7436*.

Pleurothallis sp. Mixed collection.

San Martín: San Roque, 1350–1500 meters, on tree trunk in forest, *Williams 7737*.

Octomeria sp. Aff. *O. tenuis* Schltr. Whole plant imperfect.

Junín: Chanchamayo Valley, 1600 meters, *Schunke 1722*.

Malaxis sp. Aff. *M. Parthonii* Morr. Fruit.

Huánuco: Cani, 7 miles northeast of Mito, about 2600 meters, "in deep humus of dense stream-wood," *Macbride 3392*.

Malaxis sp. Aff. *M. termensis* (Kränzl.) C. Schweinf. Fruit.

Huánuco: Mito, about 2700 meters, on northeastern slope, "in deep grasses," *Macbride & Featherstone 1497*.

Liparis sp. Aff. *L. ramosa* Poepp. & Endl. No good flowers.

Junín: La Merced, Hacienda Schunke, about 1200 meters, on floor of "montana," *Macbride 5643*.

Epidendrum sp. Flowers agglutinated.

Amazonian slope of the Andes, 3000–3300 meters, *Ehle 1927*.

Epidendrum sp. Aff. *E. nephroglossum* Schltr. Flower poor.

Apurímac: Prov. of Andahuaylas, west of Pincos, 2600 meters, epiphyte in forest, flower dull waxy yellow, *Stork & Horton 10706*.

Epidendrum sp. Aff. *E. nocturnum* Jacq. Flowers wilted.

Ayacucho: Aina, between Huanta and Río Apurímac, 750–1000 meters, terrestrial in open woods, *Killip & Smith 23169*.

Epidendrum sp. No flowers.

Ayacucho: Ccarrapa, between Huanta and Río Apurímac, about 1500 meters, epiphyte in densely forested valley, "segments grass-green," *Killip & Smith 23220*.

Epidendrum sp. No good flowers.

Cuzco: Valle de San Miguel, slopes of Machu-Picchu, 2400 meters, *Herrera 3188*.

Epidendrum sp. Aff. *E. syringothyrsis* Reichb. f. ex Hook. f.

Huancavelica: Prov. of Tayacaja, Ampurco woods, on trail between Salcabamba and Surcubamba, 2900 meters, epiphyte on mossy trunk, sepals and petals dark red, lip pink to white, *Stork & Horton 10427*.

Epidendrum sp. Aff. *E. Funkii* Reichb. f. Plant poor.

Huánuco: Between Huánuco and Pampayacu, *Kanehira 337*.

Epidendrum sp. Aff. *E. Schlimii* Reichb. f. var. *gracillimum* (Reichb. f. & Warsc.) C. Schweinf.

Huánuco: Between Huánuco and Pampayacu, *Kanehira 26*.

Epidendrum sp. Aff. *E. Haenkeanum* Presl. Small flowers.

Huánuco: Between Huánuco and Pampayacu, *Kanehira 338*.

Epidendrum sp. Old flower on fruit.

Huánuco: Chaglla, about 2700 meters, epiphyte in patches, *Macbride* 3636.

Epidendrum sp. Old flower on fruit.

Huánuco: Huacachi, near Muña, about 2000 meters, pendent epiphyte, *Macbride* 4179.

Epidendrum (Section **Amphiglottium**) sp. Flowers only.

Huánuco: Mito, about 2700 meters, on very steep, grassy, sparsely shrubby, northeastern slope, flower dull brick-red with yellow center, *Macbride & Featherstone* 1481.

Epidendrum sp. Flowers passé.

Huánuco: Vilcabamba, Hacienda on Río Chinchao, about 1800 meters, epiphyte, *Macbride* 5013.

Epidendrum sp. Aff. *E. inamoenum* Kränzl. Flowers old.

Huánuco: Yanahuanca, about 3000 meters, on steep, densely shrubby bank, *Macbride & Featherstone* 1188.

Epidendrum sp. Flowers passé.

Huánuco: Muña, about 2100 meters, epiphyte, *Macbride* 4044.

Epidendrum sp. Fruit.

Huánuco: Muña, about 2100 meters, epiphyte, *Macbride* 4043.

Epidendrum sp. Flowers poor.

Huánuco: Between Huánuco and Pampayacu, *Kanehira* 313.

Epidendrum sp. Flowers poor.

Huánuco: Between Huánuco and Pampayacu, *Kanehira* 309.

Epidendrum sp. Aff. *E. polystachyum* HBK.

Junín: Chanchamayo Valley, *Schunke* s.n.

Epidendrum sp. Aff. *E. Schlimii* Reichb. f. var. *gracillimum* (Reichb. f. & Warsc.) C. Schweinf. No flowers.

Junín: Huacapistana, 1800–2400 meters, epiphyte on open hillside, *Killip & Smith* 24225.

Epidendrum sp. *E. inamoenum* Kränzl.? Fruit.

Junín: Carpapata, above Huacapistana, 2700–3200 meters, terrestrial at edge of forest, *Killip & Smith* 24418.

Epidendrum sp. Fruit.

Junín: Pichis Trail, Yapas, 1350–1600 meters, epiphyte in dense forest, *Killip & Smith 25585*.

Epidendrum sp. Aff. *E. paniculatum* Ruiz & Pav. Fruit.

Junín: Río Paucartambo Valley, near Perene Bridge, 700 meters, epiphyte in dense forest, *Killip & Smith 25338*.

Epidendrum sp. Aff. *E. crassilabium* Poepp. & Endl. Fruit.

Junín: Huacapistana, 1800–2400 meters, in thickets and open woods, *Killip & Smith 24157*.

Epidendrum sp. Aff. *E. blepharichilum* Kränzl. Fruit.

Junín: Carpapata, above Huacapistana, 2700–3200 meters, terrestrial in forest, *Killip & Smith 24495*.

Epidendrum sp. *E. anceps* Jacq. (probably). No flowers.

Loreto: Puerto Arturo, lower Río Huallaga below Yurimaguas, about 135 meters, epiphyte in dense forest, "segments greenish yellow," *Killip & Smith 27746*.

Epidendrum sp. Flowers are *E. fruticulus* Schltr. (probably); plant apparently a *Maxillaria*.

Puno: Prov. of Sandía, near Limbani, 3200–3450 meters, on very wet, shaded mountain-side in sphagnum, "flowers red and orange-yellow," *Metcalf 30540*.

Epidendrum sp. Aff. *E. scabrum* Ruiz & Pav. Flower old.

Puno: Prov. of Sandía, near Limbani, 3200–3450 meters, in dry sphagnum on rocks, in fog belt, "perianth segments green-brown," *Metcalf 30534*.

Epidendrum sp. Flower imperfect.

San Martín: San Roque, 1350–1500 meters, *Williams 7313*.

Scaphyglottis sp. Aff. *S. Huebneri* Schltr. No flowers.

Ayacucho: Río Apurimac Valley, near Kimpitiriki, 400 meters, epiphyte at edge of dense forest along beach, *Killip & Smith 22977*.

Scaphyglottis sp. No good flowers.

Junín: La Merced, Hacienda Schunke, about 1200 meters, on fallen log, "fls. greenish white," *Macbride 5598*.

Scaphyglottis sp. Flower loose in pocket; perhaps a mixture.

Junín: Chanchamayo Valley, 1500 meters, *Schunke s.n.* Herb. Chicago Nat. Hist. Mus. 571663.

Scaphyglottis sp. Flower loose in pocket. Same as last.

Junín: Chanchamayo Valley, 1500 meters, *Schunke 536*.

Polystachya sp. Fruit.

Junín: Río Paucartambo Valley, near Perene Bridge, 700 meters, epiphyte in dense forest, *Killip & Smith 25361*.

Polystachya sp. Buds only.

Loreto: Río Huallaga Canyon, below Río Santo Domingo, about 1200 meters, "dry woods, fls. green," *Macbride 4253*.

Galeandra sp. No flowers.

Loreto: Balsapuerto (lower Río Huallaga basin), 150–350 meters, epiphyte in dense forest, "flowers yellow," *Killip & Smith 28402*.

Govenia sp. Aff. *G. tingens* Poepp. & Endl. Fruit.

Huánuco: Muña, about 2100 meters, in dry rocky woods, *Macbride 4042*.

Catasetum sp. (probably). Buds only.

Junín: Colonia Perene, about 680 meters, epiphyte in dense forest, "young perianth segments purple," *Killip & Smith 24951*.

Catasetum sp. Raceme of female flowers.

Junín: Chanchamayo Valley, 1000 meters, *Schunke 1653*.

Catasetum sp. Abnormal growth and flowers.

Loreto: Vicinity of Iquitos, epiphyte in dense forest, "fls. mignonne, with small red-brown spots," *Klug 10033*.

Lycaste sp. Fruit.

Huánuco: Mito, about 2700 meters, "on soil ledge of shrubby southwestern slope," *Macbride & Featherstone 1480*.

Lycaste sp. (probably). Immature bud only.

Junín: East of Quimiri Bridge, near La Merced, 800–1300 meters, epiphyte in dense forest, "perianth green, pink-tinged within, lip and column white," *Killip & Smith 23840*.

Bateman sp. (probably). No good flowers.

Junín: Colonia Perene, about 680 meters, epiphyte in dense forest, "perianth greenish white," *Killip & Smith 24960*.

Zygopetalum sp.? Old fruit.

Junín: Pichis Trail, Eneñas, 1700 meters, terrestrial in open sphagnum swamp, *Killip & Smith 25696*.

Zygopetalum (Section *Warscewiczella*) sp. Fruit.

Loreto: Balsapuerto (lower Río Huallaga basin), 150–350 meters, epiphyte in dense forest, *Killip & Smith 28624*.

Zygopetalum (Section *Warscewiczella*) sp. Fruit.

San Martín: San Roque, 1350–1500 meters, on trunk of petrified tree, *Williams 7345*.

Maxillaria sp. (probably). No flowers.

Ayacucho: Aina, between Huanta and Río Apurímac, 750–1000 meters, epiphyte in open woods, "segments light green, column red-dotted," *Killip & Smith 23158*.

Maxillaria sp. Aff. *M. xantholeuca* Schltr. var. *peruviana* C. Schweinf. Flowers imperfect.

Cuzco: Prov. of Convención, Sahuayaco, 1800 meters, epiphyte, "flowers yellow," *Vargas 6296*.

Maxillaria sp. No flowers.

Huánuco: Pampayacu, Hacienda at mouth of Río Chinchao, about 1070 meters, epiphyte in dense woods, "fls. bright yellow," *Macbride 5107*.

Maxillaria sp. Aff. *M. purpurea* (Spreng.) Ames & Correll. No good flowers.

Huánuco: Pozuzo, about 600 meters, epiphyte, *Macbride 4579*.

Maxillaria sp. Aff. *M. striata* Rolfe. No pseudobulb present.

San Martín: Near Tingo María, 625–1100 meters, "flowers pure yellow with orange lip," *Allard 21986*.

Scelochilus sp. Aff. *S. saccatus* (Poepp. & Endl.) Reichb. f. Flower imperfect.

Cuzco: Prov. of Urubamba, "Huiñahuina," 2550 meters, epiphyte, "flower pale yellow," *Vargas 4126*.

Odontoglossum sp. (probably). Flowers old.

Ayacucho: Ccarrapa, between Huanta and Río Apurímac, about 1500 meters, epiphyte in densely forested valley, *Killip & Smith 22405*.

Brassia sp. Flower imperfect.

Huánuco: Confluence of Huallaga and Monzón Rivers, near Tingo María, 700 meters, epiphyte on tall tree, "sepals greenish yellow mottled with dark purple, lip yellow mottled with dark purple," *Stork & Horton 9499*.

Oncidium sp. *O. aureum* Lindl.? Old fruit.

Huánuco: Muña, about 2100 meters, epiphyte, *Macbride 3955*.

Lockhartia sp. Aff. *L. hologlossa* Schltr. Fruit.

Junín: Huacapistana, about 1800 meters, epiphyte in densely forested valley, *Killip & Smith 24296*.

Ornithocephalus sp. No flowers.

Cuzco: Cochapampa, 1000 meters, "banda derecha del Urubamba," *Bues 2*.

Ornithocephalus sp. Aff. *O. pygmaeus* Reichb. f. & Warm. Material scanty.

Cuzco: Valle de Santa Ana, *Herrera 3046*.

Ornithocephalus sp. Immature buds only.

Junín: Along Río Perene, near "Hacienda 3," Colonia Perene, about 600 meters, epiphyte in forest, "perianth segments white," *Killip & Smith 25179*.

Ornithocephalus sp. Buds only.

Junín: Colonia Perene, about 680 meters, epiphyte in dense forest, *Killip & Smith 25094*.

Ornithocephalus sp. No flowers.

Junín: San Ramón, 900–1300 meters, epiphyte in dry woods, *Killip & Smith 24759*.

Notylia sp. Buds only.

Junín: Along Río Perene, near "Hacienda 3," Colonia Perene, about 600 meters, epiphyte in forest, *Killip & Smith 25177*.

Notylia sp. *N. yauaperyensis* Barb. Rodr., fide Mansf. Photograph only.

Loreto: Upper Río Marañon, at mouth of Río Santiago, 160 meters, in rain-forest, "flower yellow with a white lip," *Tessmann 4309*.

Notylia sp. Buds only.

San Martín: Tarapoto, 750 meters, epiphyte on shrub, *Williams 6148*.

Trichoceros sp. Aff. *T. parviflorus* HBK. No flowers.

Junín: Huacapistana, 1800–2400 meters, terrestrial in thickets and open woods, "sepals yellow-green mottled with pink, column and lip deep pink marked with yellow," *Killip & Smith 24124*.

Dichaea sp. Aff. *D. muricata* (Sw.) Lindl. var. *maculata* (Poepp. & Endl.) C. Schweinf. No flowers.

Ayacucho: Aina, between Huanta and Río Apurímac, 750–1000 meters, epiphyte in open woods, "perianth greenish white, purple-dotted," *Killip & Smith 22592*.

Dichaea sp. No flowers.

Junín: East of Quimírí Bridge, near La Merced, 800–1300 meters, epiphyte in dense forest, "fruit green," *Killip & Smith 23828*.

Dichaea sp. Aff. *D. calyculata* Poepp. & Endl. Old fruit.

Junín: Schunke Hacienda, above San Ramón, 1400–1700 meters, epiphyte in dense forest, *Killip & Smith 24861*.

Dichaea sp. Flower poor.

Junín: La Merced, Hacienda Schunke, about 1200 meters, epiphyte in "montana," *Macbride 5766*.

Dichaea sp. Old fruit.

Junín: Pichis Trail, San Nicolas, about 1100 meters, epiphyte in dense forest, *Killip & Smith 25979, 25980*.

Dichaea sp. Aff. *D. campanulata* C. Schweinf. Sterile.

Junín: San Luis de Shuaro, *Soukup 2535*.

Dichaea sp. Sterile.

Junín: Pichis Trail, San Nicolas, about 1100 meters, epiphyte in dense forest, "buds white," *Killip & Smith 25991*.

Dichaea sp. Aff. *D. campanulata* C. Schweinf. Old fruit.

Junín: Wooded banks of Río Pichis, between Puerto Bermudez and Cahuapanas, 340–375 meters, epiphyte, *Killip & Smith 26691*.

Dichaea sp. Aff. *D. campanulata* C. Schweinf. Sterile.

Loreto: Lower Río Huallaga, San Ramón, Yurimaguas, 155–210 meters, *Williams 4565*.

Dichaea sp. Flower poor.

San Martín: Juan Jui, Alto Río Huallaga, about 400 meters, epiphyte in forest, "flower white and violet," *Klug 3796*.

Dichaea sp. Aff. *D. muricata* (Sw.) Lindl. var. *maculata* (Poepp. & Endl.) C. Schweinf. Sterile.

San Martín: Lamas, near Tarapoto, 840 meters, epiphyte on shrub, *Williams 6402*.

Dichaea sp. Aff. *D. muricata* (Sw.) Lindl. var. *maculata* (Poepp. & Endl.) C. Schweinf. Sterile.

San Martín: San Roque, 1350–1500 meters, epiphyte on forest tree, *Williams 7709*.

Pachyphyllum sp. No flower seen.

Peru: Habitat not recorded, *Mathews 1862*.

Pachyphyllum sp. Buds only.

Cuzco: *Bues s.n. (Herrera 2153)*.

Pachyphyllum sp. Flowers poor.

Cuzco: Prov. of Urubamba, Puyupata-Tuncapata, 3200 meters, epiphyte, *Vargas 2929*.

Campylocentrum sp. Aff. *C. micranthum* (Lindl.) Rolfe. Flowers poor.

Junín: Schunke Hacienda, above San Ramón, 1300–1700 meters, in dense forest, *Schunke A52, A66*.

Campylocentrum sp. Aff. *C. micranthum* (Lindl.) Rolfe. No good flowers.

San Martín: San Roque, 1350–1500 meters, epiphytic, *Williams 7511*.

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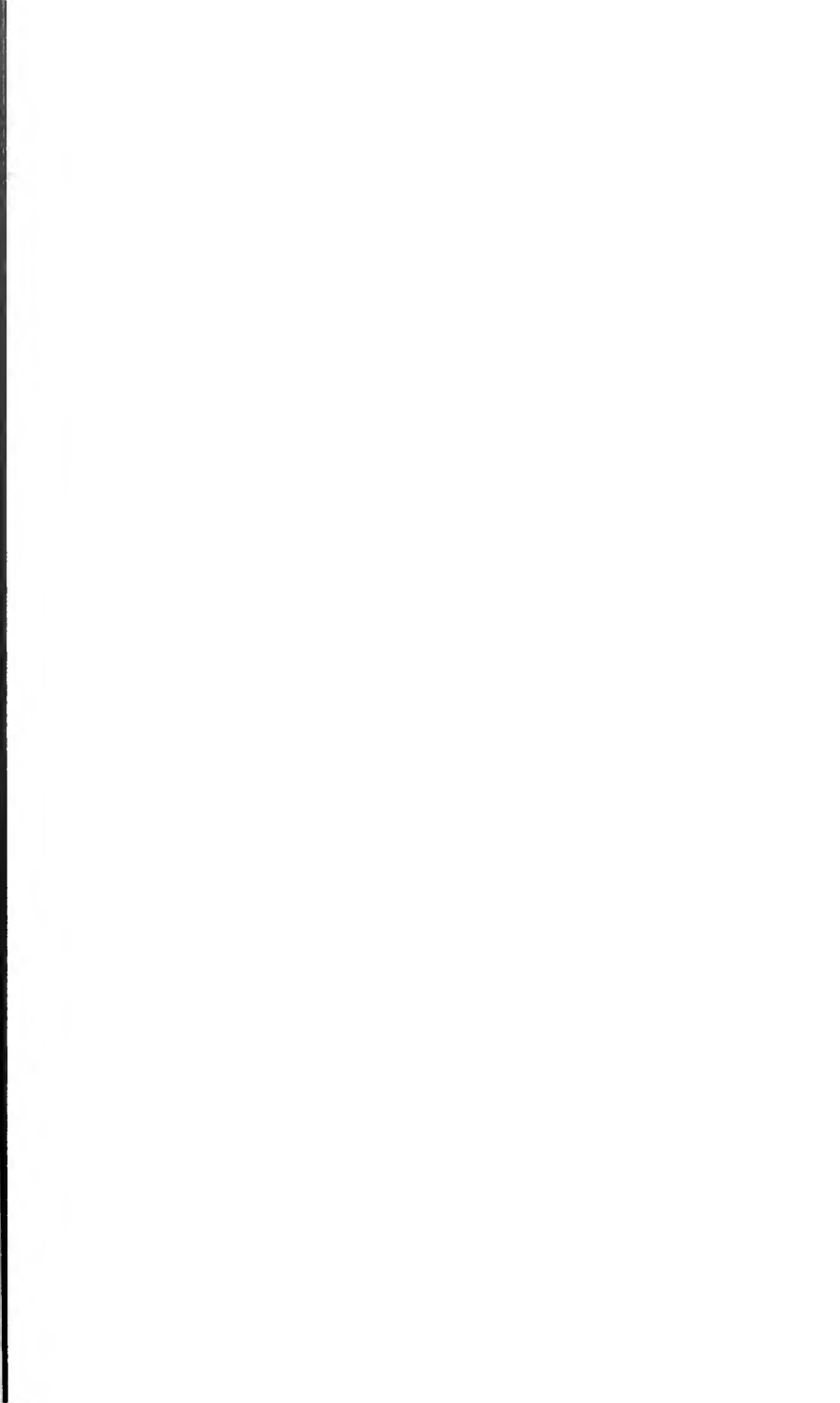
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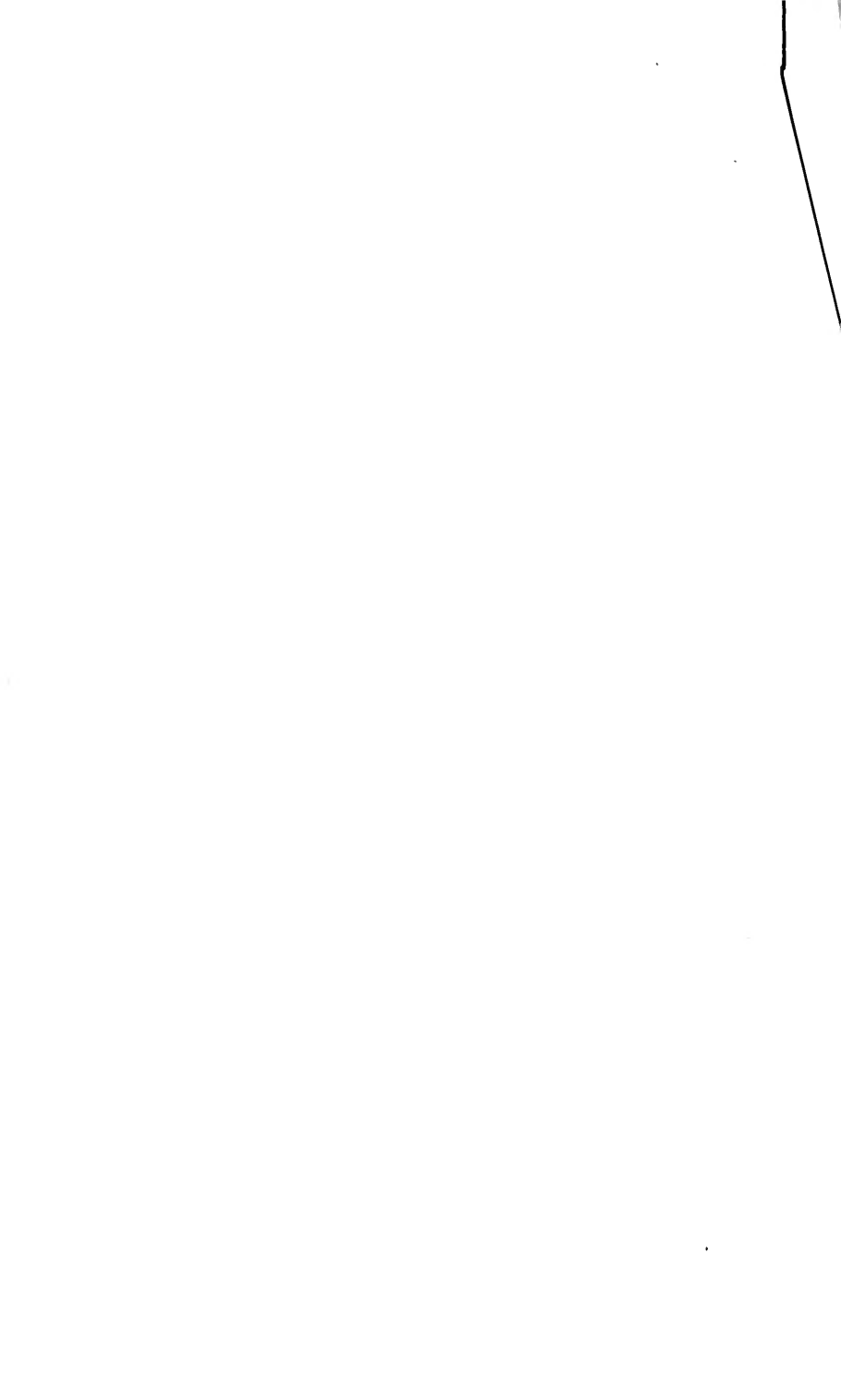
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